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Disjunctivism and Perceptual Psychology

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Perceptual anti-individualism holds that the nature and correct individuation of perceptual states and perceptual beliefs are constitutively associated with relations, including causal relations, between capacities in the perceptual system and aspects of the physical environment.

A closely associated thesis is that

> a constitutively necessary condition on perceptual representation by an individual is that any such representation be associated with a background of some *veridical* perceptual representation.

For purposes of this essay, in accord with perceptual anti-individualism, I will assume that the relevant veridical perceptual representation is representation of entities in the physical environment.

Perceptual anti-individualism—sometimes called *externalism* about perception—is very old, stemming as it does from Aristotle. In the history of philosophy it has been the dominant view. In the last quarter-century it has become widely held in an explicit way. I believe that it is presupposed and relied upon in perceptual psychology. I think that it and its associated thesis are surely true.

Proponents of perceptual anti-individualism differ over the natures and correct individuation of perceptual states and perceptual beliefs. Some differences can be settled by reflecting on other things that we know. Intra-psychological relations, as well as relations to the environment, constrain the natures of representational

states. I want to give color, shape, and particularity to this point by showing how psychological explanation and psychological ability bear on the natures of perceptual states. I will argue that such considerations rule out *disjunctivism*. They also rule out *naive realism* about perception and perceptual belief. I believe that disjunctivism and naive realism are *seriously mistaken forms of perceptual anti-individualism*.

I will characterize disjunctivism and naive realism more fully later. Rough characterizations will do for now. Disjunctivism is, roughly, the view that there is never any specific perceptual-state kind in common between a perception of one object and a perception of another object (even if the objects are not discriminable to the perceiver through the perception), or between a perception of an object and a perceptual referential illusion that is contextually indiscriminable to the perceiver from the successful perception. Naive realism is roughly the view that veridical perception is, without residue, a relation between a perceiver and an object. Naive realism entails disjunctivism.

Suppose a perceiver perceives object O. According to both disjunctivism and naive realism, if object O had been exchanged for another object that the perceiver could not discern from O, or if there had been no object at all and the perceiver had an illusion that was for the perceiver indiscernible in the context from a perception of O, then there would be no specific "explanatory" kind of perceptual state that is common between the first case and either of the latter cases.

In addition to explaining why disjunctivism and naive realism are mistaken, I will explain how reflection on the relation between veridicality conditions and psychological explanation motivates distinguishing two kinds of representation, or representational content.[1] One of these kinds is what we might call *pattern-based representation*. It marks general aspects of psychological, epistemic, representational abilities and events. These abilities are individuated in terms of patterns or types of psychological activity and patterns of interrelations to the environment. The other kind is what we might call *occurrence-based representation*. It marks certain particular, occurrent representational acts or events in which those general abilities are applied. These acts or events are individuated not in terms of patterns or types, but in terms of particular, actual, context-dependent exercises of the general abilities. The distinction between two kinds of representation is neglected by disjunctivists, and indeed by most philosophical accounts of the content of perception.

This essay is a long one. It is not meant to be read in a single sitting. Its structure is as follows. In section I, I explicate perceptual anti-individualism. Section II centers on the two aspects of the representational content of perceptual states. Sections III and IV concern the nature of the empirical psychology of vision, and its bearing on the individuation of perceptual states. Section V shows how what is known from empirical psychology undermines disjunctivism and hence certain further views that entail it, including naive realism. In Section VI, I raise a further point against disjunctivism. Section VII indicates how general reflection on perceptual perspective and epistemic ability supports the constraints from empirical psychology. It also explains how reflection on veridicality conditions, psychological

explanation, and cognitive ability conspire to force recognition of the two kinds of representation mentioned in the preceding paragraph. In the Appendix, I criticize attempts to support disjunctivism.

I. PERCEPTUAL ANTI-INDIVIDUALISM

The key feature of perception is that it is representational. I mean this in a very broad sense. Perception is representational in that its nature is both to purport to be about something and to represent it as being a certain way. To purport to be about something is to *function* to represent something—to function to refer to or indicate something.

Perception's function to represent something is fallibly realized. When the function is successfully realized, perception represents particulars and represents them veridically as being a certain way. Being fallible, perceptual representation may not succeed in representing a particular as it is. It may even fail to represent any particular at all. The exercise of perceptual capacities can be veridical or non-veridical—accurate or inaccurate. Perceptual states are typed in terms of their representational content—in terms of how they represent things to be.

Representational content is an abstraction that marks the kind of psychological state that has the content, and that is what is true or false, veridical or unveridical. For example, the representational content of a belief that most dogs are faithful is the abstract thought content that most dogs are faithful. I will discuss the representational content of perceptual states shortly. Roughly it is a percept-abstraction that attributes or categorizes what is purportedly perceived as being a certain way (as being round, for example) and that purports to single out a particular instance of that property or relation, or purports to single out a particular that has that property, or enters into that relation. All elements of representational content function to represent—all are representational.

I believe that there is a significant distinction between the forms of representational content in perception and those of thought. These forms *mark*, or help type-identify, psychological abilities whose operations are structured in different ways. Thought is propositional. Concepts are certain representational constituents of propositional thought contents. Perception is representational but non-propositional. Primitive perception has no conceptual elements. The difference between perception and thought lies in the type of representation, the way representation is organized, and the abilities marked by the representational content. With some serious qualifications, I believe that perceptual representational content has a structure more like a map. Thought has propositional form, of the sort exemplified by sentences. What I say here will not depend on taking perceptual representation to be non-propositional and non-conceptual. Anti-individualism applies to both perception and empirical thought about the physical environment.[2]

Perceptual anti-individualism entails that the individuation and natures of perceptual states are necessarily associated with certain relations between the types of states that are part of the perceptual system of the individual, on one hand, and kinds of objects, properties, and relations in the physical environment, on the other. The relevant kinds of objects, properties, and relations are those that enter into causal relations that help set conditions under which perceptual states and standards of their correctness are individuated. The relevant environment—what I call the "*normal environment*"—is the environment that determines the natures of representational kinds in the perceptual system.

Later I will say more about what counts as the normal environment. The normal environment need not be where one usually is. It may be where one grew up. It may be where one's perceptual system first evolved, before one was born. The key idea is that one's representational capacities get their meaning from the tasks that they function to perform. Such tasks can be explained by reference to conditions other than the present or most-frequent ones. Representation can occur in abnormal conditions, where the tasks of the representational capacities cannot be carried out with full success.

In understanding this key idea, it is important to remember that the notions of normality, function, environment, and representation all have explanatory roles. Fully understanding them requires understanding these roles. They have one foot in common sense and one foot in theory.

A more specific characterization of a central idea behind perceptual anti-individualism is as follows: The correct individuation of perceptual states centers on their representational function. Their representational function is to provide veridical information about the environment, information that might be useful in the individual's central activities. Practical function may not aim at veridicality; but representational function does.

Individuation of representational capacities is thus success oriented. The nature of representational capacities involves a teleological element. Some perceptual states are non-veridical. But the nature of a perceptual system and the natures of its perceptual kinds are partly determined by environmental properties that ground explanation of the representational function of the perceptual system, and individuation of its state types. Individuation of perceptual state types underwrites the fact that veridical perception is presupposed by the conditions that make perceptual states possible. For veridical representation is what is fundamentally explained by the anti-individualistic formation conditions. Errors are explained as well, but as the products of special conditions.[3]

I indicated that the natures of perceptual states are "partly determined" and "partly individuated" by relations to the environment. Environmental properties that help explain, and are represented by, veridical perceptual states cannot fully fix representations. This is because the representational way that a perception is associated with its (partly) individuating object or property depends also on the perception's connection to other representations, and on its role in forming a perspective on the object or property for the perceiver.

The full representational content of a perceptual state is normally very complex. It is common to discuss parts of this full content. For vision, a representational content of a perception of a scene includes representational contents that specify parts of the scene, or properties of objects in the scene, or objects in certain relations in the scene. We can think of a perceptual state as the state of representing the whole scene. Or we can think of a perceptual state as representing some sub-part of it. Either way, the perceptual state is type-identified in terms of its representational content.

Perceptual representational content types *mark* or help type-identify perceptual states and abilities. These states and abilities involve perceptual response to types of kinds, properties, and relations that figure in the individual's needs and activities in its normal environment. Perceptually responding to particulars with certain shapes and colors that are relevant to the activities of eating, avoiding being eaten, reproducing, navigating, finding shelter, and so on, is a fundamental function of the visual system. The representational content of an animal's perceptual states is individuated partly in terms of what causes those states and how those states enable the animal to cope with specific types of entities in its environment. Successful interactions help ground individuation of perceptual states partly in terms of representational contents. These contents in turn mark or help type-identify representational abilities. The psychological kinds or natures thus individuated enter into a pattern of animal activity that is the subject of psychological explanation.

This is the basic shape of perceptual anti-individualism. The shape is, however, more complex than it may initially appear. I mention two sources of complexity.

An individual can be systematically mistaken in application of its perceptual representations if it is in circumstances other than those that the perceptual system functions to represent. If a frog or a child is given a show of holograms, its perception may fall into systematic error. If it is moved into a hall of prisms, mirrors, and special lighting, it may be radically fooled. These points reflect the fact that perceptual contents and abilities are often typed not in terms of the individual's history, but in terms of successes that serve the basic needs of perceivers with the relevant perceptual system.

The point about error goes further. An individual can be perceptually wrong more often than right even in its normal environment. The value of veridicality may pay for many errors. One veridical representation of a predator may pay for a lifetime of false positives. The key idea is that the individuation of perceptual types is ultimately *explained* in terms of conditions for veridical cases.

A second source of complexity is that perceptual anti-individualism does not require that every perceptual state type sometime be caused by instances of what it represents. Perceptual representation can involve spectra containing many contents that are never satisfied by particulars perceived and never caused by instances of the property represented. Consider a perceptual system capable of representing shapes. Many of the more complex shapes may never have been instantiated in the environment that the perceptual system functions to deal with. A given shape representation might be triggered only in cases of illusion—even in the individual's normal

environment, even in the whole history of a perceptual system across species. The spectrum of shape representations is still grounded in causal interactions with some shapes that are in the normal environment of that perceptual system—either in the evolution of the system, or in the learning history of the individual.

II. TWO ASPECTS OF THE REPRESENTATIONAL CONTENT OF PERCEPTUAL STATES

In this section I discuss two aspects of the representational content of perceptual states.

The first concerns the fact that all perceptual representational content contains both general and singular elements. I believe that perceptual content is not propositional. But it is analogous to some propositional representational contents in having singular elements that purport to pick out particulars and general, attributive elements that purport to attribute properties to the particulars.

Perception necessarily represents what is perceived—the referents of perception—as being a certain way. Perception classifies and categorizes. This typing is of immediate semantical relevance, but it also marks various repeatable abilities. The very notion of perceptual ability presupposes a responsiveness to types of input. The response to the input characterizes the distal environment as being of a certain kind. Representations that function this way are general elements.[4]

Perception is also necessarily applied in a singular way to particulars in the scene. One never perceives just properties or relations or kinds in the abstract. One perceives particular instances of those properties or relations. Or one perceives particulars of those kinds, or particulars as having those properties, or particulars as standing in those relations. The practical function of perception is to enable us to engage with the particulars in our environment. The representational function is to represent those particulars accurately, within the representational means available.

If a type-identical, perceptually indiscernible scene existed somewhere else in the universe, one would perceive the scene that causes one's perception, not the type-identical duplicate scene. So the representation that marks the perception must contain a singular element that is particular to the elements of the perceived scene. The singular element is context-dependent. The perceptual system does not have the resources to specify the perceived particulars in a context free way. So the singular elements have the singularity and context-dependence of applications of the demonstrative "that," even though they are not associated with language—or with propositional structure.[5]

The singular element can be compared to the singular element of representation in a photograph. The photograph should be contrasted with a painting that is type-indistinguishable from the photograph, but not meant to represent and not

otherwise derived from any actual scene. The photograph represents an actual scene containing objects and their properties. The painting represents types, but does not even purport to represent particular, actual instances of those types.

Singular representational elements in perception are often neglected.[6] I shall return in section VII to a more detailed discussion of them.

The second aspect of the representational content of perceptual states concerns its *perspectival nature*. Representational perceptual content is to be strictly distinguished from the entities (objects, properties, or relations) that are perceived. Such content always constitutes a partial representation of the particulars perceived or the properties or relations attributed. For any given particular object, property, or relation, there are many possible (commonly actual) representational contents that correctly represent it. Both singular and general elements are perspectival.

An aspect of the perspectival nature of representational perceptual contents that is salient in human perception is that phenomenologically different contents can apply (and can be taken to apply) to the same particular, property, or relation. The general phenomenon of perspectival representational content is ubiquitous in perception—phenomenally conscious or not.

A perceptual state's representational content is fundamental to the kind or type of state that it is. The content that marks or helps type-identify perceptual states is, in the first instance, not the referent, but the mode of presentation.[7] It depends on the individual's perspective and marks abilities that are exercised from that perspective. They are abilities to perceive that connect to a perceptual referent only from some perceptual perspective, only in some context. Perceptual representational content marks such perspective and context.

