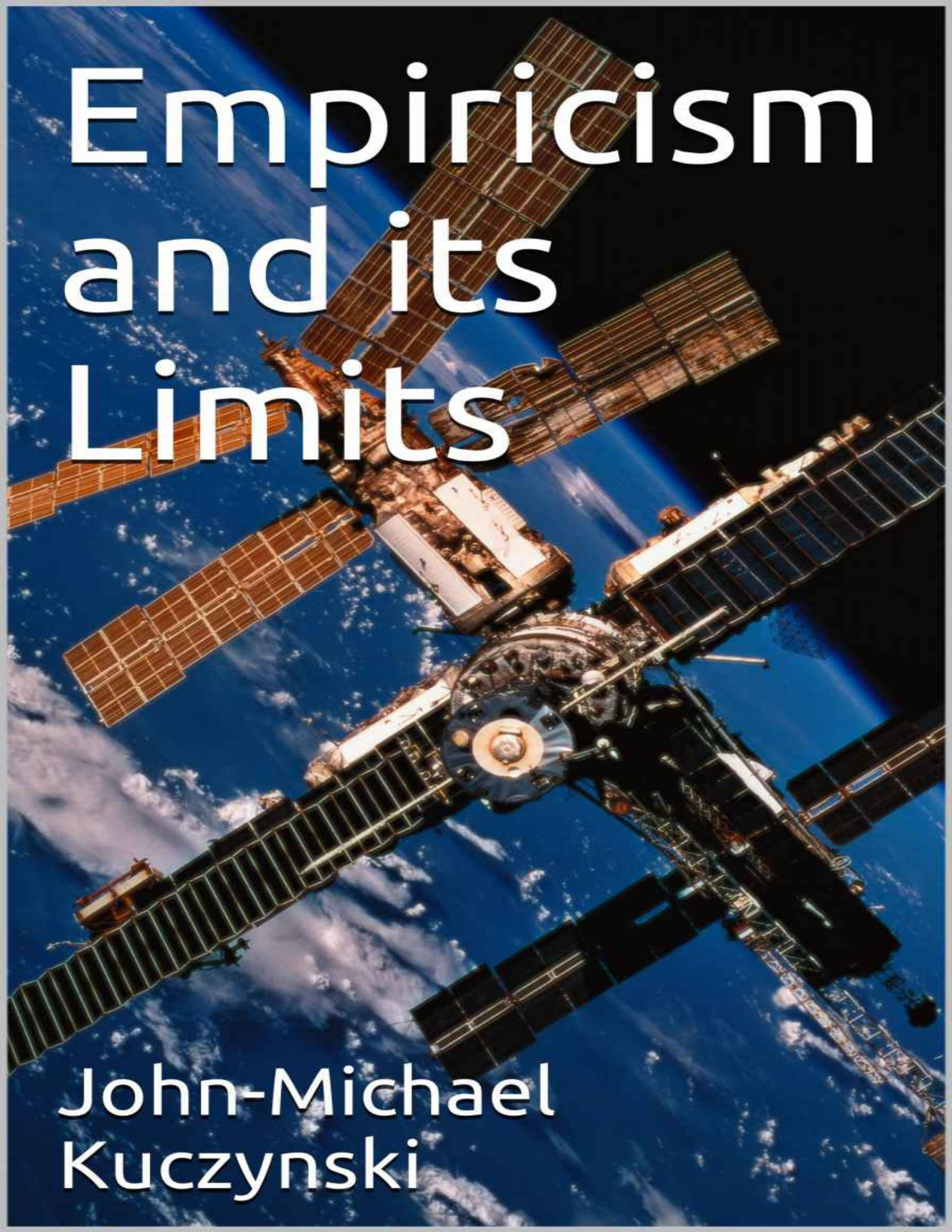
Empiricism and its Limits



John-Michael Kuczynski

Empiricism and Its Limits

John-Michael Kuczynski, PhD

Fellow, Bard College

1.0 Empiricism vs. rationalism

2.0 The particularist nature of sense-perception and the need for universals

3.0 Non-perceptual knowledge a prerequisite for perceptual knowledge

4.0 Why pre-perceptual and, therefore, non-empirical knowledge is a prerequisite for empirical knowledge

5.0 The biggest problem with empiricism: not all thoughts are pictorial

6.0 George Berkeley and the collapse of empiricism into idealism

7.0 The phenomenal reduction

8.0 Two insights of Berkeley's

1.0 Empiricism vs. rationalism

We obviously acquire a great deal of knowledge through "sense-perception" (i.e., through sight, hearing, touch, and so forth). According to a doctrine known as "empiricism," *all* knowledge is derived from sense-perception.

According to a view known as "rationalism," some knowledge is acquired entirely through the use of one's ability to *reason.*

Rationalists almost never hold that *no* knowledge is acquired through sense-perception. They hold only that reason, as opposed to sense-perception, is the vehicle through which *some* knowledge is acquired.

Rationalists typically hold that knowledge acquired in this way is very important—it isn't trivial.

Some hold the view that there is knowledge that is acquired neither through the senses nor through reason. I don't wish to dismiss this view. Maybe it's correct. But there is an apparent problem with it. Any case of knowledge is a case of *justified* true belief. Given a belief that isn't acquired through the senses *or* through reasoning, the question arises: what could possibly justify it? And there's no obvious answer.

In any case, in this short work, it will be assumed, if only to simplify exposition, that the only viable sources of knowledge are reason and the senses and therefore that the only viable options for epistemologists are rationalism and empiricism. But I wish to stress that I am genuinely open on the question of whether there is non-perceptual, non-rational knowledge. (I'm inclined to think that there is.)

Those who believe that there exist non-spatiotemporal entities are necessarily rationalists. Give or take a few nuances, empiricism is the view that you don't know it if you don't see it. We see property-instances, but not properties themselves. Therefore, empiricists either deny the existence of properties themselves or they hold that properties are identical spatiotemporal entities. Those who take the latter view are forced to view properties as being composed of their own instances; so the property of being wet is identical with some object composed of all wet things, or some such. Therefore, empiricists don't believe in *uninstantiated* properties. Therefore, anyone who does believe in such properties, or who believes that properties are not spatiotemporal entities, is a rationalist.

Those who believe that properties are non-spatiotemporal are *Platonists.* Therefore Platonists are rationalists. A Platonic metaphysics requires a rationalist epistemology. Plato himself accepted a very extreme form of rationalism.

Being one that has deep roots in common sense, empiricism is a very old doctrine. But empiricism was first rigorously developed by John Locke (1632–1704), George Berkeley (1685–1753), and David Hume (1711–1776). The doctrines put forth by these authors form the basis of modern philosophy. Hume's beliefs about *causality* and *inductive inference* are outgrowths of his empiricism. These views are examined in *Causality*, by the present author.

Berkeley's belief that objects are identical with our perceptions of them is an outgrowth of his empiricism. Berkeley's ingenious arguments for this outrageous doctrine are examined later in this book.

John Locke's plausible position that universals are "the workmanship of the understanding"—that *we* create them, so as to make sense of the world—is a derivative of his empiricism. That doctrine is examined in the present work.

The first great rationalist was Plato (428 B.C.–348 B.C.). Other rationalists are: Augustine (354–430), Descartes (1596–1650), Leibniz (1646–1716), and Gottlob Frege (1848–1925).

The first great empiricist was Aristotle (384 B.C.–322 B.C). Other empiricists are J.S. Mill (1806–1873), Rudolph Carnap (1891–1970), and W.V.O. Quine (1908–2000).

In this monograph, we will find that empiricism is not in its strictest form a defensible doctrine and that, consequently, at least some knowledge has a non-perceptual basis.

There are, as we will see, two important corollaries. First, many commonsense-based views about the internal (psychological) and external (physical) worlds must be jettisoned. Second, sober scientific methodology actually demands an acceptance of principles that would strike common sense as decidedly unscientific. We will see that many concepts that cannot be adequately understood along strictly empiricist lines can nonetheless be correctly understood only *in terms of* what empiricism has to say about them.

2.0 The particularist nature of sense-perception and the need for universals

Sense-perception discloses only *particulars* to us—particular objects having particular property-instances. But we understand and describe the world in terms of categories or, as they are sometimes called, "universals." These can be thought of as natures, essences, or "ways of being," that, although *exemplified* by the particulars that we encounter in sense-perception, are not themselves to be sense-perceived, and, though they presumably exist, do not exist in space-time.

Because they are non-spatiotemporal, those of an empiricist mindset regard universals with extreme suspicion. In fact, empiricism is, nearly enough, the denial that such things exist. Why? The empiricists say: what we can legitimately believe is what we can sense-perceive or know on the basis of extremely conservative inferences on the basis of what we can sense-perceive.

The problem is that there is no way to understand the world except in terms of universals. To understand things *is* to know how, in virtue of having such and such characteristics (i.e., in virtue of falling under such and such universals), they are subject to thus and such principles or laws. "Why did Max steal the money? Because Max is greedy and amoral and he believed it to be to his strategic advantage to steal the money." Max's behavior is explained by showing how, given the operative conditions, his having those characteristics makes it inevitable that he will act in that way. This explanation presupposes the existence of many different universals. (Among them are those denoted by the terms "greed," "amorality," "money," and "theft.") This explanation is not unique in this respect: *all* explanations presuppose the existence of universals. The very idea of an explanation that didn't do so is an incoherent one.

Universals are outside of space-time. For this reason, they cannot have effects on anything. (Causal relations hold only among spatiotemporal entities.) One cannot sense-perceive an object without being affected by it. (It is only because your ocular surfaces are disturbed by light-rays bouncing off of the page in front of you that you can see it.) It follows that universals cannot be sense-perceived. It also follows that no *evidence* of them can be sense-perceived. This is because x is evidence of y only if x and y are *causally interconnected* in such a way that, given x's existence, y's may reasonably be assumed. (Smoke is evidence of fire because smoke and fire are causally connected in such a way that, given the presence of smoke, the presence of fire may be inferred.) It is therefore impossible as a matter of logic to find any *observational* basis for the existence of universals. This means that, if empiricism is correct, we cannot possibly have any good reason to posit the existence of universals. Given how endemic universals are to thought, language, and explanation, the right move is to reject empiricism.

2.1 The empiricist response to these problems

Empiricists have responded by saying that, although *instances* of universals obviously exist, universals *per se* do not. (Remember that, in this context, "universal" is synonymous with "property.")

The problem with this view is that, as previously noted, every sentence and every thought demands the existence of at least one universal.

Also, some basic logic shows that universals exist. Consider the following inference: "Bob and Ted are both human; therefore, there is some characteristic that they have in common." That is a valid inference; and the

conclusion affirms the existence of a universal. (“Characteristic” is synonymous with “universal.”)

Finally, many statements straightforwardly presuppose or affirm the existence of universals; and were it not for statements of this kind, many obvious truths couldn’t be expressed. Consider the following statements:

(i) Hitler and Stalin had a lot in common;

(ii) Smith has what it takes to be a great pianist, but he doesn’t have what it takes to be a great composer;

(iii) Even though Smith is different from Jones, that has nothing to do with the fact that they don’t like each other.

The meanings of these sentences are, respectively:

(i*) There are many properties such that, given any one of them, Hitler had it and so did Stalin;

(ii*) There are properties such that, if one has them, one is a great pianist and such that, moreover, Smith has them; and there are properties such that, if one lacks them, one isn’t a great composer and such that, moreover, Smith lacks them;

(iii*) There are properties such that Smith has them and Jones does not, but this fact isn’t responsible for the fact that they don’t like each other.

(i)–(iii) cannot be translated into statements that don’t presuppose or

affirm the existence of properties. So it isn't really an option to hold that properties don't exist.

As soon as one grants that anything resembles anything, one must grant that universals exist independently of thought. For two objects to be similar in some respect is for there to exist some property that they both have. For two objects to have the same shape is for there to exist some morphological property such that each object is an instance of that property. It's obviously possible for two objects to have the same shape in a world devoid of sentient beings. Therefore, there exist properties in worlds where there are no sentient beings. Therefore, properties aren't created by such beings and aren't otherwise dependent on them.