Suppose that the perceptual system or the animal's behavior allows for the *possibility* that two occurrent perceptions at different moments are referentially associated with different represented entities. These may be properties or relations, types or tokens, particulars or kinds. The individual and perceptual system may be perceptually referring to only one entity. They may even treat the different perceptual states *as* referring to one. Still, if there is a psychological/logical possibility that the perceptual states are perceptions of distinct entities, the representational content—the mode of presentation—varies. The individual's perception can correctly treat a perceptual referent as the same, even though the identification is not guaranteed by the form of the perceptual content, or the perceptual abilities marked by the content. Then we have an analog of Frege's true identities formed by terms expressing different modes of presentation.

For example, suppose that the system treats the referent of a touch as the same as that of a visual perception. Or suppose that the individual perceptually tracks an object as it turns. The perceptual representations will commonly have different representational content, even if the contents in fact do have the same referent, and even if there is a further intermodal, or modality neutral, representational content. There is the possibility of error in the identification. Non-trivial psychological mechanisms enter into the identification.

In what immediately follows, I will discuss non-trivial identifications of properties and relations in the perceptual system. I am interested in the perceptual analogs of *that object's size (or color) A is the same as that object's size (or color) B.* Or one can think of the perceiver or the perceiver's system as tracking instances of a single property under a series of ways of presenting the property, while treating it as the same property. In section VII I will touch on perceptual analogs of thoughts of the form *that F = that G*, where "*that F*" and "*that G*" purportedly refer to particulars.

There are framework aspects to representation that require distinguishing representational content—mode of presentation—from perceptual referent. It is an empirical question what sort of coordinate system for representing a given spatial layout is used by perceptual memory in a given instance. Some representations are *de se* or ego-centrically indexed. Such representations are from a perspective that locates everything relative to something about the individual's present (or once-present) vantage point. For different purposes, different *de se* "origins" marking the viewer are basic. For some activities, the viewer's hand may be the origin. For others, the head. For vision, the origin is in the area of the eyes. For hearing, the origin is in the general area of the head or ears. Representational markers of all these sorts are *de se*, or ego-centrically indexed.[8] All present perceptual representations, as distinguished from remembered ones, carry *de se* markers.

Other representations of spatial or temporal layout are from an allocentric perspective that is more like that of a map, in particular a map without a "you are here" indicator. Perceptual memories can take allocentric as well as ego-centric form. Allocentric systems of perceptual memory are present in many animals. In such cases, location is relative to certain remembered objects or features of the environment, which themselves provide the origin for the coordinate system.

Complexes of perceptual representations in ego-centric and allocentric frameworks can pick out the same objective spatial locations. Their referents are the same. The modes of presentation—the ways the referents are represented in perceptual memory—are different. They are associated with the origins in different ways.[9]

Similarly, if in the exercise of a perceptual constancy for size or shape, the individual's perception represents a property as the same but computes the sameness from two different distances or angles, the modes of presentation of the property will normally be different even though they are treated as perceptions of the same property. It is an empirical question whether the individual's representational system has dispositions that might treat the referents of the two token representations as different. It is an empirical question whether the system might allow collateral information to bring the presumption of sameness of referent into question. It is an empirical question whether the representations that are treated as perceptions of the same property are in fact representations of the same property. Where the implicit identification is not guaranteed by the perceptual abilities marked by the content, the differences in computations, and in perspectives, will be marked by different perceptual representational contents.

Of course, when one fails to perceive something, there is perceptual representational content but no perceptual referent. For these reasons and others, perceptual representational contents, hence perceptual states, are not individuated purely in terms of the environmental referent.

III. THE EMPIRICAL PSYCHOLOGY OF VISION

I believe that there are general arguments for perceptual anti-individualism that do not rely on any specialized knowledge. The arguments make use only of general, uncontroversial, well-known empirical facts, and other rational considerations. I believe that perceptual anti-individualism provides the only acceptable framework for understanding conditions under which perceptual representation is possible. And I believe that one can recognize this on reflection and by considering alternatives. I will not discuss these general arguments here. Here I discuss a body of considerations centered in concrete empirical explanation.

Perceptual anti-individualism is embedded in the practice of the empirical psychology of perception. Empirical psychology takes for granted the general anti-individualist account. It provides empirical explanation of the specific, contingent ways that perceptual-state kinds depend on relations to the physical environment. And it makes uses of perceptual-state kinds which are embedded in law-like generalizations that depend on such relations.

Healthy modes of interchange between philosophy and science cannot be reduced to a formula. Philosophy's record regarding perceptual psychology in the last century has not, however, been exemplary. A good deal of philosophy has proceeded with insufficient reflection on the science, or has offered unconvincing rationales for taking it to be irrelevant to philosophical problems.

The psychology of perception, particularly vision, has become serious science. It has well-established results and successful application of mathematical methods. There is no good reason to doubt that it provides insight not only into the mechanics of perception, but into aspects of its nature.

I will go over some basics of the psychology of vision. These will illustrate how perceptual psychology embeds and gives empirical specificity to the general anti-individualist account.

The theory of vision begins with the observation that detectors in the retina are sensitive to the effects of arrays of light frequencies. Its paradigmatic problem is to explain how perceptions of the distal environment are formed from sensitivity to such light arrays—registration of their spatial and temporal distributions on the retinal detectors. There are other sources of input into the visual system—proprioceptive input, input from other senses, top-down cognitive input. Still, as an empirical matter, it has been repeatedly confirmed that many basic explanations of fundamental visual processes can be successfully carried through while bracketing these further sources, factoring them in at further stages of explanation.

It is critical to realize that the information available in these registrations of arrays of light frequencies on the retina significantly underdetermines the environmental distal causes of those registrations. It underdetermines the entities in the environment that are perceived by humans and other animals. This point applies both to more or less immediate and to more temporally extended proximal stimulation. The proximal stimulations could have been produced artificially—with no normal environmental antecedents at all. Or the same types of proximal causes could have been produced by different distal antecedents. For example, the same light frequencies could be produced by a large object at a distance or a smaller object closer by, if either the object is at a distance of thirty feet or more, or only one eye is being used. Visual flow over time can also be the source of visual illusion about motion. Whereas the perceptual system can respond only to proximal stimulations, it is the distal antecedents in the environment that are, for the most part, perceived.

Not all psychologically relevant states of the visual system are perceptual states. Not all sensory information is perceptual. Arrays of light intensity are registered on the retina and encoded in the visual system. These encodings carry information, but are not perceptual representation. Light intensities registered on the retina are not perceived. Objects of perception are distal entities in the environment that figure in explanation of animal activity.

I believe that what is central to distinguishing *perceptual representation* from mere registration, or even mere sensation, is a certain type of *objectification*. To count as a perceptual system, the system must have objectifying capacities. Such capacities are perhaps most vividly exemplified by what are called representational *constancies*. These are capacities systematically to represent a given property or object as the same despite significant variations in proximal stimulation. For example, despite significant variations in illumination, we can perceive a color as the same. Registration of light arrays on the retina involves no such constancies. The proximal light arrays cannot alone (even taken sequentially) suffice to distinguish among different types of possible distal causes. They cannot alone determine a single distal, objective property under different conditions. At least as a rule of thumb, where a sensory system simply registers proximal stimulation with no significant processing of it, there is no perception.[10]

The fact that identical light arrays are the possible, and sometimes actual, products of different environmental antecedents motivates the paradigmatic problem of the psychology of vision. The paradigmatic problem, to repeat, is to explain how information contained in these arrays is converted into representations (perceptions) of physical entities in the distal environment. A central aspect of this problem is that of explaining the transformation of the registrations of light intensities on the retina—a two-dimensional array—into perceptual representations of entities in three-dimensional space. What makes the problem both difficult and interesting is that the retinal registrations, together with all further proximal input, can underdetermine the possible distal causes—even physically possible distal causes.

Underdetermination has been shown empirically to take an immense variety of forms. Non-technical, intuitive considerations, however, illustrate the basic fact of underdetermination.

Ambiguous figures certainly suggest underdetermination. The Necker cube or the duck-rabbit drawing bring out the role of the visual system in producing a state that is "committal" beyond what is present in the proximal stimulation itself. Of course, in the standard drawings, the external two-dimensional object is the same, however it is perceived. Nonetheless, the drawings suggest the possibility of different objects producing the same visual stimulation by showing that the same visual stimulation is compatible with different perceptual representations.

Visual illusions illustrate the point more directly. The Ames room is a trapezoidal room with a sharply receding back wall. From a certain perspective, it is misperceived as being rectangular; and the sizes of familiar objects (human bodies) in it are also mis-perceived because distance relations are mis-perceived. The same visual stimulation could have been produced by a scene that made the same perceptual-representation types veridical. The proximal stimulation is compatible with either of these two possible objective situations. This point applies to numerous brute perceptual illusions.[11]

A further intuitive consideration that illustrates underdetermination is what is known as visual completion. In cases in which one object occludes another, the occluded object is perceived as continuous. In cases in which the front of an object occludes its back, the object is perceived as a body, and often it is perceived as having a particular three-dimensional shape. In the first case, the proximal stimulation is often compatible with there being no occluded object—only two objects adjacent to a middle object. In the second case, the proximal stimulation is compatible with the object's being a mere facade, or having any number of oddly shaped backsides.

Perhaps the most basic intuitive consideration illustrating underdetermination lies in reflection on the geometrical consideration noted earlier. The light intensities that constitute the proximal stimulation are registered on the retina in a two-dimensional array. The array corresponds to a physical array in the receptors—each corresponding to a surface area of stimulation. The information that is registered can be constructed as a two-dimensional image. There is a determinate solution to how light from a three-dimensional scene will project onto a two-dimensional surface. The visual system must, however, use the two-dimensional array of information —the light intensity that stimulates each unit surface area of the retina—to perceptually represent a three-dimensional scene. This "inverse problem" has an infinity of mathematically possible solutions. Some of these mathematically possible solutions are not physically possible. There are, however, many physically possible solutions in most cases. These possibilities constitute possibilities for perceptual illusion. Yet the perceptual system commits itself to only one of these solutions, in a wide variety of cases. How is this done?

Many facts complicate this basic problem. The problem has a dynamic dimension. There is a serious theoretical question about the temporal limits of a perceptual

representation. There are questions about how perceptual representations separated by short time intervals are related to one another. For example, vision relies heavily on quick eye movements, saccades, in forming a visual perception. Moreover, there are feedback loops at various stages of visual processing; feedback loops between eye-muscles and the main visual pathway; relatively modular, subsystems within the larger visual system; relations between different perceptual representations over time; connections between different sensory modalities; and so on. Many such complications are built into basic vision theory. Some are treated as "interfering" complications that can, for many explanatory purposes and problems, be idealized away, and then accounted for at more concrete levels of explanation. For all that, the paradigmatic problem that I have outlined, in close to the form that I have presented it, has guided research and led to a considerable amount of detailed scientific knowledge.

The inverse problem and the more general problem presented by underdeterminations are the visual system's analogs of the paradigmatic problem of visual psychology, mentioned above. The paradigmatic problem is to explain how the visual system deals with underdetermination. Despite the fact that we fall into perceptual illusion, we or our visual systems manage to overcome this problem in the overwhelming majority of cases. In many cases, we do so with proximal stimulation that is limited by short time exposure and lack of auxiliary information from non-retinal sources.

By far the dominant approach in visual psychology to accounting for how these problems are overcome is to take the visual system to operate under certain principles in the formation of perceptions. These principles constitute *biases* that convert proximal stimulation (or later processings of proximal stimulation), and other afferent or efferent input into the perceptual system, into perception of the environment. In effect, the biases make the underdetermining proximal stimulation trigger a perceptual state that represents the distal cause to be a particular one of possible distal causes that are compatible with (but not determined by) the given proximal stimulation.[12]

At their most primitive, the principles govern the formation of perception from registration. There are also principles for the formation of some perceptions from others. For example, there are principles for the formation of perceptions of solids from perceptions of surfaces and edges.

These principles yield perceptions that are underdetermined by the information carried by the initial proximal stimulation. So they are subject to error. They have inductive import, although the way the principles operate can be taken to have the form of deductively or automatically applied rules or principles ("If the proximal stimulation is of type P, then form a perception as of an F").

This approach is well entrenched. There are numerous empirically supported, mathematically rigorous, powerful explanations of particular problems that the visual system solves in yielding perceptual representations—both approximately veridical ones and ones that involve illusion. There is a lot of knowledge about how

the visual system works, even though this knowledge is clearly only a substantial beginning.

In presentations of the psychology, a good bit of metaphor is used for convenience. The visual system is often spoken of as "solving" the underdetermination problem, or as using the principles as "assumptions," or as engaging in "reasoning." Explanation does not require these terms. They are metaphorical, and known to be so by most methodologically aware psychologists. Explanation requires no deliberation and no conscious reasoning in the visual system. There is no reasoning at all, inasmuch as reasoning is a propositional activity carried out by an individual.

What the psychology is committed to is that there is processing of information, a sequence of events in which registrations or representations are formed according to general laws or principles. Registrations and representations are abstractions that help type-identify the underlying kinds of psychological states. The psychology is also committed to some of the information's being representational—genuinely perceptual in the sense that it represents objective matters and can be mistaken as well as veridical. On one hand, the principles or laws that govern the formation of registrations and representations, and the transitions from one state within the perceptual system to another, are not *assumed* by any perceiver, qua perceiver. On the other hand, they are not simply artifacts of the psychological theory. The principles are laws, or law-like generalizations, that govern the formation and transformation of perceptual representational states—and the formation and transformation of perceptual representations that type-identify those states.