Properties are identical with *categories.* For x to fall into a given category is for x to have a given property. (For x to fall into the category of round things is for x to have the property of being round.) Given that properties exist independently of thought, the same is true of categories. Thus, contrary to what some empiricists (e.g., Locke) say, categories are not devices that human beings created in order to expedite thought.

It is easy to find independent corroboration for this view. Let each of x and y be a pint of pure, clean glacial water, and let z be a pint of gasoline. The chef or chemist or auto mechanic who chooses to co-categorize x and z, as opposed to x and y, is in for some very unpleasant surprises. Why? Because his categories don't cut "nature at the joints," to use Francis Bacon's expression. In other words, there is some relevant property that x and y have in common that x and z *don't* have in common, and this person's system of categories embodies an ignorance of that fact.

3.0 Non-perceptual knowledge a prerequisite for perceptual knowledge

It's not as though tables, rocks, trees, etc., create little images of themselves that they deposit in our hitherto empty crania. Our minds have to supply the "paint," so to speak, with which our mental representations of those objects are painted.

In fact, our minds must supply *everything*. External objects don't *supply* our minds with anything. All they do is tell our minds when to deploy what is already in them. External objects don't stock our minds; they *activate* what's already in them. A rock will never experience an image. It doesn't matter how many light beams you fire at it. There's nothing in it to be brought forth; there are, so to speak, no images in there to begin with. For similar reasons, the acoustical disturbances that, in a human, would lead to knowledge of English or of philosophical principles will have no comparable effect on a rock. Thoughts are taught by being elicited, not by being deposited. This is the most fundamental problem with empiricism.

A precondition for sense-perceiving anything is that we be able to represent it as having a location (relative to us) in space and time, that we be able to represent it as having a certain shape, state of motion, color, etc. Although we learn a great deal through perception, what we *don't* learn through it are the concepts—space, time, motion, shape, color, etc.—out of which sense-perceptions are constructed. So those things, and all that having them involves, must be in the mind *prior* to sense-perception, as a necessary *pre*condition for it.

These considerations expose what I believe to be the deepest confusion of which empiricism is guilty. Empiricists fail to distinguish between two very

different roles that sense-perceptions can have: they can have a *triggering* role and they can also have an *information-transmitting* role.

3.1 Sense-perception as transmitter of information about the external world

You see a dog. On that basis you have the belief that there is a nearby dog. Here your eyes transmitted information to you about the external world. They "told" you, so to speak, that there was a dog in a certain place. Your could not possibly have learned this fact through pure logic-chopping or conceptual analysis. You could learn it only through the senses (either by seeing the dog or by sense-perceiving some other sort of evidence of the dog). In this context, then, information about the external world is being transmitted to you through your senses. Your senses (specifically, your sense of sight) is thus functioning in what we might call an "information transmitting" capacity.

3.2 Sense-perception as cognitive trigger

Sense-perceptions have a triggering role when they provide the recipient with new information *not* by telling him something about the external world, but by activating or "triggering" some already existing cognitive faculty.

You are in a geometry class. The teacher draws something that is supposed to represent a triangle but only vaguely looks like one. He draws various lines through it, around it, etc. And from these diagrams you learn

various facts about triangles.

What did you actually *see?* What did your eyes show you? A triangle? No—only a few uneven lines that formed something that vaguely looked like a triangle. How did your seeing this non-triangle get you to know that, for example, the area of a triangle is 1/2 base times height? Since you didn't see any triangles, you didn't see any triangles' height, base, or area. The things you saw were symbols for things that had to be supplied to you by something other than your senses—that had to be supplied to you by your intellect.

This is not to say that the diagram was useless. Plainly it was not. It may be that, but for seeing it, you wouldn't have learned anything about triangles. But your seeing the diagram led to your knowing those truths about triangles *not* because any triangle, or any fact about triangles, was any part of the information imparted to you by your perception, but rather by *triggering* or *activating* certain conceptual faculties of yours. In this context, your senses are (to the extent that you are learning actual geometrical truths as opposed to mathematically irrelevant facts about the blackboard, chalk-marks, etc.) providing you with knowledge by getting you to acquire knowledge in some *non*-sensory way, viz. by getting you to grasp, and analyze relations among, concepts.

The proof that your visual perception of the diagram had only a *triggering* role, and that it did not itself contain any information relating to what you learned, is that, if you were to forget ever having seen that diagram—were to forget what it looked like, who drew it, where you saw, or even *that* you saw it—it would have no effect on the geometrical truths that you learned that day. The reason is that those geometrical truths (e.g., area of a triangles = bh/2) were simply *not* part of the content of what your senses were telling you.

By contrast, if you forget ever seeing the dog (described in the last section), you *will* forget the information that, on that occasion, your senses led you to have. The reason is that, in that context, your senses weren't serving the purpose of jogging your ability to acquire knowledge in some *non*-sensory way (viz. through rational insight) but were themselves the bearers of the information learned.

3.3 An anti-empiricist consequence of the distinction between triggering and information transmitting

According to strict empiricists, *everything* that is learned, including purely logical principles, is learned through sense-perception. When this appears to happen, it's because sense-perception is simply "turning on" some non-sensory mode of knowledge acquisition. "Truths of reason," as Hume called them, aren't learned through sense-perception, even though sense-perception may awaken the non-sensory faculty through which we do become aware of them.

Some empiricists are aware of this objection, and they generally deal with it by saying one of two things:

(1) Truths of reason *really* are truths about the irregular figures on blackboards, that truths of arithmetic *really are* truths about what happens when apples are put on top of other apples, etc.

(2) The so-called "truths of reason" are just linguistic or typographical

conventions. “1+1=2” is an empty, purely definitional truth. “2” is *defined* as “1 + 1,” and “3” is *defined* as “1 + 2.” Every other fact about mathematics can be reduced to definitions, linguistic conventions; and all of mathematics turns out to be typographical. (As a matter of typography, you can replace “1 + 1” with “2,” just as you can replace “five” with “5.”) And all the so-called “truths of reason” that lie outside of mathematics are thought to be explained in the same way.

3.3.1 Why (1) is wrong

Your knowledge that 113 + 876 = 989 isn’t empirical; you didn’t see 113 pears being counted, then see 876 pineapples being counted, and then see the whole lot be counted. (And even if you did have such an experience in connection with those particular numbers, there are many other pairs of numbers whose sums—not to mention quotients, products, differences, etc.—you know, or could readily figure out, but in connection with which you’ve never seen anything like the situation just described.) Your knowledge of arithmetical truths is based on a grasp of non-empirical principles. Even if (what I think is necessarily false) you learned that 1 + 1 = 2 from watching one thing be put on top of another, you still would not, on that basis alone, have any way of generalizing that knowledge—of inferring the other mathematical truths you know. To make the needed inferences, you’d need access to rules of inference that you couldn’t possibly know about if your knowledge were strictly sense-based.

Another reason why (1) is wrong: Even one’s knowledge that 1 + 1 = 2

isn't known empirically. As David Hume made clear, observation tells you how things are, not how they should be. It reveals facts, not norms. But one's knowledge that 1 + 1 = 2 has normative force. If two people enter what you thought was an empty house, and three people leave, you don't reconsider your belief that 1 + 1 = 2. You take that belief as fixed and, in light of it, reconsider your belief that the house was in fact empty. If it turned out that, according to a certain scale, rocks R and R* had a collective weight of more than 2 pounds, even though you previously thought that each weight no more than 1 pound, you'd take your belief that 1 + 1 = 2 as fixed, and would revise some other belief of yours (e.g., your views concerning the rocks' individual weights or the accuracy of the scale or possibly even the laws of physics).[1] We interpret observations in light of the principle that 1 + 1 = 2, not *vice versa*.

3.3.2 Why (2) is wrong

Conventions are indeed arbitrary. But whether the conventions one adopts are *consistent* with one another is not itself a matter of convention. It's a matter of convention that "1" denotes 1, that "+" denotes addition, and it may even be strictly a matter of convention (though I think not: see below) that "2" refers to the same number as "1 + 1." But once these conventions have been laid down—once convention has fixed what "1," "+," "=," "3," etc. mean—various facts that are *not* among those conventions follow. For example, *given* our convention of referring to "1" as 1, to "+," as plus, etc. it follows that there is no pair of whole numbers p and q such that $(p/q)^2 = 2$ (in other words, 2 has no rational square root). But it's not a matter of *convention* that "2 has no rational square root" is true. It is a non-

conventional consequence of our conventions. (Nor—to make a different point—is it a matter of convention that what is *meant* by that sentence is true. The *fact* that 2 has no rational square root isn't a consequence of our conventions; it has nothing to do with conventions, as we'll discuss in a moment.) So even though our conventions don't directly say anything about the permissibility of the following sentence—"there *is* a pair of whole numbers p/q such that $(p/q)^2$"—those conventions *prohibit us* from adding that sentence to those same conventions. Were we to do so, our conventions would be *inconsistent.* In general, not all truths of reason (or any, actually, as well now see) can be conventionalized, since consistency among conventions is not itself a matter of convention.

3.3.3 Another reason why (2) is wrong

Also, we have to distinguish sentences from the things they express. For argument's sake, suppose that "2" is *defined* as "1 + 1," and suppose that "=" is defined in the normal way. In that case, the *sentence* "1 + 1 = 2" will indeed be a matter of definition. But that leaves it completely open *which* truth that sentence expresses. For suppose that, as a matter of convention, "1" referred to 8, and "1 + 1" referred to "7 + 1." Or suppose that as a matter of convention, "1 + 1" referred to Superman and "2" also referred to Superman. In each of those cases, the *sentence* "1 + 1 = 2" would be true by convention, but each would express a truth very different from the one actually expressed by "1 + 1 = 2." The truth *actually* expressed by that sentence concerns the number one—not Superman, not the number eight—and it says of it that, when added to itself, the result is two—not Superman, not eight.

Could “1 + 1 = 2” express *that very truth*—the one just described—and be false? No. If a sentence affirms that one and one make two, then—because of facts about one and two and addition and equality—it’s going to be true. So what makes “1 + 1 = 2” true isn’t convention, and is instead non-conventional facts about numbers. To be sure, conventions are involved: it is a matter of convention that “1” refers to one, “+” refers to addition, etc. And it follows from those conventions that “1 + 1 = 2” says that one, added to itself, yields two. But it’s a matter of mathematical, non-conventional fact that one plus one equals two.

4.0 Why pre-perceptual and, therefore, non-empirical knowledge is a prerequisite for empirical knowledge

Innate cognitive structures are needed to have sense-perceptions and also to learn from them. Having a sense-perception means having a certain kind of mental representation of an object. Not all mental representations of objects are sense-perceptions. Mental images aren’t, even though they resemble them. Concepts aren’t, and they don’t resemble them. It’s a delicate matter exactly what kinds of representations are perceptual: a necessary condition, certainly, is that they be caused by their objects—your perception of Smith must be caused by Smith (by light bouncing off of him). It also seems necessary that (with certain qualifications) your perception “co-vary,” or be capable of co-varying, in real time with the thing perceived. If you’re looking at Smith, and he moves, you see him move (provided certain conditions are met; e.g., the movement isn’t infinitesimally small). It’s unclear whether there are other conditions that have to be met. (There probably are.)

In any case, perceptions are mental representations. And they represent their objects in four dimensions, and as having various chromatic (color-related), kinematic (movement-related), dynamic (force-related, causal) properties. Unless we take the implausible view that no intelligence is involved in the processes mediating between the somatic disturbances that lead to sense-perceptions, on the one hand, and those sense-perceptions themselves, on the other, none of this would be possible unless your mind, at some level, had some kind of pre-perceptual understanding of what it is for two things to be spatially, dynamically, etc., interrelated. So, in all likelihood, sense-perception *presupposes* knowledge.