The transitions between contentful perceptual states are often called "inferences." Although this term is used in a variety of ways, I think it best, as a matter of terminological hygiene, to reserve the term for transitions in propositional activity attributable to whole individuals. I do not count the transformations under the biasing principles within the perceptual system as inferences. The biasing principles are laws of perception formation that take computational or information-processing form. Although none of the computations carried out in the visual system are attributable to the perceiver, many of the perceptions computed from the initial registrations of light intensities *are* attributable to the perceiver. Humans and animals have the perceptions that the theory explains the formation of. The point of the theory is to explain human and animal perception.

To review: The visual system's primary receptors are sensitive only to dynamic arrays of light frequencies. The arrays of light frequencies to which the receptors are sensitive are consistent with multiple types of distal stimuli that could (and sometimes do) cause a given type of registration of proximal stimulation. The arrays are not infallible indicators, or even always correct indicators, of the environmental conditions that cause them. This point remains true even when further afferent and efferent input into the perceptual system (such as information about whether the head is moving) is added. Perceptual representation makes mistakes, even if its internal workings are optimal. It makes mistakes (brute errors), even if the perceptual system is making the most of information available to it, given the

standard of veridical representation. The aim of the psychology of vision is to explain how the perceptual system normally gets things (approximately) right, to the extent that it does, on the basis of sensitivity to light-arrays and other types of input, including internal input.

To solve its paradigmatic problem, perceptual psychology tries to find the "biasing" principles governing how the perceptual system produces perceptual states, type-identified by perceptual representations that are veridical in the cases where they are veridical. The theory should also explain misperceptions, especially where they derive from the normal functioning of the system.

The principles are fitted to the function of the perceptual system in representing (providing perception of!) entities in the environment. The relevant entities are the explanatorily relevant distal antecedents of the proximal light arrays. The theory assumes that perception represents elements in the distal environment. This intuitive assumption is grounded in a larger explanatory scheme. What count as potential perceptual objects—as *relevant* distal antecedents—are roughly those that can be discriminated under appropriate conditions and that are ecologically relevant to the individual's fundamental activities—activities such as eating, navigating, mating, fleeing danger.

I want to give two examples of how empirical psychology postulates biasing principles to explain aspects of visual perception.

Lightness constancy is the capacity to perceive achromatic surfaces (ones that are white, black, or some shade of gray) as having roughly the same surface lightness, despite significant changes in the illumination of the surface or other changes in viewing conditions. The ability to see a page with print on it as having roughly the same shade of white whether one is in a moderately lighted interior or in bright sunlight is an example of lightness constancy. Normal outdoor light is over one hundred times brighter than artificial interior illumination. The amount of light coming off the black print outside is over ten times greater than what comes off the white page inside. Yet normally, we can see the white as the same shade outside as we saw it as inside. Humans and most animals with eyes have lightness constancy. It is one of the simpler of the perceptual constancies.

For various reasons this capacity cannot be accounted for simply by appeal to adaptation of our receptors to changes in lighting conditions, or in any other simple reflexive way. For a variety of reasons that I will not go into, much of the relevant ability centers on responses to ratios of light intensities at luminance edges. A *luminance edge* is a sudden and large discontinuity between adjacent registrations of light intensity by receptors in the retina. Thus if a series of spatially adjacent receptors, which map spatially adjacent light intensities striking the retina, produce a pattern of registrations of significantly different levels of light intensity, the receptors have produced a luminance edge. The roughly constant, or averaged, ratio between sharply different light intensities along relatively local edges is the main starting point for the exercise of lightness constancy. It is known that the visual system can compute such ratios. I will not go into how local ratios are used in forming perceptions of whole scenes. I will focus on only one aspect of lightness constancy.

The light intensity that strikes a receptor is a combination of the reflectance of a surface and the illumination of the surface. So luminance edges are produced by a combination of surface reflectances and surface illumination. The receptors just respond to light intensities. Lightness constancy depends on an ability to separate out surface reflectance from illumination. For lightness constancy is a capacity to track achromatic surface reflectance—brightness of the surface itself—through changes in illumination.

A solution to the visual system's problem of separating surface reflectance (the property that is usually most useful to the animal) from the illumination of the surface is facilitated by the fact that some discontinuities in light intensity are caused by discontinuities in reflectance, whereas others are mainly caused by discontinuities in illumination. Some discontinuities in light intensity in the environment are mainly due to changes in illumination. These are called *illumination edges*. Shadows, reflections on glossy surfaces, differences in surface orientation toward the light source, and focused light sources (such as spotlights) produce illumination edges. Other discontinuities in light intensity are mainly due to changes in the reflectance of the surface. These are called *reflectance edges*. Reflectance edges are patterns of sharp changes in luminance caused by changes in reflectance of two adjacent areas. Much of the problem that is solved by lightness constancy lies in separating reflectance edges from illumination edges. The different distal causes must be separated on the basis of registrations of differences of light intensity that are each combinations of reflectance and illumination.

Key to solving the problem is operating in accord with certain biasing principles. Such principles apply to the registrations of light intensities—in particular, to luminance edges. They specify what perceptions are formed given relevant registrations of light intensities. The principles do not always yield veridical perceptions, but they are fairly reliable in an animal's normal environment. The most basic principles underlying lightness constancy are probably shared by all mammals. I will mention three main principles.

The first centers on the degree of sharpness of the luminance edge. In the absence of information to the contrary, the visual system operates under the principle that a sharp luminance edge is due to a reflectance edge in the environment, rather than to an illumination edge. This principle tends to yield veridical separation of illumination from reflectance, for the most part, because in our actual environment illumination edges—for example, from shadows or spotlights—overwhelmingly tend to be fuzzy, whereas reflectance edges tend to be sharp. The principle can yield illusions under special conditions, however. An extremely sharp-edged spotlight shone onto a surface of uniform reflectance will yield a misperception of a region of higher reflectance on a background of lower reflectance—unless there is some further clue to the presence of the illumination.

A second principle centers on the depth relations among surfaces. The principle states that, in the absence of contrary information, if depth information (which is associated with distance constancy) indicates that two regions are not co-planar, then the edge between the regions is an illumination edge, even if the edge is sharp

rather than fuzzy. This principle tends to yield veridical separation of illumination from reflectance, because in our actual environment surfaces at different depths tend to receive different amounts of illumination. Obviously, this principle can yield misperceptions under special conditions.

A third principle centers on the magnitude of the luminance ratio along an edge. The principle states that very large ratios, roughly larger than ten to one, are products of illumination edges rather than reflectance edges. This principle yields veridical separation, for the most part, because given the strength of the main light sources in our environment, illumination edges can produce much greater ratios than reflectance edges can. A white surface usually reflects no more than ten times as much light as a black surface. Ratios of light intensities caused by discontinuities of illumination can be higher than a thousand to one. So if a luminance edge ratio is more than ten to one, it will tend to derive from a difference in illumination, not reflectance.

In color vision, there are further principles for distinguishing reflectance from illumination. They enter into color constancy. But the simple principles governing lightness constancy illustrate how the undifferentiated information available in initial registrations of proximal stimulation by light intensities can be combined with general principles to yield largely veridical perceptions of distal sources of the proximal stimulation. Such principles are present in all visual systems of a certain kind. They are either innate or developmentally automatic. For the most part, such principles are modular and are not subject to much adaptation or modification through "learning."[13]

I turn now to a second example of the postulation of biasing principles to explain the formation of perceptual representations. This is the account of how vision in humans and many other animals determines the *slant of a textured planar surface—the angle away from being parallel to front-on view—from perceptual representations of features of the texture of the surface.* This is a phenomenon very well understood in vision science.

Imagine looking front-on at a rigid white page perhaps twenty inches distant. The white page has an array of circles drawn on it. The circles are equally spaced and of equal sizes. Now imagine slanting the (still rigid) page so that the top slants away from you (and away from upright position) at, say, an eighty-degree angle from vertical. The paper slants so that instead of being front on, it is almost flat. The bottom edge of the page remains where it originally was.

The images of the circles projected on to the retina will be distorted by the perspectival angle. Thus, relative to the images on the fronto-parallel, unslanted paper, the *shape* of the images of the circles further away, on the slanted paper, will be increasingly flattened ellipses (more foreshortened in the tilt direction); the projected *sizes* will be smaller; and the *density* of the images per retinal area will be greater. The visual systems of many animals capitalize on these geometrical facts to produce fairly reliable representations of planar slant from registrations of such features on the retina, and from perceptions of certain distributions of textural elements.

Proximal stimulation of the visual system underdetermines the objective facts about a surface. For the image, codified from the geometrical patterns of light emanating from the circles, projected onto the retina is the product of a combination of the actual shapes of the circles and the slant of the page. An irregular texture on a fronto-parallel surface could produce proximal stimulations that are indiscernible at a given time from the stimulations produced by a regular texture on a slanted surface. Thus instead of a pattern of similar, equally distributed circles at a slant, a page that is straight on could exhibit a pattern with nearly regular circles at the bottom, and increasingly flattened, smaller, and more densely distributed shapes at the top. In fact, patterns of this kind on a flat surface seen straight on can produce the illusion of a slanted surface, if there are no other cues available to the perceiver.

The biasing principles produce, however, perceptual representations that favor the slant of a surface with regularly distributed textural elements over the straight-on surface with irregularly distributed textural elements. The biasing principles take as default position that the distribution of textural elements is regular. Given that default position, a projection of light arrays on the retina that derive from foreshortened textural elements combine with the biasing principle to yield a representation as of regular circular textural elements at a surface slant. The biasing principles are mathematically specific, and closely fitted to the empirical evidence about what slants are perceived from what proximal stimulations deriving from what particular distributions of textural elements.

Thus, vision makes use of cues corresponding to the three effects just mentioned. It allows for distortion of *shape* of textural elements, by taking the *foreshortening* of these elements as being in the direction of surface tilt by an amount proportional to the cosine of the slant of the surface relative to the line of sight. It allows for distortion of *size*-image by *scaling* textural elements, so that the relative size of images of textural elements is inversely proportional to the distance of the elements from the eye. It allows for the change of *density* of texture distribution by making transformations on the principle that *an increase in average density* is roughly proportional to an increase in distance.

The biasing principles take cues of the three sorts that indicate that textural elements exhibit a pattern that (roughly) accords statistically with the way textural elements project on to the retinal image for a given surface slant. And they yield a representation of the surface as being at that slant.

The biasing principles depend for their reliability on the pattern of a texture being *regular*. More precisely, textural elements must be *homogeneous*. The statistical relationships among elements on the surface depend only on their relative positions, not on the absolute position in some global reference frame. The statistics of homogeneous planar textures are approximately invariant over translations in the plane of the surface. The notion of homogeneity is more complex for certain curved surfaces. The basic idea should be clear: distributions of shapes, sizes, and densities of textural elements are statistically about the same in any surface region. The patterns that cause illusion are not homogeneous.

Thus any given textural image produced by a textural pattern is consistent with either a slanted surface with regular pattern or a straight-on surface whose objective pattern matches the foreshortening, scaling, and density images thrown by the slanted surface. The biasing principles produce correct results only if a textural pattern is *homogeneous*. Homogeneity characterizes a large class of surfaces. This is why the visual systems of many animals can determine slant from texture in many circumstances.

There is research about how the three cues are weighted. The third, regarding density, is generally the least reliable cue and is relied upon least. The foreshortening cue, regarding shape, is weighted the most heavily, in most contexts.

This weighting would be justified if the biasing principles gave extra weight to an assumption, other things equal, that the surface textural pattern is *isotropic*. A pattern is isotropic if there is no directional bias in the statistical relations among the textural elements. The relations remain invariant in rotations of the surface itself within its coordinate frame. Isotropy implies homogeneity, but not vice versa. In our example of circles on a page, the textural pattern is isotropic. A page with a regular distribution pattern of parallel lines, all pointed in the same direction, would have a homogeneous but not isotropic pattern. Isotropic patterns give more information about slant, and information from shape-foreshortening will be richest in isotropic patterns. There is evidence that our visual systems operate according to a principle that gives isotropy some weight, and yet more weight if isotropy can be independently confirmed.

This example again illustrates how information available in registrations of proximal stimulation underdetermines physically possible objective situations. Given certain retinal projections—with certain statistical patterns of images of textural elements on something identified as a surface—, the biasing principles yield a perceptual representation as of a slanted surface with foreshortened, scaled, regularly distributed textural patterns. The content that the biasing principle gives to perceptual states—hence the nature of the perceptual states—is dependent on projective geometry and the fact that the textural patterns on surfaces in the physical world are commonly statistically regular. The content and nature of the perceptual state depends on a history of interaction with the regular physical world. The largely innate weightings of the various cues are probably further dependent on the likelihood within the physical world, in which the system evolved, of certain types and degrees of regularity in textural patterns on the surfaces of physical objects.[14]

It must be remembered that the biasing principles are "implicit" in the visual system in the sense that they constitute explanatory laws that descriptively govern transformations within the system. They are not "consulted" by the system and are not principles applied in pieces of ordinary reasoning. They may contain mathematics—governing the nature of a statistical distribution of light arrays, for example—that no perceptual system could be taken to have as part of its representation of the world, or as anything that the perceiver understands. Still, the system's operations are explanatorily described by the mathematically informed principles. The

registrational and representational states and events are the entities that the psychology describes. The content of the representational states is "explicit" in the system, in the sense that this content marks the representational natures and identities of the main entities (the states and events) postulated by the theory.[15] The principles governing transitions among these states make reference to the states and their contents. Such principles include formulae that are not in any way explicit in the perceptual system—much less attributable to the perceiver.