4.1 Why non-empirical knowledge is a prerequisite for post-perceptual, inferential knowledge

We couldn't do very much with the information that sense-perception gave us unless we had non-empirical knowledge. First of all, your senses operate in the present. You are not seeing, touching, etc., whatever you're not *now* seeing, touching, etc. At most, you are remembering it. In order to apply what you remember to a current situation, you must see how what you remember *bears* on your current situation. Let's take an example that, because it concerns such a pedestrian inference, shows how great the scope of this point is. You remember seeing somebody turn the key in their car and then driving away. You are now in front of a car with a key in it, and you want to drive it. Obviously you can apply what you remember to this situation. Let us suppose that you do so. So you think: "on *that* occasion, turning the key started the car; so the same thing will happen on *this* occasion. So, given that I want to start the car, I'll turn the key." Sense-perception (plus memory) *has* shown you that *on the first occasion*

a certain car started after the key in it was turned. And supposing that you turn the key in this car (the one in front of you), sense-perception will show you that another car started after the key in *it* was turned. But sense-perception did not show you, and could not possibly have shown you, that there was a *relationship* between these two situations; it could not show you that, *because* the car in the first situation started after the key was turned, the same would be true of the car in the second.

Your senses apprise you of situations; they thus give you *intra* situational information. They don't give you *inter* situational information. You can't see or otherwise sense-perceive relations between situations—between an event you saw a week ago and one you're seeing right now. Thus, any knowledge that you have intersituational relations is partly (though obviously not entirely) non-empirical. Therefore any knowledge of *dependence*-relations holding between distinct situations is, at least in part, not strictly sense-based. Since it is only by virtue of knowing of such relations that one can know anything other than what one's senses are currently telling one, one can know extremely little if all knowledge is sense-based, and what one can know, one can know only for a fleeting instant.

4.1.2 Why non-empirical knowledge is a prerequisite for post-perceptual, inferential knowledge (continued)

Hume said that there is *no* legitimate inference from "that car (the one I saw two days ago) started when the key was turned" to "this car (the one I'm looking at now) will start if the key is turned" and, in general, that there is no legitimate inference from *a n y* proposition concerning the past to *any*

proposition concerning the present or future. Hume acknowledges, of course, that past experience *makes* people form certain beliefs.[2] But his point is precisely that those beliefs, lacking as they do any legitimate basis, are not knowledge; they're just compulsions (albeit ones that, as he grants, have thus far served us well for the most part).

Although I believe that knowledge of the past *does* warrant beliefs about the present and future, there is an important truth in what Hume is saying. Hume has made it clear that *f i* one permits oneself to use *only* such knowledge as one has acquired through the use of one's senses, then one can't infer anything about anything from anything. Inferences are about bearing relations. (More precisely, if one legitimately infers Q from P, then (i) P supports Q, (ii) one knows that P supports Q, and (iii) one's acceptance of Q, given P, is driven by one's knowledge that P supports Q.) If something about situation X is inferred from something about situation Y, that inference, if legitimate, must accord with some principle that is concerned with relations holding *between* distinct situations. And such relations, obviously, cannot, at least not as a rule, be sense-perceived. To sum up, all knowledge that isn't strictly sense-based—and this means all knowledge that involves any element of inference and, therefore, all theoretical knowledge (all theoretical knowledge is inferential, but not *vice versa*)—one must have knowledge of intersituational dependencies; and since they can't be sense-perceived, one's knowledge of these dependences cannot be strictly sense-based.

5.0 The biggest problem with empiricism: not all thoughts are pictorial

What does perception give you? Images. (Not just visual images, of

course, but also acoustical images, tactile images, etc.) If empiricism is right, this means that any thought that is not itself an image, or that contains information that cannot be encoded into an image, is unwarranted. But most thoughts, if not all of them, contain just such information. In other words, most thoughts, if not all of them, contain *non-iconic* information. For example, there is no image such that, in virtue of experiencing that image, one is thinking:

(S) if Smith had fallen off the fence, he would have broken his leg.

What sort of image would represent S? Obviously you could have an image of Smith falling from a fence, and you can have an image of Smith breaking his leg. But S is to the effect that Smith's falling would *involve* his breaking his leg; it affirms the existence of a certain *dependence relationship.* And nothing could be an image of such a relationship. There can be images of rocks, trees, explosions, fallings, and waterfalls—but not of dependence relationships.

5.1 No iconic representation of dependence relations

Of course, you could create a system of symbolism *involving* images that represented that supposed truth (e.g., you could stipulate it would be representing by putting an image of Smith falling off the fence on top of an image of Smith with a broken leg). But that wouldn't be an *image* of its being the case that Smith would have broken his leg if he'd fallen off the fence. It

would be an image of Smith falling off the fence on top of an image of Smith having a broken leg. Relative to some convention, the one image's being on top of the other would *represent* that dependence relation. But it wouldn't be an *image* of it. Relative to certain conventions, the expression "Socrates" represents Socrates, but it isn't an image of him. It's a non-iconic representation of him. And putting one image on top of another is no more a case of producing an image of a dependence relation than saying "Socrates" is producing an image of Socrates.

But even if there could be some image of this dependence relation, there would *still* be no image that had S for its content. There is a difference between believing S, on the one hand, and:

(S*) Smith broke his leg *because* he fell.

S* presupposes that Smith fell off the fence and that he broke his leg. S presupposes neither. In fact, it presupposes that Smith did not fall off the fence. So an image of S* wouldn't be an image of S, and an image of S would have to be an image to the effect that *inter alia* Smith did *not* fall off the fence. But there can't be images of negative propositions. There is no image such that, by virtue of having it, you are thinking that Smith did *not* fall off the fence. You could produce an image with a big X on it of Smith falling off the fence. But that wouldn't be an image of Smith not falling off the fence. It would be an image with a big X on it of Smith falling off the fence; or maybe it would be an image of Smith falling off a fence in the vicinity of a big X.

Disjunctive propositions are really conditional ones. *Either P or Q* is

interchangeable with *if not P, then Q*. It follows that no disjunction can be imaged.

5.2 Iconic information too specific in some respects and also too unspecific in others

First a terminological point: By a "general" thought, I mean one that concerns some unspecified thing (e.g., *somebody or other cured cancer*) or that concerns all things in a certain category without considering any one of them in particular (e.g., *most people have at least some decency*).

Suppose you believe that the cat is on the mat. Any *image* of a cat on the mat will include information not included in that thought (e.g., it will include information concerning the cat's shape or color, or concerning the mat's shape or size).

By the same token, any thought will contain information not included in any image. An image of a cat on the mat is indistinguishable from an image of a perfect cat-impostor that is on a mat. So if the thought that *the cat is on the mat* were identical with an image, it would be identical with the thought that *a perfect cat impostor is on the mat.* But those propositions are distinct.[3]

Also, general thoughts couldn't possibly be identical with images. Suppose you think that something or other is on the mat. An image can't just be an image of something or other on the mat; it must be an image of some particular thing on the mat. So if the thought that something were on the mat were identical with an image, it would be identical with the thought that (say) Snoopy was on the mat. But those thoughts aren't identical.

Similar arguments show that other general thoughts can't be identical with images. Consider the thought that *all* birds have feathers. An image of *all* birds —an image that depicted every single bird in existence—would be indistinguishable from an image of (say) 84 billion birds. But the thought *84 billion birds have feathers* is different from the thought that all birds have feathers. So neither thought is image. Obvious adaptations of this argument show that no image can be identical with the thought that most birds/many birds/all possible birds have feathers.

So, really, *no* thought that can be expressed by a sentence is identical with an image. This shows that many thoughts aren't images and, since sense-perceptions are images, therefore have contents very different from those of any sense-perception.

5.2.1 Berkeley's unwitting anti-empiricism

Ironically, it was that greatest of empiricists, George Berkeley, who made it clear that no general thought cannot be identical with images, the reason being that any image is specific in ways that any one of those thoughts won't be. (Berkeley didn't make the correlative point that thoughts are specific in ways that images are not.) Berkeley saw that *if* all thoughts are images, then there are certain thoughts we can't have. Berkeley also saw that, if empiricism is correct, thoughts must be images. Finally, Berkeley saw that, given these two points, empiricism is inconsistent with the presumption that we can have general thoughts. But instead of rejecting empiricism because it has this absurd consequence, Berkeley held that, indeed, we can't have general thoughts. This position, in addition to being obviously wrong, is self-defeating, since the

thought that there are no general thoughts is itself a general thought.

Berkeley qualified his position by saying that, although we couldn't *directly* grasp general propositions, we could grasp non-general propositions that we *took to stand for general ones.* But one can't take x to mean y unless one grasps y. So one can't take a non-general proposition to stand for a general proposition unless one grasps the latter. (See Sections 8–21 of Berkeley's "Principles of Human Knowledge.")

5.3 Knowledge never wholly identical with mental imagery

As we observed, if all knowledge is strictly sense-based, then any case of knowledge is a case of some sequence of images running through one's mind. But even though any given image-sequence *can* be knowledge-bearing, no such sequence is *inherently* so, showing that, ultimately, it is never images *per se* that mediate genuinely cognitive, as opposed to iconic, ideation.

An image-sequence may serve as a partial *basis* for knowledge (e.g., if the image-sequence is a series of visual perceptions of a dog, then, partly on the basis of that sequence, you may know that there is a dog near you); and one can have knowledge *about* that sequence (e.g., you can know that only a visually gifted person could experience such high-resolution mental images). Nevertheless, knowing something *always* involves grasping at least one thing in some way *other* than through an image and, therefore, in some way that, because sense-perception gives one nothing but images, empiricism cannot account for.

There's a difference between an image, on the one hand, and that image's being represented as *true,* on the other. (Philosophers use the word

"veridical" to describe accurate perceptions, and they sometimes use the word "falsidical" to describe inaccurate ones. But I'll stick with "true" and "false.") Consider some painting (e.g., a painting of a woman picking flowers). There is nothing in the image itself that says: *this woman really exists, and she really is picking flowers.* Images are not self-referential; so they don't say "I am true" or "I am false." Thus, the image itself leaves it open to how it is to be taken. It could be taken as something true, something false, or something that is not meant to be taken as true *or* as false.

A corollary is that there is no image such that, merely by virtue of experiencing it, one is grasping the concept of truth. To know something, one must believe it to be true. Believing something to be true thus involves grasping the concept of truth and, given what we just said, therefore involves grasping something that cannot possibly be grasped by experiencing an image. Since the senses provide us only with images, it follows that the concept of truth is one that is not be grasped through the senses. And since a grasp of that concept is a prerequisite to knowing anything, it follows that, contrary to what empiricism says, not all knowledge is strictly sense-based. In fact, it follows that, although a great deal of knowledge is obviously *largely* sense-based, *no* knowledge is *strictly* sense-based.

6.0 George Berkeley and the collapse of empiricism into idealism

George Berkeley (1685–1753) argued that "to be is to be perceived" (*esse percipi est*). He held, in other words, that the things we believe to be revealed to us *through* sense-perception (e.g., rocks, trees) *are* sense-perceptions—or, more exactly, are collections of sense-perceptions.[4] So Berkeley held that book that

you see before you is identical with the perceptions you (and others) have of it.

The view that physical objects *a r e* sense-perceptions is known as "idealism." It is so named because it is the view that external objects are "ideas," not because it embodies a spirit of optimism.

Even though, if our intuitions are to be given any credence, idealism is an abomination, Berkeley had a very good reason for accepting it. Given an acceptance of empiricism, one *must* be an idealist *if* one is to avoid saying that we have no knowledge of the external world at all. Berkeley saw this; and, being an empiricist who wasn't also a skeptic, he duly accepted idealism.

According to empiricism, if you don't know it through sense-perception, you don't know it. But what do know through sense-perception? "I know that I'm reading a book right now." No you don't. You know that, *if what your senses are telling you is the truth,* you're reading a book.

Your senses cannot themselves give you any good reason to believe that they're truthful. Unless you already have some assurance that your senses are truthful, no attempt on their part to *tell* you this deserves any credence. So, supposing that you *d o* know that you're reading a book right now, this knowledge, although *largely* based on sense-perception, isn't *entirely* so.