In every case, biasing principles depend on and mirror basic facts regarding space, motion, light, physical objects, that obtain in the perceptual system's environment.[16] They mirror either laws or deep regularities that hold for the most part.[17] Some principles, including some that govern the simpler perceptual constancies, apply to the visual systems of a wide variety of animals, including some like bees or certain reptiles that surely lack propositional attitudes.[18]

The role of these principles in explanation and in determining kinds of perceptual states brings out some of the fine structure of anti-individualism in perceptual psychology. Perceptual states have representational content that makes reference to the physical environment. The natures of these perceptual states—the perceptual-state kinds—are constitutively dependent on the general character of principles governing their formation. For these principles constitute laws governing transactions among the perceptual states in a perceptual system; and the laws are in a reciprocal constituting relation with the kinds governed by those laws. These psychological kinds and laws reflect and are constitutively determined by kinds and deep regularities or laws in the environment. Not only is the presence of the psychological kinds causally explained in terms of evolution and species-adaptation to the environment. The psychological kinds, marked by their representational contents, are also constitutively dependent on laws, patterns, and kinds in the distal environment of the visual system. So the nature and individuation of perceptual states are constitutively associated, through causal relations, with kinds, patterns, and laws in the physical environment.

I emphasize that the laws governing the formation of perceptual states are laws governing the formation of states *with representational content*. Perceptual-state kinds are type-identified in terms of their representational content, together with the perceptual modality (or intermodality). The representational contents of the states are fixed by the types of transactions into which they enter and by the normal causal and discriminative relations that perceptual states and their associated transformations bear to the physical environment. These discriminative relations are often mediated in conscious beings by the phenomenal aspects of perception. But not all such discrimination need involve phenomenality or consciousness. Many perceptual representations, even in conscious beings, are not available to immediate conscious introspection and may be unconscious in every sense.

There is no getting around the fact that basic kinds in perceptual psychology are intentional or representational. Commitment to representations (and representational contents) as marking perceptual abilities is deeply embedded in the theory's

objectives, methods, and explanations. The structure of representations corresponds to structural elements in the abilities associated with perceptual states.[19]

Most of the explanation—including much of the most mathematically rigorous and empirically well-supported explanation—at both the explicitly representational levels and the more "engineering oriented" algorithmic levels—invokes intentional or representational content. In fact, the algorithms would make no sense if they were not algorithms for forming and processing perceptions—states with perceptual content. The fundamental explanatory objectives of the science—including the solution to its fundamental problem—could not be attained if the laws did not govern representational states.[20]

The reliance in perceptual psychology on postulation of representations or representational content does not derive fundamentally from introspection or phenomenology. The reliance derives partly from considering the fact that the paradigmatic problem of the theory of vision is to account for how an individual comes to be in accurate or inaccurate perceptual states. Being accurate is the central representational function of perceptual states. The postulation of representations or representational content also derives from the function of content to mark ability. The abilities that it marks have turned out to be very complex. The processes that lead from registration of the initial light arrays to perception are layered, interlocking, interdependent, and sensitive to a large number of conditions. Attempts to account for perceptual ability while circumventing postulation of representational content have failed in systematic and massive ways, on empirical grounds.[21]

From the point of view of the methods of perceptual psychology, part of what it is to be a perceptual state of a certain kind is to be produced in something like the way that kind of state is produced by the law-like formation principles. Of course, exactly what the laws are is epistemically open. The theory is, however, committed to a general picture of what the laws are like. And the representational perceptual kinds that it theorizes about are not independent, for their identities or natures, from the laws into which they actually enter. The formation principles are the relevant psychological laws. As I argued five paragraphs back, these principles fit the representation to its distal objects in favorable circumstances in the perceptual system's natural environment. More importantly, their very content is explicable only by reference to the way that patterns in the perceptual system's natural environment have affected the nature of the perceptual system and its perceptual states.

It is independently plausible that the nature and correct individuation of perceptual states depends on their relations to fundamental features of the physical environment—features that they represent and help the individual accommodate to. The idea that such states have a nature that is completely independent of the environment that they represent is implausible. From an explanatory point of view, it constitutes wand waving. Either the idea postulates a nature in which representational content is already implicitly included. Or the idea postulates a representational power on the basis of a feature that bears no genuinely explanatory relation to it. For example, attempts to individuate perceptual states in *purely* phenomenological terms

fail to provide any insight into the intentionality of perceptual states. Either they help themselves to representational power associated with our phenomenology, without explaining that power, or they offer a feature, phenomenology-with-representational-content-bracketed, that does nothing to explicate representational power. Reflection on the role of biasing principles in determining perceptual kinds yields a detailed elaboration of empirical aspects of anti-individualism. Such reflection indicates how perceptual anti-individualism informs and is made specific through empirical explanation.

Empirical psychology does not philosophize about how its fundamental representational kinds are individuated. Its fundamental problem is to explain process not individuation. Nevertheless, its kinds are what they are because of the laws governing perceptual states' getting things right to the degree that they do. These laws are essentially concerned with relations between the individual and aspects of the *distal* environment. In solving its fundamental problem, visual psychology relies on general anti-individualist principles, and fills them in in particular, empirically supported ways. Built into the very methods of visual psychology is the presumption of perceptual anti-individualism. The methods of visual psychology are fundamentally the same as those used in the psychology of other perceptual systems—principally hearing and some aspects of touch.

IV. THE BEARING OF THE EMPIRICAL PSYCHOLOGY OF VISION ON THE INDIVIDUATION OF PERCEPTUAL STATES

I emphasize two aspects of the empirical framework discussed in the previous section.

First, the aim of the theory is to explain the structure of *human* and *animal* perception. The theory does not just explain a mechanism of perception or a set of enabling conditions for perception. The theory does not confine itself to providing an account of a causal chain of non-perceptual processes that precede or lie in the background of an individual's perceiving—and then stop there. The theory incorporates what is known about the accuracy or inaccuracy of whole-organism perception. Perceivers' perceptions and perceptual states are not only the end products of a series of processes. They occur at various stages within these processes. They are often maintained within more complex perceptions that are derived from them. They represent distal environmental conditions that, in veridical cases, originally set the processes going.

Many of the perceptual representations attributed by the theory to *human* perception are known pre-theoretically to be perceptions had by humans. There are perceptions of edges, surfaces, spatial relations, colors, textures, motion, objects—which are familiar to common sense and informed introspection. The methodology of the theory includes tests that make use of this fact. In humans, many of these perceptions, though not all, are accessible to consciousness. Many are easily reported.

A sharp contrast must be drawn between perceptions (whether states or representational contents), on one hand, and processes and principles, on the other. These latter are not accessible to the individual, and are arguably attributable only to a subsystem. I will not try to explain the basis for this distinction here. The main point for present purposes is that it will not do to claim that the theory of vision is entirely about something other than vision and visual states of individuals, ordinarily so-called. Fairly early in the processes that it describes, the theory attributes states that are recognizably perceptual and recognizably states of individuals, not *merely* of subsystems.

The second point of emphasis is crucial in what follows. *Holding constant the antecedent psychological set of the perceiver, a given type of proximal stimulation (over the whole body), together with associated internal afferent and efferent input into the perceptual system, will produce a given type of perceptual state, assuming that there is no malfunctioning in the system and no interference with the system.* On any given occasion, given the total antecedent psychological state of the individual and system, the total proximal input together with internal input into the system suffices to produce a given type of perceptual state, assuming no malfunction or interference. Call this principle the *Proximality Principle*.

The primary relevant proximal input goes into the perceptual system. An example of internal efferent input is motor feedback regarding whether the eye or head is moving. Afferent input can be input from other internal sources, presumably deriving from triggered or antecedent internal conditions, psychological or otherwise.

The import of the principle is that given antecedent psychological states, the formation of perceptual states causally depends on nothing more than proximal input and other contemporaneous internal input into the perceptual system. The Proximality Principle is implicit in causal explanation of the perceptual states that are the principal *explananda* of all reasonably well-developed empirical perceptual theories that I know of. It is not particular to any approach.

There is no way to reinterpret the science so as to maintain that explanation of perceptual states derives from distal causes independently of proximal causes, so that types of perceptual states can vary even when proximal stimulation, internal input, and antecedent psychological states remain the same. Causal explanation of the occurrence of types of perceptual states in the science assumes that the effects of distal causes are entirely exhausted by their effects on proximal causes.

The idea that perceptual states causally depend only on proximal stimulations, internal input, and antecedent psychological conditions is basic to the method of the science. Proximal stimulation can be specified in various ways. Usually it is specified in physical terms—such as arrays of light frequencies striking the retina. In any case, proximal stimulation is specified in a way that does not assume any particular distal antecedents in the causal chain. Laws of perception fit this mold.

A corollary of these points bears on non-veridical perceptual states. Since relevantly different environmental distal conditions could yield the same type of prox-

imal stimulation, a given type of perceptual state can be produced by different distal conditions. The accuracy or inaccuracy of a perceptual state—including whether a perceptual state is a successful perception of anything in the environment at all—depends on the distal conditions. So the methodology of all serious empirical theory of vision guarantees that given types of visual state can be veridical in some circumstances and non-veridical in others. A perceptual state can be non-veridical in either of two ways. It can be misperception of a particular. Or it can be failure of perceptual reference—failure to perceive any particular.

Failure of perceptual reference is a topic of systematic empirical research. Studies of *apparent motion* are cases in point. In one type of apparent motion, a pair of static images (images of dots, of two-dimensional shapes, or of three-dimensional shapes) are given to the perceptual system at different places and within certain small time intervals. Individuals perceive the situation as involving motion of a single object between the two places. Depending on the stimuli, individuals erroneously experience changes, during the "motion," of shape, size, color, and other properties. With reference to the spatiotemporal interval between the two places, individuals have an illusory perception as of an event, and even plausibly an object, that is simply not there. For example, if red and green dots flash in different places in certain temporal intervals, the individual will have a misperception as of a moving dot changing from red to green. There is no moving object and no event of change of any object's position or color. It is implausible to hold that the subject is misperceiving an actual dot as moving or changing color, since it is unclear which dot it would be. The subject is certainly having a referential illusion of an event of motion and color change.

Apparent motion is studied not only because it provides evidence about how vision works under normal conditions in which slow, meticulous observation is impossible. It is studied also because it has been fruitful in identifying biasing principles. The biasing principles that lead to these illusions govern the perceptual representation of motion and shape under time pressure. In the absence of input that corrects these default biases, motion is perceived as following certain types of paths.[22]

The methodology takes advantage of the fact that a kind of perceptual state can be produced by a given proximal stimulation, whether or not the standard distal antecedents of the proximal stimulation are present. In cases of referential illusion, the biasing principles can be seen to operate under specially controlled circumstances. The scientist can study the biasing principles isolated from the environmental conditions that they normally serve to represent. The content of the representations and the biasing principles are what they are because of reliable patterns of interaction with the environment in the evolution and ontogenetic development of the perceptual system. The theorist can focus on the nature of the representation without distraction from the environmental causes in *particular* cases. Study of other referential illusions has had a similar empirical status.[23]

Perceptual anti-individualism maintains that the nature of a perceptual state type is what it is only because of a *pattern* of normal environmental causes. That

nature is not dependent on the cause's being normal, or as represented, in a particular case. Perceptual state types involve general abilities individuated in terms of patterns of interaction. They are triggered by proximal stimulation. Causal explanations under causal principles take perceptual states to be determined by proximal stimulation, antecedent psychological states, and other internal processes approximately co-occurring with or subsequent to the proximal stimulation.

Perceptual states are usually approximately veridical in the environmentally normal case. Their natures are determined by the veridical responses, because the representational states are individuated in terms of abilities to discriminate distal features of the environment. They are not, however, tuned infallibly to the distal environment. They constitute the individual's fallible point of view. Their occurrence is determined by local causation and internal states, psychological or otherwise. Typing perceptual states in this way is fundamental to what is known about perceptual states—their causal patterns, formation conditions, veridicality, and failures of veridicality. One of the most basic things we know from the science of vision is that the same perceptual state type can be a perception, a misperception, or a perceptual illusion that fails to be a perception of anything in the physical environment.

Let us pause to reflect on the Proximality Principle. Perceptual psychology, as it is now done, is certainly committed to it. What would it be to maintain that *no* explanatorily relevant perceptual states accord with it? As we shall see, this is the position disjunctivism is committed to. To deny that any explanatorily relevant perceptual states accord with the principle would be to deny that psychological explanation includes causal principles that, apart from malfunction or interferences, ever explain the type of perceptual state of a perceiver only in terms of proximal stimulation, antecedent psychological states, and further internal input. This amounts to a denial of any normal causal explanation of perceptual state types.