In general, even if our senses are generally telling us the truth, this fact cannot *itself* be known through sense-perception. This doesn't mean that it cannot be known. (I believe it can be known that our senses are telling us the truth. See *Skepticism and the Justification for Inductive Inference*.) But it means that, if we are to come to know that our senses are telling us the truth, it cannot be entirely on the basis of what our senses themselves tell us.

An analogy may help. Uncorroborated testimony is close to worthless. Smith is a suspect in a crime. He gives you an alibi. (You're the detective

assigned to the case.) You want to know whether Smith's alibi is correct. If you ask Smith "are you telling me the truth?", he'll obviously say yes. What you want is *independent corroboration* for Smith's testimony. No person can self-corroborate; and neither can anything else, including sense-perception. If we are to have any assurance that our senses are telling us the truth, that assurance must come from some non-sensory source. But empiricism says that nothing coming from any non-sensory source deserves any credit.

Given this fact, there are only two ways for empiricists, such as Berkeley, person to go. (i) Deny that we know anything about the external world. (ii) Redefine the concept of an external object in such a way as to validate empiricism.

(i) is self-explanatory. It's skepticism. Some philosophers accept skepticism.[5] But for Berkeley, skepticism is not alternative. He all but takes it for granted that it's false. (We'll say why in a moment.)

This puts Berkeley between a rock and a hard place. Berkeley refuses to stop being an empiricist. And he also refuses to accept skepticism.

This leaves him with only one option. He must show that the presumption that our senses give us knowledge of the external world can be accommodated *within* the limits set by the belief that all knowledge is strictly observational.

There is only one way to do this. One must reinterpret statements about the external objects as statements about one's own perceptions. In other words, one must take the view that the statement "that rock weighs five lbs" has the same content as some statement about one's own perceptions.

The position that statements about external objects can be translated into statements about perceptions is known as *phenomenalism*. Any attempt to

translate a sentence about the external world into one about one's perceptions is known as a *phenomenal reduction.*

Phenomenalism entails idealism. If every truth about rocks, trees, etc., is a truth about perceptions, then rocks, trees, etc., are nothing if not perceptions.

Phenomenalism is false. It simply isn't possible to translate statements about rocks (etc.) into statements about one's perceptions. We'll see why in Section 8.0.

But phenomenalism must be accepted by any true empiricist who isn't also a skeptic.

6.1 Berkeley's argument that to be is to be perceived[6]

Our senses give us knowledge of the external world (or so we will assume for argument's sake). There is no non-sensory source of knowledge (same qualification).

Our senses give us conflicting reports. I'm near the house; my eyes tell me that it's big. I'm far away from it; my eyes tell me that it's small. The first report conflicts with the second. I leave a sauna: the room feels cool. I then go outside (where it's frigid, since it's Northern Canada in the winter), and come back in: the same room feels hot (even though, as my housemates tell me, the room hasn't changed temperature).

In *some* cases where sensory-reports conflict with one another, we can throw one of them out. Somebody puts LSD in my drink. I hallucinate a nine-headed goblin. My goblin-(mis)perception can be thrown out; I know that it's

wrong. Why? Because the message it gives me doesn't fit in with the other messages my senses give me. It is on this basis that we throw out dream-images on this basis. Dream-images don't fit into the narrative.

But I cannot throw out either of my house-perceptions. Neither is in the same category as my goblin-perception. Only a tiny fraction of the discrepancies within the reports given to us by our senses involve a (mis)perception that is in the same category as my goblin-perception. In most case, all of the mutually discrepant perceptions must be accepted. When, while I'm in an airplane, my eyes tell me that people on the ground are the size of ants, I cannot reject the testimony of senses. (I'm not dreaming or hallucinating.) Nor can I reject it when my eyes tell me that they're the same size as myself. During what follows, when we talk about "mutually discrepant perceptions," we *won't* be referring to discrepancies involving dream-images or hallucinations. This is a point that is likely to be forgotten and that, being crucial, will be repeated more than once.

Given the fact that we have mutually discrepant sense-perceptions, there are, as a matter of logic, only two paths we can take.

Path #1: We can say that *some* of those perceptions are veridical while others aren't. (It must be kept firmly in mind that, in this context, we're setting aside patently deviant perceptions, e.g., my goblin-perception.)

Path #2: We can say that *all* our perceptions are correct. Let's discuss these two paths.

Path #1 evaluated: Supposing that we decide that some of our perceptions are wrong, it must be asked: on what basis are we making this determination?

If we do it on the basis of some principle known to us in some *non*-sensory manner, we're not empiricists any more. So, given that we're empiricists, it cannot be on the basis of such a principle.

So it must be on the basis of some principle known to us through observation—supposing that it's made on the basis of any principle at all. But all of the perceptions we're talking about are equally credible. Remember that we're setting aside dream-images, hallucinations, etc. We're focusing *only* on garden-variety perceptions—those that, unless our senses are constantly deceiving us, must be correct.

This entails, tautologically, that there is no *observational*-basis for deciding that some of the perceptions in question are to be thrown out while others are to be kept on. In other words, there is no observation-based principle on the basis of which we can decide which perceptions to keep on. And, since we're empiricists, this means that there is no principle *at all* on the basis of which we decide which perceptions to keep on.

So, given that we're following Path #1, we must *arbitrarily* choose to throw out certain perceptions while keeping others. This means that, even if we made the right choices, we wouldn't know it, since those choices weren't justified. Which in turn means that nothing we believed on the basis of sense-perception would be justified. Which, in *its* turn, means that we wouldn't know *anything* on the basis of observation. (And, since, by assumption, we're skeptics, we can't say this.)[7]

Plus, that procedure, if adopted, would have the consequence that our senses tell us little, if anything, about the external world.[8] Since any given perception

is discrepant with many others, many of our perceptions, perhaps all of them, would get the axe.

Thus, Path #1 isn't viable. So we must take Path #2. In other words, we must say that (setting aside patently deviate (mis)perceptions), our perceptions are correct.

Path 2 Evaluated: Assuming Path #2 the right one, we are stuck with a serious problem. When I look at it from one angle, the table appears square-shaped. (Let P_1 be this perception.) When I look at it from another angle, the table appears diamond-shaped. (Let P_2 be this perception.) P_1 and P_2 cannot both be accurate *if* they're both taken to concern some trans-perceptual object. A given object cannot simultaneously be, and fail to be, equiangular. (Given any property F, nothing x can, at a given time, both have and not have x.) But even though, when taken to concern some transperceptual object, P_1 and P_2 are inconsistent with each other, P_1 *per se* is perfectly capable of co-existing with P_2 *per se*. They *do* co-exist. So they can co-exist. (Two conflicting statements can co-exist.) So instead of saying that P_1 and P_2 describe some trans-perceptual object, let's say that they *are* the object that, so we wrongly thought, they describe. (Let's say, in other words, that they're constituents of that object.) Let's say, in general, that our perceptions *are* their objects (i.e., that any given perception is a constituent of its object and that any given perception is wholly constituted by some multiplicity of perceptions).

By taking this position, we accommodate the fact that we acquire knowledge through sense-perception. We know our perceptions. (Even Cartesian skeptics concede this.) If we identify our perceptions with their

objects, then we know those objects—and we know them by virtue of having sense-perceptions. So this solution accommodates the presumption that we learn about objects through sense-perception. And it also makes it unnecessary to posit *surds*, such as equiangular objects that aren't equiangular.

6.1.1 A systematic presentation of *Berkeley's argument* [9]

Step 1: If our senses are to be trusted, properties are observer dependent. (If you're an elephant, people appear small. If you're an ant, they appear big. If you just came out of a sauna, room temp seems cold. If you just got out of an ice bath, it seems hot.)

Step 2: The external world is totally unknowable *unless* we suppose that, typically, things are as they appear.

Commentary on Step 2: This is a corollary of empiricism. Empiricism says: what we know, we know strictly on the basis of our senses. So if our senses tell us that x is big, then we're entitled to believe x is big—period.

One cannot, in general, legitimately second-guess what one's senses are telling one (at least not if one is an empiricist). One *can* throw out patently deviant perceptions (e.g., perceptions of suddenly appearing pink elephants). But this covers only an infinitesimal minority of our sensory experience.

Step 3: Things *are* knowable. It would be absurd to say that we don't know

anything about rocks, trees, etc.

Step 4: Things can't have incompatible properties. A number can't be both even *and* odd. A thing can't be both big *and* small. A body of water can't be both hot and cold.

Step 5: Suppose, if only for argument's sake, that things exist independently of our perceptions of them. Suppose that, whether or not somebody perceives it, the vase exists (the same being true of the rock, the tree, etc.). In that case, things will have *incompatible properties.*

Explanation of Step 5: Remember Step 3—we *do* know about external objects. They are *not* unknown. So they *are* as they appear. Well, they *appear* to have incompatible properties. One and the same thing *appears* both big and small, hot and cold, fast and slow, etc.

Step 6 (this step is crucial to understanding Step 7, so bear with me): There's nothing incoherent in the idea that one and the same thing should *appear* both big and small, hot and cold.

Clarification: Suppose I say "Bill is in Virginia right now" and I then say "Bill is not in Virginia right now." Obviously there cannot be some one thing of which both statements are correct representations. But there's nothing incoherent in the idea that both statements should be *made.* While it is incoherent to hold there is some one thing which they both correctly *describe,*

it’s obviously perfectly ok to hold that both statements (however badly they may fit together) were affirmed. Similarly, there is nothing incoherent in the idea that, at the same time, there should occur a *perception* to the effect that x has one temperature and also a perception to the effect that x has some other temperature. What is incoherent is the idea that there should be some thing of which both perceptions are correct *representations.*

Step 7: If we say that our perceptions are *representations* of objects that lie on the other side of them, then (assuming, as we are, that our perceptions are accurate) things have incompatible properties. But if we say that our perceptions are *not* representations of such objects—if, instead, we say that perceptions *are* those objects—then things *don’t* have incompatible properties.

Clarification: Remember Step 6. It isn’t possible for there to be two correct but incompatible *representations* of some one thing, even though it’s obviously possible for two such representations to *exist.* Our perceptions give us incompatible messages (they say that one and the same thing is both big and small, is moving both quickly and slowly, etc.). So it isn’t possible for our perceptions to be correct *representations* of things. But it *is* possible for our perceptions to exist. It is irrelevant that they are incoherent if taken to be representations of trans-perceptual entities.

Step 8: It follows from Step 7 that our perceptions can’t be *representations* of anything.

Step 9: But remember Step 2—we *do* know about things. We *do* know their sizes, temperatures, etc. The way to make this all work is to say: things *are* our perceptions of them. We know our perceptions obviously. (So if we say that rocks, trees, etc., *are* our perceptions, then we can explain how we can know them.) And we *also* know that perceptions can't be representations of things. So we say that perceptions don't *represent* reality: they *are* reality.

Conclusion: For something to exist *s i* for it to be perceived. The perception doesn't represent the thing. The perception *constitutes* the thing.

6.2 The problem with Berkeley's argument: its failure to take into account the relational nature of perceptual information

Berkeley's argument fails. But the reason why it does must be understood in terms of a rather subtle point about sense-perception—a point that will initially be hard to understand but that, after being stated abstractly, will be made clear with some examples.

Our senses give us *relational* information. They tell us how things are in relation to one another and in relation to ourselves. They apprise us, not of absolute, but of relative heights, distances, velocities, temperatures, and masses; our eyes tell us, not that the car is going 35 mph, but that it is going faster than that other car; our muscles, when we exert ourselves, tell us not that the barbell weighs 215 pounds, but that it weighs more than the barbells we tried to move a moment ago. Our senses tell us, not that Smith is 7-feet tall, but that he is much taller than Jones. And our senses tell us where things are, not in relation to some absolute coordinate system, but in relation to us. So the information given to us by our senses is relational in two senses: objects are related to one another; and

they are also related to an egocentric, as opposed to universal, coordinate system.

Once this is taken into account, it is clear why Berkeley's argument crumbles. Consider a situation where X is walking at a rate of 1 mph, Y is sprinting at a rate of 30 mph, and Z is driving at a rate of 90 mph. (X, Y, and Z can see each other; they have good vision and normal cognitive capacities. So they know, at least approximately, what their relative velocities are.) According to Berkeley, X's perception of Y is simply this: Y IS MOVING SLOWLY. And, according to Berkeley, Z's perception of Y is simply: Y IS MOVING SLOWLY. And, on this basis, Berkeley concludes that Y's state of motion (his velocity and, by similar arguments, his trajectory) exists only in the mind (or, more accurately, in the minds of X and Z and any other observers of Y). But Berkeley has misreported what the relevant individuals are being told by their own eyes. X's eyes don't tell him: Y IS MOVING FAST. They tell him: Y IS MOVING FASTER THAN I AM. And Z's eyes don't tell him: Y IS MOVING SLOWLY. They tell him: Y IS MOVING MORE SLOWLY THAN I AM.

So when we consider what Y's eyes are telling him, and put it together with what Z's are telling *him* (Z), what we get is this:

(i) Z is moving fast then Y, and Y is moving faster than X.

But there is nothing incoherent about (i). It does indeed attribute two properties to Y (namely, the property of moving slower than Z and the property of moving faster than X). But there is no reason why a thing can't simultaneously have both properties; for those properties are not

incompatible—they aren't like the properties "square" and "circle." (i) describes a state of affairs that can, without any incoherence or self-contradiction, be attributed to the external world.

This reasoning is easily extended to undermine Berkeley's argument in its entirety, as another story will help make clear. X is a tiny person—he's 1-inch tall (but otherwise like us: good vision, good reasoning skills, etc.) Y is 1-foot tall (same qualification). And Z is 6-feet tall (same qualification). They can all see one another. According to Berkeley, here's what's going on: Z's eyes tell him: Y IS TINY. X's eyes tell *him* (X): Y IS HUGE. Berkeley concludes Y is both tiny and huge and that, since nothing can be both tiny and huge, size must be in the mind of the observer and not in the thing observed. But Berkeley is wrong about what X and Z are told by their senses. X's eyes tell him: Y IS MUCH LARGER THAN I AM. Z's senses tell *him* (Z): Y is much smaller than I am. So when we put together what X and Z are told by their senses, what we get is:

(ii) X is smaller than Y, and Y is smaller than Z.

And there is nothing incoherent about (ii). It doesn't ascribe incompatible properties to Y, and it doesn't therefore require that we abandon the view that size is in things themselves, as opposed to the minds of their observers.

Some additional illustrations of these principles may be in order. X is super-strong and moves barbell B easily. Y is not so strong and can barely get B to budge. According to Berkeley, X's kinesthetic sensations (i.e., the feelings of resistance that he has when moving B) tell him: B IS LIGHT. And, according to Berkeley, Y's kinesthetic sensations tell him: B IS

HEAVY. But, contrary to what Berkeley holds, X's sensations don't give him a message of the form: B's MASS IS SUCH AND SUCH. They give him *relational* message. They tell him what the *relation* is between (a) X's making a certain degree of effort and (b) B's moving by a certain amount. So X's sensations tell him how B's resistance to motion *compares* with his own ability to overcome such resistance. By similar reasoning, Y's sensations tell him (Y) how B's resistance to motion compares with *his* (B's) ability to overcome such resistance. So when we put what X's sensations are telling him together with what Y's sensations are telling *him*, what we get is:

(iii) The ratio of X's ability to move things to B's resistance to being moved is higher than the ratio of Y's ability to move things to B's resistance to being moved.

(iii) is a perfectly consistent message. In fact, it's consistent with, and confirms, what we already knew. We knew that X was strong, and that Y was not so strong; and, given that information, it was to be expected that X would have an easier time moving B than Y and, also, that this would be borne out by the kinesthetic sensations experienced by these individuals. To sum up, once it is made clear that our sensations and perceptions give us *relational* information, it turns out that, although our senses are obviously wrong some of the time, they *don't*, contrary to Berkeley argued, *systematically* give us contradictory reports.

Here is one example to drive these points home. X is a hand that has just been immersed in ice-cold water. Y is a hand that is been soaking in water that is very hot (but not so hot that it damages Y). B is a bucket of room-

temperature water. Here is what Berkeley says (this is a paraphrase, not a quotation):

"When X is immersed in B, his hand says: THIS WATER IS HOT. And when Y is immersed in B, his hand says: THIS WATER IS COLD. So X and Y say opposed things about the water in B. Therefore, B's temperature isn't in B; it's in the observer's mind."

But Berkeley is wrong about what X and Y say. Remember that perceptual information is relational. When immersed in B, X doesn't say: THIS WATER IS HOT. It says: THIS WATER IS MUCH *HOTTER* THAN THE WATER I WAS JUST IN. And, when immersed in B, Y doesn't say: THIS WATER IS COLD. It says: THIS WATER IS MUCH COLDER THAN THE WATER I WAS JUST IN.

So when we put together the messages that X and Y present to their own, we get:

(iv) The water in the bucket is warmer than the water that my left hand was in prior to being in the bucket, and the water in the bucket is colder than the water that my right hand was in prior to being in the bucket.

There is nothing incoherent about (iv); it doesn't attribute incompatible properties to anything; nor, therefore, does it require us to deny the mind-independence of any aspect of reality.

6.3 How we actually learn what properties things have

As we've noted, our senses give us only relational information; they tell us, not that the object x weighs 80 pounds, but that it weighs *more* than object y; not that object x is moving at a rate of 50 mph, but that it is moving fast*er* than y; not that x has a temperature of 78°, but that x is warm*er* than y; and so on. At the same time, we're obviously capable of learning objects' actual masses, temperatures, and such. But how is this possible if our senses give us only relational information?

To answer this question, we must take a brief detour through the philosophy of science. Suppose you decide to measure time in terms of your own heart rate. You'll find that, when you do vigorous exercise, everything in the universe (other than your heart rate itself) slows down. (Your heart rate does not itself slow down; for, being the standard of comparison, its rate is by definition constant.) And you'll find that, when you are calm and relaxed, everything in the universe speeds up.

Here you can say one of two things. (i) Because of some strange law, your exercising causes the entire universe (except for your heart itself) to slow down (and your ceasing to exercise causes it to speed up). (ii) You shouldn't measure rates of change with respect to your heart rate, since doing so creates otherwise absent causal anomalies and demands that relatively simple physical laws be replaced with exceedingly complicated ones.

Obviously (ii) is the right choice. You shouldn't regard your heart rate as a periodic process. You should say that it's your heart rate that's changing, not the entire universe.[10]

Comparable points hold with respect to all degree properties. (By a

"degree property," I mean one that can be had to varying degrees. So coldness is a degree property, since one thing can be cold*er* than another. But the property of being divisible by two is not, since a number either has that property or it doesn't.) Suppose a consequence of taking object L to have a constant length is that, when L is put in a freezer, everything in the universe (except for L itself) expands and that, when x is put in boiling water, everything in the universe shrinks. In that case, obviously, you shouldn't take L to have an unchanging length; you shouldn't take it as your standard of comparison. The principle implicit in all this is that, if one learns that there has been a change in the difference between x and y in respect of how much they have degree property phi, one should regard the extent to which x has phi as having changed *less* than the degree to which y has phi *if and only if* doing so is less costly, from an explanatory viewpoint, than it would be to regard y as having undergone less change (in that respect) than y or to regard x and y as having undergone equal amounts of change (same qualification). So if fewer causal anomalies are created by regarding y as having undergone less phi-change than x than are created by regarding x as having undergone more phi-change than y, then one should *not* regard x as approximating, to a higher degree than y, to a condition of phi-uniformity. And if fewer causal anomalies are created by regarding x and y as having undergone equal amounts of phi-change than are created by supposing one of them to have undergone more phi-change than the other, then one should regard *neither* x *nor* y as approximating a condition of phi-uniformity to a higher degree than the other. *Otherwise* one should regard x as approximating to a condition of phi-uniformity to a higher degree than x.

6.3.1 How this last point relates to sense-perception

Our senses constantly give us information about comparative rates of change. One's eyes might tell one, for example, that the apparent size of the man is changing faster than the apparent size of the tree. The man's apparent size, so one's eyes tell one, is shrinking faster than the tree's apparent size, even though the apparent size of each one is shrinking. Given this raw, pre-inferential, visual information, one holds any one of the following:

(i) One's distance from the man and the tree remains constant; but the man and the tree are both shrinking, and the man is shrinking faster than the tree.

(ii) One is moving *away* from both the man and the tree (and, therefore, one's distance from the man and the tree is not constant), but the distance between the man and the tree remains constant; and, whereas the man is shrinking, the tree's size remains constant.

(iii) One is moving away from both the man and the tree, but the distance between the man and the tree remains constant; and, even though *both* the man and the tree are shrinking, the man is doing so at a faster rate than the tree.

(iv) The tree's size remains constant, and so does the man's; the man is moving away from the tree in one direction, and you are moving away from the tree in the opposite direction.

Each of (i)–(iv) is consistent with the raw information contained in the previously described perception. But a world where any one of (i)–(iii) was correct would *ceteris paribus* be a world that was replete with causal anomalies absent from a world where (iv) was correct. This means that, if one were to countenance any one of (i)–(iii), one's understanding of the world and the forces that govern it would undergo a weakening that it would not undergo were one instead to countenance (iv).

It is for this reason, then, that *ceteris paribus* one countenances (iv), and not any one of (i)–(iii). It is for this reason, that, after exercising vigorously, one believes that one's heart rate sped up and not that the rest of the world slowed down; that, after lifting weights for a year, one became stronger and not that everything became lighter; that, on leaving a steam room, one's body that has become warmer and not that the world that has become colder; and so on.

So even though it is obviously *through* sense-perception that we learn objects' masses, speeds, temperatures, and so on, we don't *sense-perceive* them, at least not directly. Although it is through sense-perception that one learns that the water is 78°, one doesn't *sense-perceive* that the water has that temperature. What one sense-perceives is that the water is warm*er* than x and cold*er* than y. Given this information, one is justified in believing that the water's temperature is 78° just in case, in doing so, one is undermining the integrity of one's understanding of physical reality less than one would be in not doing so. Basically, objects' actual properties are inferred from sense-perceptions and not directly sense-perceived; and the relevant rule of inference is: "of the various ways of accommodating the raw, sensory data that you've been given (and there will always be several such ways), the right one is the one that is the least *ad hoc* (that posits the fewest causal anomalies, that has the most explanatory fertility, etc.)."

6.4 Primary vs. Secondary properties

Like John Locke, Berkeley distinguishes between *primary properties* and *secondary properties*.[11] Examples of primary properties are shape, size, density, liquidity, solidity, gaseousness, and state of motion. Examples of secondary properties are sweetness, smell, color, and timbre.[12]

For a thing to have a given secondary property—e.g., for it to have the taste of Snicker's bar—is for that thing to be prone to induce sensations of a certain kind in creatures of a given kind.

For a thing to have a given *primary* property is for it to have an effect of a given kind on the conditions that objects must meet to occupy a certain region of space-time. By virtue of being round (or gaseous), a thing has certain effects on would-be occupants of its current location that, other things being equal, it wouldn't have were it square-shaped (or solid) instead.

According to some, the essence of Berkeley's argument for idealism is that primary properties are really secondary properties.[13] Thus interpreted, Berkeley's argument is as follows:

> Berkeley's argument (BA): For a thing to have a given secondary property is for it to taste, smell, feel, etc., a certain way. Some philosophers hold that, in this respect, shape, size, and other so-called primary properties are fundamentally different from secondary properties. But they're wrong. Shape, size, etc., are quite as observer-dependent as taste, color, etc. When you're near the house, it looks big

> (we're assuming that your perception is accurate); and when you're far from the house, it looks small (same qualification). Of course, we *could* say that the size an object *seems* to have is different from the size it *actually* has. But in that case, we'd be stuck saying that our senses tell us nothing, or next to nothing, about the external world, which is absurd. It follows (for the reasons given in 6.1) that the objects of sense-perception are identical with our perceptions of them.