Consider a denial that these three factors fully determine *any* perceptual state type. Suppose that the denial rests on the idea that *any* explanation of the occurrence of perceptual state types must depend additionally on the nature of the distal causal antecedents. Suppose that some element, perhaps an individual, in the distal parts of the causal chain leading up to a perceptual state had been exchanged for another element. Suppose that the exchange were to occur in such a way that proximal stimulation, antecedent psychological states, and perceptually relevant internal processes all remained the same. The counterfactual exchange is to have no psychologically relevant effect on these three factors. Such exchange is surely physically and psychologically possible. Suppose that one claimed that in any such case, no resulting explanatorily relevant perceptual state type specific to the two causal chains would remain the same.

Such a claim would deny that *any* instances of perceptual state types causally depend *only* on what is available to the perceiver's proximal sensors together with antecedent internal psychological conditions and relevant internal input. This negative claim would not only deny the actual science. It would also deny that any normal causal psychological explanation is possible. Normal causal explanations in

psychology take the individual as a significant unit, and explain perceptual states in terms of impacts on this individual together with internal conditions, especially psychological conditions, in the individual. The negative claim entails that, in *all* psychological explanation of perceptual states, either (a) explanation is non-causal, or (b) individuals and their bodies (hence proximal stimulations) are not relevant units, or (c) psychological causation involves action at a distance, or (d) perception is not of entities in the distal environment. None of these alternatives is attractive or empirically warranted.

V. EMPIRICAL PSYCHOLOGY AND DISJUNCTIVIST FORMS OF ANTI-INDIVIDUALISM

Some forms of perceptual anti-individualism are incompatible with what is known from empirical science. In particular, they are incompatible with the second of the two aspects of the framework of perceptual psychology just laid out.[24] They are incompatible with the Proximality Principle and its consequences for empirical psychology, and indeed common-sense explanation.

The forms I have in mind entail *disjunctivism*. Disjunctivism makes two closely related negative claims. It claims that there is never an explanatorily relevant mental state type in common between (and specific to) a veridical perception and a referential perceptual illusion. And it claims that there is never a mental state type in common between (and specific to) perception of an object and perception of a would-be duplicate substitute for the object that would be, in the context, perceptually indiscernible to the perceiver. The same claims are made with respect to corresponding perceptual beliefs. Disjunctivism makes these claims because it holds that the particular environmental objects (or lack of objects) that are involved in perception are essential to type-identifying all explanatorily relevant perceptual state types and perceptual belief types.

In discussing the duplication case, I will always assume four conditions: (i) that the perceptually relevant *type* of proximal input is the same; (ii) that the antecedent psychological set is the same; (iii) that relevant afferent and efferent internal processes that provide input to the perceptual system are the same; and (iv) that the perceiver cannot in the context perceptually discern through dispositions or phenomenology the difference in substituted objects.[25]

I do not assume, or even believe, that phenomenological indiscernibility suffices for sameness of perceptual state type. I have several reasons for avoiding this assumption. I will mention only one. I think that a phenomenologically indiscernible hallucination, produced by direct stimulation of central areas of the brain, rather than through visual pathways, might well not even count as a perceptual state. This case is ruled out by the assumption that proximal input is the same in the duplication and referential illusion cases. So phenomenological indiscernibility

is not the key condition on these cases. When I speak of cases that are *contextually indiscernible to the perceiver*, I am using shorthand for cases in which the first three conditions just stated apply. The fourth condition is, I believe, necessitated by the first three conditions.

I also do not assume that all perception has a phenomenology. There is some evidence to the contrary.[26] So the fourth condition could in certain cases be regarded as fulfilled vacuously.

Our concern is with disjunctivism's denial of common, explanatorily relevant perceptual state types and perception-based propositional attitude (belief) types, in the three sorts of cases—the original case, the duplicate-substitution case, and the referential illusion case.[27] Disjunctivists commonly add that there is no phenomenological or qualitative character common to the perceptual states that occur in the three cases. This denial derives from maintaining that there is no phenomenological property distinct from the representational content of the perceptual states. I regard this additional view as very implausible. Holding that *in these cases* phenomenally indiscernible states are nevertheless phenomenally distinct seems to me very hard to motivate independently. Since I am not focusing on issues about phenomenology or qualia, I will not pursue this point. In assuming, in my fourth condition (d), that the cases are phenomenologically indiscernible to the perceiver, I mean only that nothing in the perceiver's reactions indicates that whatever phenomenological differences there may be in the different cases are discernible for him.

Suppose that one sees an object. Then as one blinks, the object is removed and replaced by a duplicate that one cannot discern from the original in the context. As one blinks again, the duplicate is removed. One is induced by an abnormal confluence of light to have a visual illusion as of an object that is indiscriminable from the originally seen object. The light array hitting the retina is, we shall suppose, type-identical in the three cases—or at least sufficiently similar that the perceptual system cannot make use of the difference. Disjunctivism holds that no explanatorily relevant type of perceptual state or perceptual belief that bears specifically on the three situations is common to any two of the three situations. It holds that in such cases, what seeming to see an object amounts to is a "disjunctive" state of affairs, not a kind of state: either the individual sees object 1, or the individual sees object 2, or the individual has a perceptual illusion of an object; *and* no explanatory perceptual state is common to seeing and referential perceptual illusion—or to the seeings of duplicate objects.

Of course, in counting states mentioned by both disjuncts *perceptual*, one has counted them members of a kind. Similarly, insofar as the states are indiscriminable, one can count them members of a kind defined by indiscriminability. Kinds can be regarded as cheap. Fuller expositions of disjunctivism concede these points, but claim that such kinds are of no explanatory significance and are not "fundamental" kinds of perceptual states. I shall take disjunctivism in this way.

What is at issue is the constitutive *negative* claims of disjunctivism. What is at issue is the denial of an explanatorily significant perceptual state common to veridical perception and referential perceptual illusion. The positive claim that veridical

perceptions and referential illusions are members of different kinds need not be contentious. One can allow that veridical perceptual states make up an important kind (with relevant specific sub-kinds) and that there are non-veridical or illusory perceptual states that make other such kinds. One might think of states and state kinds in a flexible way. There is certainly a referential relation to particulars in all cases of seeing and of veridical visual belief. One might just count being in such relations as states of the individual.[28]

Whether this flexible approach leads to insight is an interesting issue, but it is not our issue. Our issue is whether the disjunctivist denial of common explanatorily relevant kinds of states across the three sorts of cases is correct. It cannot be emphasized too strongly that disjunctivism is not merely the claim that there are mental differences among the three states. In any actual cases, there will trivially be token differences. Some of these token differences, as I shall explain later, are relevant to a certain aspect of representational content. Disjunctivism denies that the relevant perceptual experiences have any explanatorily relevant *type* of perceptual state in common. This is the view that I shall criticize.

Disjunctivism is implausible. Not only common sense but the scientific knowledge that I have outlined support this initial evaluation. Disjunctivism is incompatible with the Proximality Principle, which is basic in nearly all scientific study of perception.

Given that different distal causes can yield proximal stimulation that is relevantly the same, perception of entities in the distal environment is fallible. The Proximality Principle, together with this empirical fact, entails that the same type of perceptual state can be veridical or non-veridical, perceptually referential or non-referential. And the same type of perceptual state can on different occasions be a perception of different, contextually indiscernible particulars. The principle and these entailments are fundamental to the explanatory method and the basic results not simply of particular theories but of the methodology of perceptual psychology itself. Given what we know from empirical psychology, we know that disjunctivism is not a true account of perceptual states.

Disjunctivism entails that token distal differences, in the causal chain leading to perceptual states, that make no relevant difference to proximal stimulation, or to other internal processes that provide input into the perceptual system, or to antecedent psychological states, determine differences in perceptual state types. It further denies that *any* explanatorily relevant perceptual states are caused entirely by these three factors. This view is not only undermined by scientific knowledge. It controverts well-entrenched views about the form of causal explanation in psychology.

Disjunctivism may have been encouraged by running together kind-individuation, causal principles, and particular causal relations on particular occasions. These matters are complex. I want to say just a few things about them here.

There are hypothetical cases, discussed in the twin-earth literature, in which two individuals with similar bodies have relevantly similar proximal stimulation and yet are caused to go into different psychological state types.[29] The key difference between these cases and those required by disjunctivism is that in the twin-earth

cases the *antecedent* psychological states are different in the two individuals. Antecedent patterns of causal interaction in the twin environments mandate differently individuated psychological states. So the similar proximal causation affects individuals whose psychological states (and psychological state-formation principles) are already different. The production of different psychological states in these cases is no surprise. So the Proximality Principle is preserved in these cases, but not in those entailed by disjunctivism.

Psychological state types are individuated in terms of reliable *patterns* of causal interaction. The substituted duplicate perceptual referents bear on different *occurrent* effects on the psychology of a perceiver, but not on different perceptual state types that enter into general causal explanations.

The positive conception of an explanatory perceptual state type embodied in the disjunctivist view is a special one. The positive claim is that there are perceptual state types that are sensitive to (or vary with) distal differences that make no difference to the (independently specified) type of proximal stimulation available to the perceptual system, or to the antecedent psychological states, or to further internal input into the psychological system. As noted in section IV, explanation that invokes such state types is either non-causal, or involves action at a distance, or does not take perceptual referents to be in the distal environment or demotes the role of proximal stimulation in determining psychological states so as to suggest that the individual's body is not a unit for causal principles. I do not reject such conceptions of explanation out of hand. It is, in any case, an empirical matter where they have any purchase. What I firmly reject is the disjunctivist denial that there are fundamental, explanatorily relevant perceptual state types that accord with the Proximality Principle. It is wildly implausible and contrary to empirical knowledge to hold that these contextual occurrent differences among particulars—differences that have no relevant effect on proximal stimulation—govern *all* individuation of explanatorily relevant perceptual state types.

The patterns that make both individuation of state types and causal principles possible are, of course, grounded in particular causal relations between occurrences of states or events. There are common-sense causal explanations that simply consist in singular causal statements. Sometimes these statements cite distal causal relations. Thus we say that Annie's perception of and grasp of the apple was caused by Bill's placing the apple on the table. Such ordinary explanations are clearly compatible with the Proximality Principle. They certainly do not deny the existence of more general, fuller causal principles that give more insight into general mechanisms as to how this particular causal interaction worked. They do not deny that causation is ultimately proximal or that some causal psychological principles explain how proximal stimulation is converted into perceptual states via internal psychological principles together with other internal input into the perceptual system.

In my judgment, disjunctivism is worth discussing not because it has any chance of being true. It is worth discussing because it provokes reflection on the motivations for perceptual anti-individualism. I shall discuss these motivations in section VII.

It is fairly unusual, at least since the days of Descartes and Newton, for philosophical views to be as directly at odds with scientific knowledge as disjunctivism is. Hegel's claim that there are seven planets comes to mind. It is natural for proponents of disjunctivism and even neutral observers to inquire whether matters might not be so straightforward. Perhaps the science is too young to be counted on. Perhaps the philosophy is making a claim that is not incompatible with the science, because the science is really about a different subject matter than the philosophy.

As to the youth of the science, I believe that any fair-minded comparison of the specific explanatory accounts of vision science with the arguments of disjunctivists will indicate the intellectual and empirical superiority of the former. More importantly, the Proximality Principle that disjunctivism is incompatible with seems necessary to any explanation that would show how perceptions are formed on the basis of proximal stimulation. It is hard to see how there could fail to be perceptual kinds whose individuation is in accord with the principle. The perceptual system can make use only of what is available to it through proximal stimulation and what is present in the background psychology or provides additional *internal* input into that psychology.

It has been claimed that empirical psychology of perception is not about perception but is merely about antecedent enabling conditions of perception. Some claims to this effect are not worth discussing. I will discuss one such claim, intimated by Evans and articulated by McDowell, in the Appendix. I believe that the claim is implausible on its face and has received no serious support. The scientific theory of perception is a theory of the perceptual states and capacities of individuals.

No proponent of disjunctivism has, in a careful and informed manner, confronted the facts from psychology that I have been discussing. No reason has been given to overturn the fundamental modes of explanation and ways of individuating perceptual states and perceptual beliefs that are well entrenched in empirical psychology. Nor has this body of scientific knowledge been shown to be irrelevant to the philosophical issues, or to perception as we ordinarily understand it. The core considerations that inform the science are available to common sense. Disjunctivist forms of anti-individualism have lost touch with fundamentals of what we know about mental states.

The considerations offered in support of disjunctivism are unimpressive. Many depend on phenomenological reflection and strong use of metaphor—appeals to "direct touch with reality" or to what perception "makes manifest." Some rest on programmatic views—such as the view that disjunctivism is needed to rescue us from scepticism. Some are weak arguments in the philosophy of language. Many rest on misunderstanding of what form opposition must take—engaging in criticisms of sense-data views and of an archaic and variously formulated "argument from illusion." I will reserve for the Appendix detailed discussion of prominent arguments in favor of disjunctivism.

I want to remark on one motivation for disjunctivism. The usual motivation is a concern to insure that we make "direct" perceptual contact with the physical

world. The doctrine was originally an overreaction to veil-of-perception views of the British empiricists.