The problem with BA is that, contrary to what it says, your first house-perception *is* consistent with your second house-perception. The first perception doesn't say that the house is *big.* It tells you how its size compares with those of various objects. It tells you that it's shorter than the telephone pole next to it, but taller than the cactus in front of it, etc. The comparative information given to you by your second perception is consistent with it. The relative apparent sizes of the cactus, house, and telephone pole are the same.

In the second perception, the house appears the way that small things appear *when looked at from up close.* And *that* is the one and only sense in which the house "looks small." But you're not looking at the house from up close. You're looking at it from far away. And your perception isn't telling you that the house is close by and looks that way. It's telling you that you're far away from the house and it looks that way. So it isn't telling you that the house is small. It's actually telling you that it's quite big.

When you're near the house, your house-image hogs up your entire field of vision. It occupies more space on your visual map. When you're far from the house, your field of vision has to include a great many objects *other* than the house. So it doesn't eat up very much map-space. Thus, measured in terms of how much map-space they eat up, the first house-*image* is larger than the

second house- *image.*

But that doesn't mean that those perceptions make different statements concerning the size of the house. On a map the size of a postage stamp, the discoloration that represents Denmark will be miniscule. On a map the size of the side of a big house, the corresponding discoloration will be much bigger. But that doesn't mean that Denmark is small according to the small map and big according to the big one. Each of those maps tells you that Denmark's actual size corresponds to the *relative,* not the *absolute,* size of the picture of Denmark on that map. The bigger that discoloration is *in relation* to the other nation-representations on that map, the bigger the size thereby attributed to Denmark. Thus, the size attributed to Denmark by the small map might be twice that attributed to it by the big map.

The same thing *mutatis mutandis* is true of visual images. A big house no more "looks small" when looked at from far away is identical than Denmark "looks small" on the tiny map. When the house is looked at from far away, the corresponding house-*image* is small (i.e., it eats up a comparatively small amount of visual space). But that's consistent with that very perception's *representing* that very house as being huge.

6.4.1 BA embodies a spurious understanding of what secondary properties are

The health effects of eating a foul smelling cut of meat are very different from the health-effects of eating a wholesome smelling cut of meat that is otherwise observationally just like the first. The way a piece of meat smells is an indication of its ability to nourish. For this reason, otherwise hard to obtain

causal knowledge is easily obtained and otherwise hard to make predictions are easily made.

Differences secondary properties *always* correlate with causal differences. In many cases, day-to-day experience makes it clear what causal properties are associated with possession of a given secondary property. (Day-to-day experience makes it clear that things with certain tastes and smells are not fit to drink.) In other case, day-to-day experience doesn't do this. (Day-to-day experience doesn't make it clear how an object that is red differs in respect of its causal properties from one that is green but is otherwise identical.) But if a given object has a given secondary property, it ipso facto has some causal property that it wouldn't otherwise have.

For this reason, secondary properties are not in any relevant sense "subjective." The term "subjective," as John Searle (1992) points out, has two very different meanings. To say that such and such is "subjective" can mean that

(i) its existence presupposes that of some subject,

or it can mean that

(ii) it embodies prejudices or other subject-specific idiosyncrasies that tend to inhibit the acquisition of knowledge.

My belief that 2 + 2 = 4 is subjective in sense (i). That belief presupposes the existence of a subject. There can't be disembodied beliefs floating about.

[14] But that belief isn't subjective in sense (ii). It is (so we will assume) based on rational consideration of the relevant information. By contrast, my intense fear of people who wear plaid shirts (which is based, not on rational consideration of the relevant data, but on childhood traumas that we needn't discuss) is subjective in sense (ii). In other words, it is rooted in peculiarities of my own person that make it harder for me than it would otherwise be to see things as they are. My olfactory perception that the maggot-infested meat in front of me smells awful is subjective in sense (i) but not in sense (ii). It is subjective only in the trivial and irrelevant sense in which *any* mental entity, even a coolly made judgment, is subjective: it is subjective in the same way as my rational and informed belief that 2+2=4 is subjective. But it isn't subjective in the same way as my prejudice-driven fear of people who wear plaid shirts.

Bearing this in mind, suppose that, all of a sudden, the way things smelled was no indication as to whether they were rotten or not. So, for example, a putrid-smelling cut of meat might or might not be good to eat—its smell would give you no information as to its fitness as a source of nourishment—the same being true of a wholesome-smelling cut of meat. In general, we wouldn't know anything about an object's causal properties from the way it smelled. But we often know a lot about a thing's causal properties from the way it smells. Smells correlate *extremely* reliably with certain causal features of objects—sometimes much more reliably than other properties. Sometimes the way thing smells is the only indication (short of eating it or sending it to a toxicology lab) that it's laced with poison or that it's completely rotten.

Smells track primary properties; they track facts about microstructure that would otherwise be hard to detect. If a police-detective suspects that X is pure cocaine, he can verify his hypothesis by (i) snorting X, which would have various adverse consequences, (ii) sending X to a forensics laboratory, which

would be extremely slow, or (iii) tasting it, which would be quick and easy.

A relevant fact about method (ii) is that many scientific techniques would have been impossible to develop had there not been reliable correlations between microstructure and odor. This is true of secondary properties generally.

There are some *apparent* counterexamples to our contention that secondary properties track microstructure. For example, a thing's color doesn't correlate reliably with its microstructure. From far away, the ocean water looks black; from up close it's transparent. Locke concluded from this that secondary properties are subjective.

But this is not the only conclusion to draw. An object's apparent color is a function *both* of that object's microstructure *and* of the relevant observer's physical relation to that object. But so does an object's apparent shape, apparent size, smell, etc. So the variability of apparent color no more entails the subjectivity of color than does the variability of apparent shape. And so long as the conditions of observation are held constant, an object's apparent color does reliably correlate with its microstructure, just like its apparent shape (though not, it must be admitted, to as high a degree).

Our *perceptions* of primary properties are very different from our perceptions of secondary properties. When one sees a porcupine, one's visual image has a structural similarity to that of the porcupine; given any two features of the porcupine that are distinguished *by* image, there are corresponding differentiations *in* that image.[15] Perceptions of secondary properties are very different; they *aren't* internally differentiated, at least not in a way that at all corresponds to the objective facts to which they are hewed.

This, presumably, is at least part of the reason why it's widely held that an object's secondary properties are really properties of the subject's experiences

of that object, and not of that object itself. (It's also why it seems more natural to speak of "sensations" of taste, smell, etc. than of "perceptions" of them.) But, I will now argue, an object's secondary properties belong to it no less than its primary properties. I must warn that the forthcoming argument is quite intricate and that, for the first few paragraphs, it will seem as though I'm arguing for the contention that an object's secondary properties *don't* really belong to it. I must ask for a certain amount of patience on the reader's part.

Let S be the smell that, in actuality, is had by extremely putrid meat; and let S* be the extremely pleasant fragrance that, in actuality, is given off by eucalyptus trees. There is no *inherent* reason why eucalyptus trees couldn't have S and there is no inherent reason why rotten meat couldn't have S*. In other words, if there occurred a smell-exchange between eucalyptus trees and rotten meat, we would not, at least not for that reason alone, forfeit the causal knowledge that we now have by virtue of knowing that a cut of meat has S or that a eucalyptus tree has S*.

Of course, there would *initially* be a loss of knowledge. One would mistakenly think that the pleasant-smelling cut of meat one was about to eat was not rotten. But given some time to adjust to the new smell-situation, one would cease to make such mistakes.[16]

There is another reason why, even though it wouldn't have any lasting affect in our ability to acquire knowledge through olfaction, that smell-exchange would initially compromise our ability to do so. This fact *initially* suggests that olfaction doesn't give us knowledge of the causal structure of the world. But, duly scrutinized, it turns out to entail that olfaction is, like vision and audition, *does* give us such knowledge.

Much of the knowledge that we acquire through the sense of smell is based on the comparative properties of our olfactory sensations. Other things being

equal, the more rotten a cut of meat is, the worse it smells. Other things being equal, the more pungent the fragrance of a eucalyptus tree is, the richer that tree is in the chemical responsible for that smell.

Bearing this in mind, suppose that S is the exact smell had (under a given set of circumstances) by a cut of meet that was rotten to degree n, and that S* is the fragrance (same qualification) of a eucalyptus having amount m of the relevant chemical. Because the previously described exchange hasn't occurred, given a cut of meat having S and some other, otherwise observationally identical cut of meat, with a much stronger (weaker) version of S, I know on that basis that *ceteris paribus* the latter cut of meat is more (less) rotten than the former. For this reason, if the exchanged in question occurred *but that other, compensatory changes didn't occur alongside t i* , our ability to acquire comparative knowledge of this kind would be diminished.

But there's no reason why any given set of causal properties should be associated with any given type of olfactory sensation. What *is* necessary is that, once the assignments are made, their mutual relations parallel the mutual relations of their objects.

> (SA[17]) So you admit that its having this as opposed to that odor does not, in and of itself, diminish our ability to learn about the world through the sense of smell. You admit, in other words, that rotten meat doesn't *have* to have the smell it does. But in admitting this, you're admitting that it doesn't *really* have that smell.

There are two problems with SA.

Problem #1: When we say that a given cut of meat has a bad smell, *we're*

talking about the cut of meat. If the word "smell" referred to *sensations*, then sentences like "that meat has an awful smell" wouldn't be about the meat. By the same token, so far as that sentence *i s* about the meat, it isn't about sensations. Thus, to the extent that it really is about the meat, whether or not that sentence makes a true statement has nothing to do with anyone's sensations. And to the extent that it isn't about our sensations, "that meat has an awful smell" is about the meat's causal properties or, in any case, is about some other (probably related) mind-independent fact.

Problem #2: SA establishes that smell is mind-dependent *only* to the extent that it establishes the obviously, or at least presumably, false conclusion that size and shape are mind-dependent.

Look at the book in front of you. Let V be the visual sensation you are having. Under otherwise unchanged circumstances, you could have a visual sensation that, although very different from V, gave you either the very same information or that gave you much more information. In human beings, the set of sight isn't nearly as acute as it is where certain other species are concerned. Were they to look at the book in front of you, under conditions just like the ones that actually obtain, they'd have sensations very different from V that contained all the information contained in V, and then some.[18] You could have visual sensations very different from the ones you actually have without, for that reason, failing to know anything that you do know.

But this doesn't entail that the facts of which vision apprises us are mind-dependent. V gives you a lot of information about the book's location, its shape, and its size. And V's shape, size, etc., are quite definitely mind- *in*dependent.

"But aren't you begging the question against Berkeley in saying this?," it will be asked. "Wasn't Berkeley arguing that, since (as you just pointed out) secondary properties are relevantly similar primary properties, to be is to be

perceived?”

Berkeley does indeed argue that. But he also takes it for granted that secondary properties are mind-dependent. In other words, his argument has the form: (i) secondary properties are mind-dependent; (ii) secondary properties are relevantly similar to primary properties; (iii) therefore, primary properties are mind-dependent; (iv) it follows from (iii) that objects are mind-dependent—are creatures of the mind.

But I argued that secondary properties *aren’t* mind-dependent. I reject step (i), and provided an independently plausible reason for doing so. Therefore, what I’ve said doesn’t beg any questions against Berkeley.

6.4.2 Is temperature a primary or a secondary property?

Some properties that seem to be secondary turn out to be primary. A brief examination of one such property will clarify some of the points just made.

For an object to have a certain *temperature* is for the particles composing it to have a certain mean kinetic energy. (Basically, it’s for those particles to move around in a certain way. The faster the movements, the greater the temperature. [19]) But it’s initially tempting to categorize temperature with sweetness and, thus, to see it as secondary property.

There are a couple of reasons for this. First, secondary properties are modality-specific. Sweetness can be tasted, but not heard, seen, touched.