The veil-of-perception view holds that the primary objects of perception are internal mental items—or other non-environmental items. The primary referents are sense data or phenomenal qualities in the mind. On such a view, experience of the physical world is held to be indirect, both in not being the first object of perceptual reference and in being the product of an epistemically evaluable inference from more fundamental objects of perception.

The veil-of-perception view is certainly mistaken. It fails to understand that the representational content of perceptual representations is fixed by the function of the perceptual system in providing information about and aiding interaction with the physical environment.

Perceptual representation does not produce a "veil of ideas," because the first objects of perceptual reference are physical entities in the environment. This is a sense in which perceptual representations are "directly" about the environment: They are *referentially non-derivative*. Perception of distal physical entities does not go by way of reference to entities closer in. Where there is no environmental referent, there is (except in a few special cases), no referent. It is a confusion to count illusions as perceptual objects. It *leads to* confusion to talk of "intentional objects." Even conscious sensations and perceptual representations (conscious or unconscious) are items that we develop an ability to conceive and make introspective reference to only after we have been perceiving physical objects.[30] Perceptual consciousness is fundamentally of the physical world.

Perception is "directly" about the environment in a further, corollary sense: It is *non-inferential*. Perceptual representations are the products of a complex set of transformations that begin with registrations of light arrays. Registrations are not perceptions. Neither they nor these transformations are attributable to the perceiver. They are events in a perceptual subsystem. Moreover, the transformations are not acts. I take these to be sufficient conditions for distinguishing the transformations from inferences. None of these transformations begins with the perception of, or as of, anything more basic than those physical entities in the environment.[31]

The veil-of-perception picture is empirically and philosophically a dead position. All present empirical theories of perception and nearly all serious philosophical positions reject it.

VI. DISJUNCTIVISM AND FALLIBILITY

A problem with disjunctivism that is closely associated with its incompatibility with empirical explanation has to do with what we know about epistemic and representational abilities of individuals. Fallibility and limits on perspective are fundamental features of finite minds. I believe that all perceptual representations apply fallibly to their referents, in any given instance. This is because perceptual representations

mark perceptual abilities that are fallible. Disjunctivism stymies any natural way of acknowledging the referential fallibility of perceptual states and perceptual beliefs.

In a sense disjunctivism counts the "state" of seeing a given object, say a ball, as referentially infallible. For disjunctivism allows no possible situation in which the "state" type that one is in by virtue of seeing that particular ball could be in error about the existence of the object of perception—that particular ball. Nor could the state make reference to any contextually indiscernible duplicate. For one would not be in the "state" of seeing the ball if there were no referent, or a different referent.

There is a common understanding of seeing according to which seeing does entail a perceived referent. If one sees, there is an object that one sees. Insofar as seeing is further counted a state, it is a referentially infallible state in this sense: no instance of that state could fail to have a perceptual referent. We do not think of our capacity to see as referentially infallible. What we understand by a capacity's being referentially fallible is that it is realized in state types that could have been mistaken. The same state type could have failed to have a referent. This understanding requires that there are perceptual state types that underlie or are involved in cases of seeings, that could have failed to have a referent—lacked a seen object. So even though seeing is commonly understood as factive with respect to the existence of a seen object, seeings involve state types that could have failed to be seeings. They could have been referentially mistaken. These non-factive, referentially fallible state types are the perceptual states recognized by common sense and empirical science.

Disjunctivism denies the existence of such state types. It claims that there are no referentially successful perceptual state types that could have been unsuccessful, and no referentially unsuccessful perceptual states that could have been successful. One can imagine a different account of what it is for perception to be fallible. One could hold that to be fallible is to be indiscernible from a mistaken state. This seems to me, quite obviously, to give an account of a different sort of fallibility—a fallibility in discerning the nature of one's states, not a fallibility in the first-order capacities and states themselves. I think that such a move is clearly philosophically unattractive. For one thing, animals with no reflective powers at all are clearly still fallible in their perceptual states. For another, the view involves a distorted explanation of false (or truth-valueless) but warranted perceptual beliefs. I shall not pursue this matter here. I believe, however, that this problem is symptomatic of the fact that disjunctivism is out of touch with common as well as scientific understanding of human abilities.

VII. VERIDICALITY, PERSPECTIVE, AND ABILITY: ABILITY-GENERAL AND ABILITY-PARTICULAR REPRESENTATION

Perceptual anti-individualism holds that the nature of many representational states, including all perceptual states and perceptual beliefs, is constitutively associated with patterns of causal relations between the environment and individuals. What it

is to perceptually represent some aspect of the world is inseparable from patterns of causal connections between the representer, or the representational system, and aspects of the world. Conditions that constitutively determine representational success are fundamental in the individuation conditions of representational states. These conditions are constrained by psychological and epistemic abilities of the individual, by the limits on the individual's perspective and powers.

I have mostly focused on ways that anti-individualism must accord with causal explanations of visual perception. The relevant explanations are not anecdotal. They do not primarily explain particular events. They explain patterns, tendencies, general abilities, and so on. Representational state types have to be stable from instance to instance to provide a basis for explanation. Important perceptual state types or kinds remain stable across misperception, indiscriminable differences in reference, and referential failure. Whether a given object is seen, or a duplicate object is seen, or a contextually indiscernible perceptual illusion is undergone, the transformations from the registration of the light array to the perceptual representation are, for psychological purposes, type-identical. The sequence of states is type-identical. Many of the patterns of grasping, pursuing, fleeing behavior are the same, described in ways that include the psychology and teleology of the behavior, but not the occurrent relational aspects of it. Some successful explanation has discovered that psychological processes, perceptual representations, and perceptual states remain constant across these circumstances—given relevantly fixed internal inputs and antecedent psychological set.

In cases of perceptual illusion and duplicate substitution, the basic perceptual explanations are constant. In these cases, what vary are particular individual instances. They do not affect general abilities to represent the environment.

Yet, of course, there is a difference between seeing an object one moment, seeing a duplicate the next, and having a contextually indiscernible perceptual illusion the moment after that. A belief of the form *Franz bought that tomato* (where *that* is backed by a perceptual concept or a perception) might be true. Under a switch of a duplicate tomato, and a second reference to that one, a belief of the same form and type might be false. Suppose that there follows a perceptual illusion of a tomato that is contextually indiscernible from the original veridical perception. Suppose that the individual forms a belief of the form *Franz bought that tomato*, where no successful reference is made to any tomato. Then whereas the original belief is true, the subsequent belief is false or truth-valueless.

Since truth (not truth-of and not truth-at-time-t) is basic to propositional representation, the beliefs' representational content must be distinguished. Representational contents not only help type-identify psychological states. They also form a basis for semantical evaluation. The representational contents of the perceptual states and the perceptual beliefs must also be distinguished. This requirement derives from the individuation of perceptions and perceptual beliefs partly in terms of conditions in which they are veridical. If one representational content is veridical and one is non-veridical, they embody different conditions that must be met if they are to be veridical.

One might think of the same perceptual belief or perceptual representation as being true (or veridical) at one moment, or in one context, and untrue (or inaccurate) at another. I think, however, that the notions of *truth (veridicality) at a time*, *truth (veridicality) in a context* are not basic notions as applied to beliefs and perceptions. I think that beliefs are true or false *simpliciter*. Perceptions are veridical or non-veridical, full stop. To account for truth conditions and correctness conditions, the contents of the beliefs and perceptions in the three cases must be distinguished. There is a singular element in the representational perspective that represents the particular tomato and nothing else.

The singular element in the representational content is required not only by the primacy of truth and perceptual correctness. There are the further considerations mentioned in section I that require including a context-dependent singular element in perceptual content. The practical and representational functions of perception connect the perceiver with particulars in the environment. Representational content must mark—help individuate—the perception of particulars when these functions are fulfilled. Such content must mark the singular representation of particulars in a scene at hand, in distinction from a scene that would be contextually indiscernible to the perceiver.

Particulars cannot be uniquely characterized in perception by context-independent, general representations of properties and relations. Sophisticates can sometimes specify empirical particulars through context-independent means in thought. But they cannot always do so. Normally they do not do so. General attributive categorizations in perception and general attributive concepts in thought are applied to particulars by irreducibly context-dependent means. Context-dependent application to particulars in both perception and perceptual belief has a singular function and is marked by a singular representational content, which can be evaluated for representational success or failure. I label both sorts of representational contents with the term that also labels the acts or events that the representational contents mark and by reference to which these particular kinds of representational contents are individuated. They are *applications*—perceptual applications and applications in thought.

If a person looks at a scene, and an object in it is exchanged with a contextually indiscernible object, the first and then the second object is seen—even though the individual perceiver is unaware of a difference. Different things are seen and different perceptions or perceptual beliefs occur. One belief may be veridical, while the other is not. So different context-dependent singular elements must occur in the representational contents of the perception and the perceptual belief.

Such duplication of scenes is certainly physically possible. Objects at a distance are frequently not seen with such sharpness that a substitute (during a saccade, or as one's attention shifts and then shifts back) would be contextually discernible. Relevant proximal stimulations might even be of the same type as those from the originally seen object. In tracking moving objects, say flies, in a complex scene with distractors, it is quite possible for one contextually indiscernible fly to take the place of another. Perceptual beliefs regarding the two flies might differ in truth value.

Similarly, in accounting for belief, we must distinguish between a belief in a self-identity *that*$_1$ *tomato is identical with that*$_1$ *tomato* and a substantive claim that might be mistaken, because it involves two logically separable acts of reference (deriving from two perceptions).

For example, someone might make two, logically distinct references in an identity thought. The thought might be true. Such thoughts might also turn out to be untrue—if a contextually indiscernible duplicate were substituted, or if a perceptual illusion were induced, between the first and second acts of reference. Such beliefs have to be represented as having the form *that*$_1$ *tomato (or fly) is identical with that*$_2$ *tomato (or fly)*. The subscripts mark not different objects (for a belief of such a form can be true) but different acts of reference.

Here we have a version of Frege's point that mode of presentation must be distinguished from referent. Given that duplicates and illusions could make a belief false— wherever there are logically distinct events of reference—, there is pressure to recognize different representational contents for different applications, even in the case of tracking that is actually successful. Where there are such possibilities, psychology will need to explain how successful tracking succeeds.

To account for possible differences in veridicality among cases of contextually indiscernible duplicate switching and contextually indiscernible perceptual illusion, one must distinguish actual occurrences of context-dependent singular elements. These facts are probably the main defensible impetus for disjunctivist views. The representational contents of beliefs and perceptions involving true identities, duplicates, and illusions differ.

Such points may seem in tension with considerations developed in this paper. Reflection on psychological explanation and the fallibility of our epistemic abilities presses in favor of counting the states with these different veridicality values and different truth-values as type-identical. Reflection on accuracy and truth conditions press in favor of counting the representational contents as different. Representational contents mark states. So it might seem that the states must be different.

The first step to resolving the apparent tension is obvious. One must distinguish types of representational content and representational state, on one hand, from token-individuated representational content and representational states, on the other. Disjunctivism derives primarily from concentrating on reference to the exclusion of explanation. It derives almost equally from conflating type and token elements in individuating mental states and their associated representations.

Consider a belief of the form *Franz bought that tomato*. The belief rests on a perception as of a tomato. An illusion might occasion a type-identical perception and a type-identical belief. A contextually indiscernible duplicate could be substituted, occasioning a type-identical perception and type-identical belief. These beliefs are equally warranted. The perceptions are formed from type-identical registrations of light arrays. The perceptions and beliefs ground many of the same explanations. They are covered by many of the same psychological principles. Type-identical representational contents mark, or type-identify, the same representational state types and abilities.

The beliefs differ in referential values and truth values, however. The perceptions differ correspondingly, in their reference. Suppose that the first belief is true, the second truth-valueless (or false), and the third false. What differs among these perceptual and belief states is nothing about their general type. They are formed from the same perceptual categories and concepts. They use the same demonstrative singular representational abilities and demonstrative representation types. What is different is a token-dependent difference in the *applications* of the context-dependent singular elements in perception and belief. Thus the different occurrent applications of "that" are marked in the representational content of the belief. Analogous differences in token-dependent singular applications of the perception are marked by context-dependent singular elements in the perceptual content. These are differences in occurrent representation. *Applications* are, paradigmatically, occurrent acts or events which realize singular, context-bound, referential abilities.[32]

Two large categories of representation must be distinguished. The first category is what I have been calling pattern-based representation. This category comprises perceptual and conceptual representational types that mark, or type-identify, general representational abilities, abilities that are *freely repeatable*. These are standing abilities that are not individuated by reference to any *particular* token exercises or applications. Both perceptual representations of kind, property, and relation types and all paradigmatic conceptual representations fall into this category. I call such representations "*ability-general*," or context-free, since they type general psychological abilities—those not individuated by reference to any particular token acts or events.[33]

"Ability-general" is a more precise term than the term I have been using, "pattern-based representation." The relevant representations are not distinguished by whether a pattern is represented. A "pattern-based representation" or ability-general representation can represent a particular, even a particular occurrence. A complete definite description can refer to an occurrence. But the ability underlying the complete definite description need not be constitutively tied to any particular occurrent act, or exercise of a psychological state, or any particular representational event. One can acquire the ability through any of various disjoint sets of events, where the events in the different sets need not even be causally related to one another.