By contrast, primary properties are transmodal. Squareness can be seen or touched. In fact, creatures with very good hearing (e.g. bats) can *hear* shapes, just as we can see them; bats can detect an object’s shape through sonar. And

creatures with a very olfactory sense (e.g., moles) can *smell* shape.

According to some, including Locke and Berkeley himself, temperature can be known only through touch. But this isn't true, of course. Given what temperature is (namely, molecular motion), it is just as capable of being known through sight or audition as it is of being known through touch. But it's obvious why someone would think otherwise.

There's another reason why temperature is often falsely regarded as a secondary property. There isn't anything inherently pleasant or unpleasant about seeing a square-shaped object or a fast-moving object. Under certain circumstances, it may be very unpleasant to see something move with a certain speed. But the connection is circumstance-specific. There is, however, something inherently unpleasant about certain odors, tastes, and timbres. In general, primary properties are not inherently associated with aesthetic properties—any such association is circumstantial—whereas secondary properties *are* non-circumstantially associated with such properties. Very high and very low temperatures are non-circumstantially associated with unpleasant sensations, and moderate temperatures are non-circumstantially associated with pleasant ones.

Nonetheless, temperature is a primary property, since an instance of temperature is identical with various instances of motion.

6.5 A second Berkeleyan argument—"To be is to be conceived"

At one point, Berkeley argues that to be is to be conceived ("esse concipi ist"). In other words, things are the awarenesses that we, or other thinking beings, have of them.

Here's his argument. Try to conceive of something that exists but isn't conceived. You can't do it. Why not? Because you just conceived of it. If you try to conceive of some chicken that isn't conceived of, then you just conceived of it, and it isn't unconceived. Thus, nothing unconceived can be conceived to exist. Therefore, to exist is to be conceived.

The problem with this argument is that, contrary to what Berkeley assumes, *propositions*, not *objects*, are the objects of conception. When one "conceives of a 50-pound chicken," what one is doing is considering a proposition, to wit: *there exists a chicken that weighs 50 pounds*, which is equivalent with *the property of being a 50-pound chicken* is instantiated. There isn't some specific chicken x such that x weighs 50 pounds and one is thinking about x. When one conceives of an unconceived chicken, there isn't some specific chicken x that one is thinking about but that, at the same time, no one is thinking about. What's going is that one is considering the proposition: *there exists some chicken or other that nobody is thinking of*, which is equivalent with the proposition: *the property of being a 50-pound chicken that nobody is thinking of is instantiated.* And that proposition is clearly not an absurd one. So Berkeley's argument fails.

7.0 The phenomenal reduction

First some terminological points. An *object-statement* is one that concerns mind-independent entities, e.g., "that statue is over ten feet tall" is an object statement. A *perception-statement* is one that concerns one's own perceptions (e.g. "I am having an experience that, if it were veridical, would be of a statue that is over ten feet tall"). Two statements are *observationally*

equivalent if there is no observation that (dis)confirms the one either more or less than it (dis)confirms the other. (All analytically equivalent sentences are observationally equivalent—but not vice versa, as we're about to see.) Finally, a property or relation is *observationally inert* if no instance of it could possibly affect what anyone observes.

7.1 The phenomenal reduction

For the reasons given earlier, strict empiricism leads to either skepticism or to idealism. Skepticism and idealism are both deeply at odds with commonsense. Berkeley agreed that skepticism was at odds with commonsense. But he denied that idealism had this defect. He held, in fact, that idealism *is* the commonsense view.

In an effort to vindicate this obviously false claim, Berkeley argued that any object-statement that we could have any good reason to believe correct can be reinterpreted as a perception-statement.

Here is a modernized presentation of Berkeley's reasoning:

> (BR[20]) A statement about the external world is meaningful only to the extent that, were it true, we'd have observations that we wouldn't otherwise have.
>
> This entails that such a statement is meaningful only *to the extent* that it concerns observations. When the possible observations run out, so does the meaning. Thus, "Smith has a car" is without meaning to the extent

Smith's having a car is observationally inert, the same thing *mutatis mutandis* obviously being true of "Brown has a car." And

(1) "Smith's car weighs twice as much as Brown's car"

is meaningful only to the extent that, for any objects x and y, if x weighs twice as much as y, there would *ipso facto* occur observations that would not otherwise occur.

If we replace all of the constants in (1) with variables, what results is the sentence-form:

(2) A bears R to B.

A true sentence results if the variables in (2) are replaced with constants referring to classes of perceptions. Let K_1 be the class of perceptions that one has in virtue of the fact that Smith's car exists. (K_1 might include a perception of Smith pulling out of his garage.) Let K_2 be the class of perceptions that one has when, and only when, there are objects x and y such that x weighs twice as much as y. And let K_3 be the class of perceptions that one has in virtue of the fact that Brown's car exists.

If a given observation O confirms (1) to a degree, it confirms

(3) K_1 bears K_2 to K_3

to that same degree. (In this context, “confirms” is to be taken to refer to positive or negative confirmation.) If a given observation O* (dis)confirms any one of these three claims, it is *ipso facto* (not) a member of one of K_1–K_3. So there can’t be an observation that (dis)confirms (1) more or less than it (dis)confirms (3).

There is therefore no observation-based reason to prefer (1) to (3). So assuming, as we are, that empiricism is correct, and that all good reasons are observation-based, it follows that there is no reason at all.

But *the very fact that there is no such reason* is itself a reason to prefer (3) to (1). (3) doesn’t posit anything for which there is no observational evidence. (We’ll henceforth use the word “trans-observational” to describe entities for whose existence there is no observational evidence.) But (1), at least as many philosophers interpret it, *does* posit trans-observational entities.[21] And to the extent that a sentence demands the existence of trans-observational entities, it is meaningless. Why? Because sentences are meaningful only to the extent that, if true, they make a difference; and, given the truth of empiricism, a sentence makes a difference only if it makes an *observational* difference.

7.2 The viability and significance of the phenomenal reduction

In this context, I’ll use the word “perception” to denote any mental state that, *if veridical,* is an accurate sensory observation but that needn’t be veridical. Thus, hallucinations are perceptions, as we’ll be using that word,

and so are veridical perceptions.

You have a perception of Smith driving a car. Let P be that perception. P is obviously evidence, albeit *defeasible*[22] evidence, that Smith is driving a car. Berkeley admits this. In other words, Berkeley admits—as he surely must—that, other things being equal, your having a perception of Smith driving a car gives some weight to the contention that Smith is driving a car.

But *how* is P evidence of Smith's driving a car? It's evidence of it because it *says* that Smith is driving a car. If your mother, who you trust, calls you up and says "Smith is driving a car (which he shouldn't being doing, since he's blind drunk)," you're likely to believe that Smith is driving a car, even if you didn't previously have any reason to believe it. The reason is that you regard your mother's testimony as evidence to the effect. You also regard your visual perception of Smith driving as (extremely strong) evidence to that effect. You do this because your eyes are telling you—much as your mother might, but much more convincingly—that Smith (or, at any rate, somebody who looks a lot like him) is driving a car.

Part of what your eyes are telling you is that some spatially remote object (namely, Smith) bears a certain relation (namely, that of driving) with respect to some other spatially remote object (namely, the car Smith is driving). And in telling you that Smith and his car are spatially remote from you, your eyes are saying, or at least implying, that Smith isn't a part of you or, therefore, of your mind.

It may be that P is wrong. It may be that you're hallucinating and that, when you come down from your acid trip, it will turn out that Smith wasn't driving at the time in question. But P still *said* that he was driving, and it still *said* that there exists some spatially remote object bearing a certain relation to some other such object.

Any given perception is to the effect that objects that aren't a part of you bear certain relations to one another and/or individually have certain properties. So to the extent that our sense-perceptions are evidence of anything, they are evidence of trans-perceptual objects.[23]

And that is why statements about perceptions cannot possibly be equivalent with statements about perceptions.

8.0 Two insights of Berkeley's

Berkeley's argument for idealism does not go through, and neither does his attempt to reduce statements about objects to statements about perceptions. But, in the process of trying to establish idealism, Berkeley had two extremely profound and original insights, whose philosophical consequences are still being fathomed, to wit:

(A) many of the "statements" we make aren't really statements at all, and are instead *statement-forms*,

and

(B) a statement's grammatical form may not coincide with its logical form—that, in other words, a statement must be reparsed if its meaning is to be made clear.[24]

(A) *explained:* “The number five is odd” is a statement. It attributes a definite property to a definite object. The expression ‘x is odd’ isn’t a statement. It *would* be a statement if the variable were replaced with a constant. A given statement form may be true ‘under some interpretations of it’ and false under others. This means that replacing the variables with constants may yield truths or falsehoods.

An “interpretation” of a statement-form is simply an assignment of constants to the variables. To *model* a statement-form is to identify an interpretation of it that yields a true statement. Here is a trivial example:

(1) A bears relationship R to B.

(2) If x bears R to y, y bears R to x.

(3) Nothing bears R to itself. In other words, ‹x bears R to x› is false, for all objects x.

Let R be the relationship that one bears to somebody else in virtue of being that person’s next-door neighbor. Since (setting aside the odd person who owns adjacent houses) nobody is one’s own next-door neighbor, (3) comes out true. So does (2), since x must be y’s next-door neighbor if y is x’s next-door neighbor. Thus, supposing for argument’s sake that Smith and Jones are next-door neighbors, (1) comes out true if “A” refers to Smith and “B” refers to Jones. We have thus modeled (1)–(3).

In conjecturing that (so-called) statements such as ‘that rock weighs five lbs’ can be reinterpreted as statements about perceptions, Berkeley was in effect saying that such statements aren’t statements at all—they’re statement forms.

Though he didn't himself put it this way, he was saying (i) that the terms in them (e.g., 'rock,' 'weighs five lbs') are really variables, and (ii) that true statements would result if those variables were replaced with constants referring to perceptions.

He was wrong about (ii), as we saw a few pages ago. But he *was* right about (i). There is no one microstructure that Rover must have if my current perception of him is to be accurate. There is, as we will now see, no one way anything must be if *any* given perception is to be correct.

We've seen that our knowledge of the world is strictly comparative.[25] We know how fast a given thing is traveling *only* to the extent that we know how much fast*e r* it is traveling than some other thing. We know how heavy/hot/big/etc., a thing is *only* to the extent that we know how much heavier/hotter/bigger/etc., that thing is than some other thing. Spatiotemporal knowledge is comparative knowledge.

That means that *any*thing—no matter what it's parts are 'made of'—whose parts are appropriately interrelated is no more, and no less, consistent with what our sense-perceptions tell us than is any other thing whose parts are thus interrelated. This means that perception apprises us only of *structure*.

Our perceptions (if correct) tell us the structure of the world, and our physical theories (if correct) apprise us of micro*structure*. Given *any* two things having the requisite structure, there cannot possibly be any observational basis for holding that it, and not the other thing, is what is really out there.

This means that, if x and y both have the requisite structure but are qualitatively different in some non-structural respect, the supposition that x is what is really out there models the data exactly as well—no better, no worse—than the supposition that y is what is really out there.

This doesn't mean that there is no fact as to what is out there. There obviously is. Given any set of possible objects, each having the structure of the external world but each differing in some non-structural respect from the others, at most one of those objects can be the external world. But the supposition that any given one of them is what is actual does exactly as good a job of modeling the observational data as the supposition that any other given one of them is what is actual. And one of the claims embodied in Berkeley's argument(s) for idealism is precisely that, to the extent that the probability of a hypothesis is a function of its congruence with observational data, anything that models the observational data ipso facto no less likely to be what's really out there than anything else that does so. Berkeley was therefore the first model-theorist.

(B) explained: To my knowledge, Berkeley was the first to recognize the distinction grammatical structure (surface structure) and logical form (deep structure[26]). To avoid getting caught up in technicalities, let's also suppose Smith is the only percipient being in existence. Berkeley's idealism seems to entail that, if Smith closes his eyes (and is otherwise not in sensory contact with the world), the whole world disappears; and it also seems to entail that the whole world springs back into existence when Smith opens his eyes. This is deeply implausible.