The concept *is orange* is an ability-general representation. One person's mastery of the concept could be individuated by reference to interactions with orange things (and other psychological states) in Africa. Another person could simultaneously learn the concept through interacting with orange things in Canada. There need be no chain linking the two persons' masteries with some ur-event-particular. Thus although the individuating conditions are similar in type, no specific, particular events are essential to their being the same abilities, type-identified by the same representation.[34]

Most concepts and all ability-general *perceptual* representations are general in a further sense. They are capable, according to their content, of applying to various satisfiers of the representational type. They are true of, or veridical of, or applicable to any number of entities. I call such representations "*semantically general*"

representational contents. Most primitive predicative concepts are semantically general. The concept *is green* is open to applying to numerous green entities according to its content, even if there were in fact only one instance of green in all the world. By contrast, concepts expressed by a complete definite description, the concept *5*, and the concept *is identical with 5* are ability-general, but not semantically general.

There is a third type of generality—formal or syntactical generality. The unapplied demonstrative concept *that* marks an ability to apply other concepts to particulars. It is syntactically singular, but ability-general and semantically general. The concept *5* and concepts that are expressed by definite descriptions are syntactically singular and semantically singular, but ability-general. It follows from what I have said that ability-generality is to be distinguished both from semantic generality and from syntactic generality.

Ability-general representations constitute the first category that I advertised five paragraphs back. The category I want to distinguish from it is that of what I have called occurrence-based representations. A more precise term for these representations is "*ability-particular representations.*" Ability-particular representations mark, or help type-identify, particular, specific acts or events of application. They type-identify an ability or act in terms of some specific occurrent act or event (or sometimes acts or events). Applications may be acts in thought (applications of concepts) or events in perception. Applications are always applications of ability-general, semantically general representations. Applications purport to be acts or events of context-dependent reference. Normally they refer to concrete particulars. I think that they can also refer to abstractions, but not in perception.

Ability-particular representations can be parts of propositional representational contents. An example is an element in the thought content that corresponds to a believer's occurrent, context-bound act of applying *that tomato* to a particular tomato, in the belief *Franz bought that tomato.* The ability-particular representation is not only to be contrasted with the ability-general concept *tomato.* It is also to be contrasted with the ability-general, semantically general concept *that.* The concept *that* marks a general ability, individuated not in terms of any particular events, but in terms of a capacity to apply other concepts (like *tomato*) to particulars. An application of *that tomato* makes the propositional content of the belief true or false. In some cases, the representation that corresponds to the act of application can be regarded simply as that very act. For reasons that I will get to shortly, I think it more generally correct to take the representation as an abstract type. In any case, it is a type individuated in terms of a particular occurrent act or event (or sometimes particular acts or events).

Another example of an ability-particular representation is an element in the content of a perception as of a particular red, spherical-shaped object. This element marks the occurrent event of exercising the relevant perceptual abilities in response to sensory stimulation. The element functions to single out a particular object, though it may fail to refer. This event is necessary for singular perceptual reference to a particular object. The event is the application of ability-general, semantically general, syntactically general perceptual contents—perceptual attributives. The con-

text-bound contents that mark applications always combine with ability-general representations in marking representational states. They are, however, a fundamentally different type of representational content. They are individuated in terms of specific occurrent perceptual events.

The representation that marks an application is, I think, best taken to be an abstraction tied for its identity to occurrent events. The representation can mark a memory of a perception. The representation or representational content can mark a mental file, or even an element in an interpersonal chain of thought. Such ability-particular representations are still individuated ultimately in terms of a particular, specific token act (or acts) or event (events). They are not individuated in terms of general abilities or freely repeatable patterns. All instances of such a representation must be individuatively tied by memory or interlocution to some particular act(s) or event(s). The states marked by the representation are thus not *freely* repeatable. Such token-individuated representations in thought are expressed by particular token uses of demonstratives like "that," and by pronomial occurrences taking such tokens as antecedents. As noted, analogs of such demonstrative-applications occur in perception.[35]

Token-individuated singular representation in perception and belief must be differentiated when referents are actually different. Different actual referents require different applications. Similarly, an application with a referent and one without a referent must be distinguished. In the first place, certain ordinary explanations of the particularities of events may use the distinction. These are mostly not the general explanations of perceptual psychology. They are, of course, often equally legitimate. In the second place, semantical evaluations differ. One perception or belief may be veridical (or true) while the other is not. The truth or veridicality conditions must differ.

Such token-individuated context-bound singular representations can differ even when the referent does not vary. As noted, this situation may occur in certain tracking situations or in reidentifications—either in perception or in empirical belief. The difference in application-representation occurs if there is a psychologically relevant, logical possibility that the individual might have been mistaken in taking the object to have remained the same.

Nothing in the singular token-application *specifies* the object, or has a nature that is specific to that object, although the token application is guided by semantically general perceptual or conceptual representational contents. In perception these general, guiding representations never uniquely determine an object in such a way as to guarantee its uniqueness in the world.

Perceptual reference that fails (and produces illusions) can no more be assimilated to purely descriptive, context-free reference than can successful perceptual reference. Yet, clearly, the cognitive context of *different* failures of perceptual reference must be differentiated. The differences have semantical relevance and can bear on explanations of particular events. In this sense, individuation of applications is not dependent on there being a referent.

Recognition of the fallibility of any given perceptual token application supports non-object-dependent individuation of application tokens that in fact succeed in

referring. I discussed this fallibility in section VI. The fallibility lies not in our capacity to identify which perceptual state we are in, as disjunctivists aver, but in our perceptual capacities. One could have been in the same mental state type and engaged in the same application, even if a duplicate object had triggered the application—or if the application had failed to refer. One's perceptual system would have produced the same state types and, by one reasonable method of individuation, the same application token—in relevant counterfactual cases. What is crucial is to distinguish applications that *actually* apply to different objects, and those that succeed from those that fail to apply.[36]

The nature or essence of the token-individuated representation is not tied to the referred-to particular in the same way that the nature or essence of a type-individuated representation is tied to the type (property, relation, or what not) that it is representationally tied to. The concept *tomato* can be veridically applied only to tomatoes. The percept *green* can only be veridically applied to green things or areas or color instances. The same token-individuated application event could have been a response to a different individual object.[37] No psychological law differentiates the cases. Imperfect sensitivity to possible illusions or duplicate substitutions is the nature of our condition.

For reasons just given, some empirical applications should be individuated in a way that leaves them independent for their identities from whatever object they in fact refer to. Such applications are not object-dependent. Individuation of representational tokens as well as types is aimed at accounting for fallible ability and limited perspective. I qualify this point in three ways.

First, some singular representational contents, including some applications, are certainly object-dependent. Singular concepts expressed by numerals are individuated in such a way that their referents, the numbers, are essential to their identities. Singular applications of the first-person concept and perhaps applications of certain other indexicals are also thus individuated.

Second, the non-object-dependent individuation of ordinary applications in perception and empirical thought does not exclude a narrower form of individuation that is object-dependent. There may be explanatory purposes that warrant postulation of applications that are individuated in a finer-grained, object-dependent way. It is just that our understanding of psychological ability, including fallibility, and many psychological explanations are best served by individuating applications in ways that make the referent of applications dependent on contextual matters that go beyond the essence and identity of the psychological act or occurrence. The main laws of the psychology of vision are couched in terms of ability-general representations. Those laws are neutral as to whether applications are object-dependent or not. My contention is that further considerations argue for a form of individuation that is not object-dependent, and that no good reason has ever been given for holding that all empirical applications are object-dependent in their individuation conditions.

Third, the primary error of disjunctivism is independent of how to individuate ability-particular, occurrence-based representations. The primary error is the claim that there is no explanatorily relevant perceptual or perceptual-belief *type* common among cases of perceiving an object, perceiving a contextually indiscernible duplicate, and having a perceptually indiscernible referential illusion. There are explanatorily relevant psychological states in common among these three types of cases. The best explanations that we have center on states that are common in their ability-general aspects. Token differences among the states do not affect their sameness of type in this sense. This error is abetted by failure to distinguish the two types of representation. Error could have been avoided by reflection on the Proximality Principle and on psychological explanation.

To summarize: psychological explanation, semantical reflection, and consideration of the fallible and perspectival character of our abilities motivate a distinction between two fundamental kinds of representational content.

One kind marks general abilities. These are the abilities that psychology primarily attempts to provide explanations of. Perceptions that derive from registrations of the same type of light array and other proximal and internal input, given a fixed antecedent psychological set, yield *type*-identical perceptual states and perceptual representations. These identities hold even though the proximal input might be produced by different perceived duplicate objects or by no objects at all.

The other kind marks contextual occurrences. Different instantiations of a perceptual state or belief which have different referents, or which fail to refer, are marked by different representational contents containing different token-individuated representations. These representations mark different applications with different semantical or referential relations to particulars.[38]

Perceptual anti-individualism is fundamentally about the way general representational abilities and states are individuated. Patterns of causal interaction in the individual's or species' history are essential for fixing the nature of types of representational states. When one considers representational elements that are individuated in terms of particular token events of interaction, one must not lump them together with pattern-based individuation of representational types.

Anti-individualistic individuation is present even for token-individuated representations (and hence token-individuated aspects of representational states). If different particulars are *actually* referred to, the token applications that do the referring must be differentiated. If one application *actually* has a referent and one fails to have one, the applications must be differentiated.

Why are applications individuated in a token-oriented way? It is because they mark the individuality of an encounter. The psychological elements in the encounter that are subject to lawful patterns are the elements marked by ability-general representations. From the point of view of understanding patterns of use of available information by perceivers and their perceptual systems, whether an object or its duplicate is perceived on any given occasion is accidental. Similarly, insensitivity to

certain referential illusions is simply part of the limitedness of the individual's perspective.[39] Veridicality remains primary in the individuation of the state types. Those psychological state types do not, however, guarantee veridicality or even reference in all contexts and all instances.

Differences among applications mark contextual particularities. Referential success or failure—veridicality or illusion—can depend on the individuality of the contextual encounter. Applications do not, in general, correlate with law-like relations or types of ability in interacting with the environment. There is a place for the individual, for the sheerly contextual, in the function of perception and perceptual belief—and through them, much of the rest of our cognitive systems. Along this distinction between occurrent and pattern-based individuation runs a central divide between two kinds of representation, and two aspects of perception.

APPENDIX: CRITICISM OF VIEWS THAT ADVOCATE OR ENTAIL DISJUNCTIVISM

I said in section V that disjunctivist views are often motived by rejection of the veil-of-ideas view of perception. Nearly all serious theories now hold, and should hold, that the objects of perception are not ideas or percepts. They are ordinary physical objects and properties. Still, rejection of this outdated picture motivates many disjunctivists.[40] The transition from rejection of the picture to embracing disjunctivism is not cogently supported. In the early versions of disjunctivism, opposing views were sometimes simply assumed to hold that the primary objects of perception are mental items. More recent versions are still often influenced by residues of this assumption. I believe that rejecting veil-of-ideas views gives no support to disjunctivism, whatever.

There are two main varieties of disjunctivism—two views that entail disjunctivism. One, with the older pedigree, is naive realism. Naive realism holds that in veridical perception, there is no *representational* content of the perceptual state. The only "content" is the entity or entities that are perceived. These are normally physical objects or properties. They are not representational. Often metaphors are invoked: It is said with fervor that no representations lie "between" the perceiver and the objects seen. On the direct realist view, seeing is supposed to involve nothing more than a simple relation between the perceiver and the object seen—full stop. The relata of the relation are purely the perceiver and the objects or properties that are seen. The perceiver's perceptual "state" consists purely in this relation. In the case of perceptual illusions, there is some state that is phenomenally indiscernible from seeing, but counts as a different state. Perceptions of different, contextually indiscernible individuals constitute different states, since their relata are different.

The key disjunctivist claim entailed by naive realism is negative: No specific explanatorily significant state is common between the different perceptions in the three cases: the case of perceiving object *a*, the case of perceiving contextually indiscernible object *b*, and the case of having a referential perceptual illusion which is for the perceiver phenomenally indiscernible from the two preceding cases.

As indicated, this view is empirically untenable. It is incompatible with a massive amount of empirical evidence central to the scientific study of perception. In fact, disjunctivism is incompatible with the methodology of the science, a methodology that is empirically well supported.

The claim distinctive of naive realism is unacceptable on further grounds. Representational contents are perspectival ways of perceiving. They mark the perspective on objects or properties that the perceiver has in a perceptual state. Direct realism underplays the fact that in human and animal perception, every perceptual reference to any particular object or property—to any perceptual object—is from a partial representational perspective. Veridical perceptual states, like non-veridical ones, have a representational content that marks a perspectival ability, and a way of indicating the physical object or property perceived from a perspective. An account of perception that is true to the perspectival nature of perceptual ability must type-identify perceptions not merely in terms of the objects and properties perceived but in terms of partial perspectival ways of perceiving them. Any physical object or property can be perceived from different perspectives—spatial angles, spatial or temporal frameworks, modes of perception colored by the perceptual apparatus, perspectives that have ego-related implications, perspectives that are unified in perceptual constancies. States with different perspectives on the same object or property are different states.

As argued in section II, representational contents bear a many-one relation to any item perceived. Every visual referent is seen in some perspectival way. The account of perceptual constancy, which I believe is central to our understanding of perception, presupposes the existence of a difference between the way an individual or property is perceptually represented and the individual or property itself. The direct-realist position is not only empirically untenable. I think that it postulates an impossible state of affairs.