It also seems to undermine Berkeley's claim that any object-statement that is presumed correct (e.g. 'the world doesn't' disappear when I close my eyes') is equivalent with a statement stating the observational evidence for that claim. When I close my eyes, the *observational* evidence seems to suggest that the world has vanished. And it's only, so it is thought (or so I personally think), because one knows that one's observations *aren't* the one and only relevant yardstick that one knows that the world hasn't disappeared.

Berkeley's response to this is brilliant. He says that the real meaning of

(1) “the world doesn’t go out of existence when Smith (who, for argument’s sake, we’ll assume to be the only sentient being in existence) closes his eyes”

is *perspicuously*[27] represented by a sentence whose surface-structure bears no resemblance to (1)’s. That other sentence is one along the lines of:

(2) “if Smith closes his eyes for x minutes and then reopens them, the things he sees are where one would *expect* them to be, *given* that they are subject to the usual forces.”

Berkeley’s own illustration of this principle is a bit more crisp than this one. The stars are moving, Berkeley points out. A more precise way of putting it, as Berkeley himself makes clear, is that we are moving relative to the stars, and the stars are therefore moving relative to us. But, Berkeley points out, we don’t *see* the stars move. The blips in the sky that we see on a given night aren’t in the same relative positions as the blips in the sky that we see on other nights.

For this reason, we do a kind of “regression analysis” on the blips that we see over the years. We try to connect the blips seen on night 1 with those seen on night 2, and we try to connect the latter with those seen on night 3, and so on. So if $N_1...N_n$ are nights in question, and n is some high number (e.g., 500), we identify curves such that, if it is assumed that those curves are the trajectories of those blips, it follows that those blips obey well-defined, relative simple laws. So the logical form of:

(A) “the stars are moving even when nobody is looking at them”

is perspicuously given by the grammatically very different sentence:

(B) “if it is assumed that, when we’re not looking at them, the stars obey certain laws and, therefore, have certain trajectories, we can make observationally accurate predictions that we couldn’t otherwise make, and arrive at observationally correct explanations that we couldn’t otherwise arrive at.

Berkeley said, as clearly as it can be said, that what sentences really mean isn’t what, given their overt forms, they seem to mean. So setting aside some petty and insubstantial objections relating to the exact meanings of “grammatical” and “logical,” Berkeley was, to my knowledge, the first person to recognize the distinction between grammatical and logical form. [28]

ENDNOTES

[1]. In point of fact, the laws of physics *do* demand that the collective weight of two rocks, each weighing exactly 1 pound, is just slightly more than 2 pounds. If you mix a quart of water with a temperature of 70° with a quart of water with a temperature of 90°, the result is not a body of water with a temperature of 160°. So temperature is not an "additive" property. If the object formed by conjoining two 1-pound rocks weighed more than 2 pounds, then weight would not be an additive property. Since Relativity Theory shows that two conjoined 1-pound rocks weigh slightly more than 2 pounds, weight is *not* a strictly additive property.

[2]. There are some trivial exceptions to this. For example, given that, at past time t, Eddy had two cars, one can infer that, in the future, any given object will be such that, at t, Eddy had two cars. The empiricist holds that, given any proposition P concerning the past, there is no proposition that isn't analytically entailed by P such that Q concerns the future and such that, supposing P to be true, an acceptance of Q is ipso facto justified.

[3]. Berkeley makes this point in his (1734) book *The Principle s of Human Knowledge.* Wittgenstein (1958) makes some remarks that could be interpreted as attempts to make this point.

[4]. His arguments for this are put forth in his book *Three Dialogues between Hylas and Philonous.* Some of those arguments are elucidated in his book *the Principles of Human Knowledge.*

[5]. For example, Anthony Brueckner, a contemporary philosopher, believes that skepticism is irrefutable, and he has spent much of his career trying to undermine attempts to refute it. He does this on a case by case basis. In other words, he considers individual attempts to refute skepticism, and tries to undermine them. To my knowledge (which, in this domain, is limited), he has not provided a general argument as to why skepticism is irrefutable. My personal feeling is that we would learn more from such an argument—even a failed one—than we would from the alleged failure of specific attempts to refute skepticism.

[6]. The works of Berkeley's relevant to this section are his *Principles of Human Knowledge* and his *Dialogues between Hylas and Philonous.*

[7]. The argument just given is reconstructive. Berkeley himself doesn't give it. But it provides the justification for assumptions that Berkeley makes without fully justifying.

[8]. Here's an argument for this thesis. (It isn't an argument Berkeley gives.) Consider my two house-perceptions. (Let PB and PS, respectively, be the perception that tells me that the house is big and the perception that tells me that the house is small.) According to the procedure just described, I'd have to throw out one of those two perceptions. And, given any pair of conflicting perceptions, I'd have to do the same thing. In no case would there be any principled way of doing this. Which means that, even if I happened to be right in my choice—i.e., even if I happened to select the perception that was in fact wrong—I'd be doing so haphazardly, and therefore wouldn't *know* that I was making the right choice. Which means that we wouldn't know that our perceptions (or the ones we chose, rather) were correct, even if they were. Which means that those perceptions wouldn't give us knowledge.

[9]. This is the argument Berkeley puts forth, though not as speedily, in his *Dialogues between Hylas and Philonous.*

[10]. Technically, this is an inaccurate way of putting it because it suggests, falsely, that there are absolute rates of change. But the substance of this point is correct.

[11]. He was not the first to do this. Galileo (1564–1642) did it before him, and so did Lucretius

(99 B.C.–55 B.C.).

[12]. Strictly speaking, shape *per se* isn't a primary property. What is a primary property is some *specific shape.* Similarly, taste *per se* isn't a secondary property. What *is* a secondary property is some specific taste—e.g., the taste of a Snicker's bar. The same thing *mutatis mutandis* holds for the other items on these two lists.

[13]. Judging by certain passages in his work, Berkeley himself seems to make this claim.

[14]. Actually, Hume would say otherwise; and I'm not entirely sure that he's wrong. But we can set this aside here.

[15]. In his *Essay Concerning Human Understanding,* Locke made essentially this point.

[16]. If rotten meat had had S*, instead of S, people wouldn't have minded keeping it in their caves (or whatnot), and would have been more willing to eat it. Food often smells rotten before it tastes rotten. But this (alleged) fact is irrelevant in this context, since we're talking about the epistemological, not the emotional, virtues of odors.

[17]. SA

[18]. Since you're much smarter than those animals, you can *do* a lot more with the relative of paucity of information given to you by your low-res perception than those animals could do with their high-res perceptions. But that has nothing to do with what those perceptions *themselves* are saying.

[19]. Because the particles composing very hot things move so fast, those particles do a lot of damage: they damage nerve-endings and other organic tissues. Hence the unpleasantness associated with touching such things.

[20]. "BR" is short for "Berkeley's reasoning."

[21]. Actually, Berkeley claims—totally implausibly—that people agree with his contention that there are no trans-perceptual objects.

[22]. "Defeasible" means "capable of being overridden." Defeasible evidence is evidence that is inconclusive but is to be given credence until outweighed by contrary evidence. Most evidence is defeasible. The only possible cases of non-defeasible evidence are things that are evidence of themselves, e.g., headaches, tickles.

But, since the idea of a thing's being evidence of itself is of doubtful coherence, it's likely that all evidence is defeasible.

[23]. Rudolf Carnap (1890–1971) spent years trying to translate perception-statements into object-statements. His efforts culminated in his (1928) book *The Logical Structure of the World.* At no point in that book, or in any other work of his, does Carnap acknowledge the fact that one's perceptions are evidence of the existence of things outside of one's own mind *only* because those perceptions tell one that there exist such things. Carnap made many attempts to vindicate phenomenalism (the view that statements about physical objects could be translated, without loss of meaning, into statements about one's own perceptions and sensations). Every attempt he made was subject to obvious counterexamples. When these were pointed out to him, he chose *not* to jettison phenomenalism, but to tinker with the technical details of his particular attempts to establish the truth of it.

Carnap was a hardcore empiricism—hence his tenacious advocacy of phenomenalism. He felt that empiricism was the "scientific" view to take—that not being an empiricist meant being "metaphysical." (He took it for granted that being "metaphysical" is bad. "Why is it bad?", one might ask. "Because," says Carnap "it's unempirical to be metaphysical." This vicious circularity is the most Carnap does in the way of clarifying his view that "metaphysics" is bad and of defending of his view that empiricism is good.) At a conference in Mexico in 1968, Carnap declared that,

contrary to what he had been assuming for his entire career, there is no such thing as science. He advocated the post-modern view that science is whatever works for one, given one's personal objectives.

Carnap is often praised for his willingness to change his mind in the face of new information that didn't bear out his theories; and his bold (1968) rejection of science is seen as epitomizing his (alleged) openness of thought. But it seems to me that, in doing this (pseudo-)180°, Carnap is *not* changing his mind. He's doing the exact opposite. He's saying that, since science doesn't fit his rather idiosyncratic theory as to what science is, science doesn't exist. It should be pointed out that John Stuart Mill (1806–1873) had advocated the very conception of science advocated by Carnap (minus the distinctively 20th century forays into formal logic) and, in addition, that William Whewell (1794–1866) had put forth cogent arguments against Mill's view.

[24]. To my knowledge (which is limited, given that I'm not a Berkeley-scholar), Berkeley is never given credit for making these discoveries. I am, so far as I know, the first author to do so. But there is no doubt that he made them. See his work *The Principles of Human Knowledge.*

[25]. This is a point that Berkeley himself makes very clearly on several occasions. See his *Dialogues Between Hylas and Philonous.*

[26]. In this context, I'm not using the expression 'deep structure' in the Chomskyan sense.

[27]. A sentence is 'perspicuous' if it is clear *n i the sense that* its inferential structure (what it entails and what entails it) can be read off of its grammatical structure. See the entry for 'perspicuous' in the second appendix.

[28]. Another deeply insightful and prophetic point that Berkeley makes (in the *Principles of Human Knowledge*), and for which he provides reasonably cogent argumentation, is that there is no empirical basis for the claim that position in either space or in time is absolute. He says, rightly, the spatiotemporal position must be understood in comparative terms. (One event e is later than event e*; one object x is further from y than is z.) But to his discredit, Berkeley doesn't address Newton's famous argument to the contrary. For argument's sake, suppose that motion (and therefore position) is relative. In that case, there is no difference between your standing still while some nearby bucket spins around and the bucket's spinning around while you stand still. But, says Newton, there is a difference. If you stand still and the bucket spins around, the surface of the water in the bucket becomes concave. But it doesn't become concave if the bucket remains still while you run around it.

What does this show? First of all, we must distinguish between *kinematic* and *dynamic* relativity. ("Kinematic" means "having to do with how things are moving." "Dynamic" means "having to do with the nature and intensity of the forces that are at work.") Kinematically, your relationship to the bucket (when it's stationary and you run around it) is just like the bucket's relationship to you (when it is spinning and you are stationary). But *dynamically* the two situations are not symmetrical. And, Newton very reasonably inferred, the fact that these two situations are dynamically non-comparable shows that, when the water in the bucket becomes concave, the bucket really is moving. In other words, it is moving relative to the coordinate system with respect to which given any event, that event would be assigned a position in time and space even if it were the only event that ever occurred.

In general, the effects of *accelerated motion* (direction-variable or speed-variable motion) tell us what is really moving and what is moving in, at most, a relative sense.

To take another example: Smith is standing by the side of the road. Jones is driving on that road, and he is accelerating very quickly. Kinematically, Smith's relationship to Jones is just like Jones' relationship to Smith. But dynamically the one person's situation is very different from the other's. Jones will feel the g-forces. Smith will not. This difference, Newton would say, shows us that Jones really is moving.

Newton's reasoning is extremely formidable. Berkeley didn't address Newton's argument.

(His responses are so curt that he either seems not to have understood what Newton was saying or he deliberately turned a blind eye to it, since he knew he couldn’t parry Newton. In any case, Berkeley was vindicated—after a fashion—when, working two hundred years after Newton, Einstein showed that motion is not only kinematically, but also dynamically, relative.