The other main view that entails disjunctivism differs from naive realism in maintaining that in all cases of perception of a particular—and perceptual belief successfully about a particular—, there is a representational content that indicates the particular perceived. Perception is perspectival on this view. But perceptions and beliefs are individuated in such a way as to be "object-dependent." Any possible or actual difference in the *particular* that is perceived or perceptually believed-about entails a difference in representational content. This set of views does not yet entail disjunctivism. Disjunctivism follows only when a further claim is added. This is the claim that the representational contents in the different cases help individuate different perceptual or belief state *types*, and that there is no explanatorily relevant

perceptual or belief state *type* in common among the three cases. Proponents of the view make this claim. I will discuss both sorts of disjunctivism.

SNOWDON

Paul Snowdon puts forward two principles that are supposed to support a disjunctivist view: (1) If an individual observer O sees a physical entity E and E is of a certain kind F, then there is some object to which O is so related that if he were to demonstratively identify it as an F the judgment would be correct. (2) If O sees public objects in a scene and O is not at that time having after-images, a partial hallucination, or the like, then a set of true identificatory demonstrative judgments about those public objects contains all the true demonstrative judgments one could have made, at that time, on the basis of current visual experience.

Snowdon appears to take "on the basis of current visual experience" to mean "on the basis of current visual experience without any background information." He does not explain "on the basis of." Snowdon takes these two principles to support disjunctivism.[41]

First, some preliminary remarks. I think that the concentration on after-images and hallucination is misleading. After-images are not obviously perceptual states. They do not function to refer to an object in the environment presently causing the state, as perceptions do. The psychological system does not employ after-images as it does perceptual states. Genuine hallucinations are also not obviously perceptual states. They are not the products of full operations of the perceptual system. Hallucinations caused by tickling the brain, or by internal pathology, are not clearly a perceptual state. They could be confused with one—as a memory could be confused with one.

The issue is whether or not *perceptual* referential illusions can be type-identical with veridical perceptions. Paradigmatic cases are products of the perceptual system, stimulated by light arrays.

Snowdon's two premises do not entail disjunctivism. Snowdon never makes clear how they are supposed to support his conclusion. The strategy seems to be to show that in normal vision there are no true identificatory demonstrative judgments to be made about anything else besides public objects, and that this point indicates that in normal vision there is only the visual relation to the public object.

The second premise is dubious on two counts. First, animals incapable of judgment can certainly see public objects. Why should identificatory judgments be relevant to the nature of their seeings? Let us waive this issue. Second, adult humans with relevant concepts of perceptual states *can* make demonstrative reference to their perceptual states in both veridical and non-veridical visual perception. Whether they can do so "on the basis of current visual experience" alone, as opposed to the visual experience together with background knowledge about the existence and structure of perceptual experiences, seems to me irrelevant to the question whether there is a perceptual state with a perceptual representational con-

tent. If (2) is false, it does not aid any argument. If (2) is true, it is true only because one cannot know of the existence and structure of perceptual states without background information beyond what is available in current experience. In that case also, (2) does nothing to aid disjunctivism. For the sake of argument, I grant both premises. Yet we should reject the conclusion. We have empirical reason, beyond untutored introspection, to acknowledge representational state types common to veridical and referentially illusional cases.

Snowdon does not provide an argument for disjunctivism. The considerations that he raises either fall far short of the conclusion, or they are tantamount to begging the question.

MCDOWELL

John McDowell propounds a specific version of disjunctivism.[42] On this version, successful perceptual states always involve representational content that refers to the object being perceived. This commitment of the view seems to me correct. Yet, in accord with disjunctivism, the view maintains that any actual or counterfactual difference in the particulars referred to, or any difference between reference and failure of reference, would necessarily involve a difference in perceptual representation *type* and perceptual state *type*—a difference in the *nature* of the state.

In supporting these points, McDowell holds that if an individual's array of perceptual representational states, his perceptual subjectivity, were "exactly as it is however things stood outside it," experience would be "blank"or "dark," instead of "revelatory of the world we live in."[43]

This formulation may appear only to oppose any individualist view that holds that the natures of representational states are completely independent of the environment that is represented. I agree, of course, that such an individualist view cannot make sense of reference to the environment. To be a specific kind of perceptual representational state is to be a state whose nature is essentially associated with types of objects and properties in the environment. Perceptual states could not be what they are if the environment had not been a certain way.

Although the rhetoric may suggest merely this salutary point, the exposition that follows goes much further. McDowell holds that any non-disjunctivist view would leave experience "dark." I can find no argument in the relevant passages that reference would be problematic from the subject's point of view, and that experience would be "dark" or "blank," if an explanatorily significant kind or type of representational state were acknowledged to be common among the different possible perceptual cases. These consequences are not entailed by the denial of disjunctivism. No intervening premises that suffice to entail the conclusion, or even make it more plausible, are stated.[44]

McDowell does give an argument for a different but related conclusion. He claims that as long as it is assumed that the contextual presence of a particular object determines it as the object of a thought and that this presence "cannot enter

into the thought's intentional *nature*, it follows that the thought's intentional *nature* is insufficient to determine which object it is that makes the subject's thinking true or false, and consequently insufficient to determine what it is that the subject thinks."[45]

The assumption that intentional (representational) content is exhausted by intentional natures is one of the fundamental issues here. This assumption appears to neglect the distinction between pattern-based and occurrence-based aspects of psychological states. The former fix the natures or basic types of the states. The latter concern token aspects of psychological states that are not fixed by psychological nature and law. The intentional natures of states are not sufficient to determine what the subject thinks.

If one expands "intentional nature," somewhat unnaturally, to include occurrence-based aspects of psychological states, then McDowell's argument still cannot yield disjunctivism. Such a notion of nature allows an obvious sense in which the purportedly "disjunctive" states are of the same explanatory kind. This point is independent of whether the occurrence-based aspects are individuated in an object-based way. As indicated in section VII, there are reasons to think that such occurrence-based aspects (applications) cannot be individuated *only* in an object-based way.

McDowell may be assuming in this passage that his opposition supplies absolutely no singular representation to the representational content. Although some philosophers have made this mistake, there is nothing in the denial of disjunctivism to force it. The move from the assumption that a view does not allow a particular to enter into the thought's intentional *nature* to the claim that the view cannot determine what it is that the subject thinks would be a *non-sequitur*. McDowell is, I believe, correct in claiming that the thought's intentional *nature*—its representational state type—would be insufficient to determine what the thinker thinks. But this is not the point at issue.

What needs to be shown is that if particular objects do not determine the intentional *nature* of a thought, then what a thinker thinks—and what particular objects he thinks about—cannot be determined. The cited argument does not show this. I think that it cannot be shown.

Sometimes reference depends partly on contextual application or singular elements rather than entirely on representational nature. That is, reference depends on token application of demonstrative forms. What the subject thinks ineliminably involves singular representations that mark token applications (not intentional natures or general representational abilities) whose identity is fixed by the context. They need not be fixed by the particular object itself. They are commonly fixed as the token applications that in fact occur. In veridical perceptual cases, these applications are the unique applications causally and relevantly related to the objects. These applications are of course associated with and guided by perceptual or conceptual "natures"—representational types or kinds. The natures are not always marked by the full representational content. And they do not suffice to specify, for semantical or epistemic purposes, the individual's thought or perception by themselves.[46]

Thus McDowell's argument has a significant gap. McDowell gives no reason why a thought or perception's intentional (representational) *nature* must determine the object it is about. He gives no reason why such a nature must fully determine what an individual thinks or perceives. The relevant types of thought and perception seem to determine objects by contextual or indexical elements. These elements' referential success depends on aspects of the context, not on the nature of the representational state alone. Such contextual elements play an ineliminable role in determining what the subject thinks and what the subject's psychological state is. What an individual thinks includes occurrently marked intentional acts, as well as representational types or natures. Representational types or natures guide these acts, but do not fix their reference.

One can individuate representational states for a variety of explanatory purposes. One explanatory purpose relevant to understanding the nature and individuation of representational states is to understand human (and other animal) freely repeatable representational abilities. Some of our perceptual abilities, hence representation types that mark them, can be insensitive to context-dependent, occurrent differences, while still being dependent for their natures on general formative and constitutive relations to the environment. As we have seen, empirical science takes the same view, for more specific explanatory reasons.

Insensitivity to illusion or switch *in special abnormal cases* hardly entails ubiquitous "darkness" or lack of thought with a determinate referential content and a determinate referent. An understanding of the dependence of perception and perceptual knowledge on fallible states, contextual referential devices, and contingent causal relations to the environment is simply part of understanding our limitations. It is part of understanding our dependence on the world for even our surest perceptual contact with it, and our surest perceptual knowledge. There is nothing in the nature or type of a representational perspective that guarantees that our representational kinds or our perceptual-state kinds vary with *these* sorts of occurrent environmental variations.

Nor do anti-individualist arguments that derive from my work demand such a guarantee. In fact, what we know about how perceptual state types are formed from proximal stimulations requires that some perceptual states *not* vary with possible environmental variations *of these sorts*.[47]

In further writing, motivated by commitment to disjunctivism, McDowell tries to cordon off psychology as irrelevant to understanding the nature and form of an individual's perceptual states.[48] I think that this attempt is no more successful than the support offered in favor of the view.

McDowell maintains that there are two compatible but entirely different accounts associated with perception. One is an account of the individual's perception. The other is an account of information processing by the individual's subsystems that makes perception possible. The first is supposed to be that of common sense and Gibson's ecological approach to perception. The second is supposed to be that of the cognitive psychology of perception. The first view attributes "real" representational content. The second's attribution of representational content is

claimed to be "non-literal" and "irreducibly metaphorical." It is supposed to describe systems "as if" they processed representational content. This practice is supposed to be instrumentally "useful." It is supposed to address a "genuine explanatory need," that of explaining what enables animals to represent the world in the genuine, literal way that the first account attributes.

This explanation of causal enabling conditions is contrasted with a "constitutive" explanation. McDowell seems to mean by this contrast at least that the second account is not a literal account of perception, only a metaphorical account of the causal enabling conditions for perception. He claims that the account in terms of sub-individual (modular) information processing "cannot adequately characterize what its sensory systems are for the animal . . . namely, modes of sensitivity or openness to features of the environment—not processors of information, but collectors of it."[49]

There is, of course, a distinction between what is attributed to an individual and what is attributed to the individual's subsystems. That is the point of attributing irremediable unconsciousness and modularity to aspects of the perceptual system. Mere registrations and the events of processing registrations and representations in the visual system are not acts by the individual. And they are not available to the individual's consciousness.

Still, many perceptual representations of features of the environment are not only processed by the perceptual system. They are available and attributable to the individual. They are aspects of the individual's perception of the world. They are often conscious. And they are used directly by the individual in carrying out action (sometimes including thought). It is simply a mistake to hold that none of the perceptions processed in a perceptual system are perceptions by an individual. The test procedures and the general explanatory objectives of empirical psychology presuppose the contrary. If the individual is conscious, many perceptual representations attributed by the psychology to its perceptual system will commonly be conscious for the individual.[50]

The psychology of perception centers on explaining perception, as ordinarily conceived. It does not merely explain enabling conditions of perception in something like the way neuro-physiology explains the underlying neural enabling conditions for perception. Perceptual psychology, strange to have to say it, theorizes about *perception*. It is about perception and gives law-like generalizations governing (among other things) relations among perceptions. Its methodology depends on attributing to the individual perceptions that are integrated in the *individual's* perceiving and in the *individual's* carrying out his, her, or its basic activities.[51]

Perceptual psychology as it now stands does not attempt to give a complete theory of the essence of all perceptual states. For example, it is possible that consciousness is an aspect of the essence of some perceptual states. (It is almost surely, however, not an essential feature of all perception.) The psychological theories that I have discussed do not attempt to explain consciousness. There is, currently, no scientific theory of consciousness. Still, the theories do explain a "constitutive" aspect

of perception—the structures, kinds, and laws involved in perceiving the physical environment. Their explanations appeal to representational states and contents that are states of both the perceptual system and the individual.

Moreover, Gibson's theory is in empirical competition with representational cognitive psychology, not a separate theory about a different subject matter. The anti-representationalist aspects of Gibson's theory have been empirically defeated. (Cf. note 21.) All sides in psychology agree that the subject matter of visual psychology is the individual's vision. Attribution of psychologically relevant events and representational contents, including some that are attributable only to relatively modular subsystems, are part of an account of what is "constitutively" involved in the individual's seeing objects and properties in the environment. (See the first point in section IV.)

What support does McDowell offer for denying that the empirical psychology of vision explains what is (empirically but "constitutively") involved in the individual's visual perception? What support is offered for the claim that the attribution of representational content to the perceptual system is "irreducibly metaphorical"? Argument is needed. For these positions oppose the intent, practice, and results of empirical psychology. The appeal to representational content is not a metaphor in perceptual psychology. (Cf. section III). Its subject matter is animal and human vision, not merely some set of enabling conditions that are not themselves perceptual states, capacities, or processes. The psychological theory of vision is not a theory of something else besides vision.

Let me quote the crucial part of McDowell's discussion that is supposed to establish his radical theses. This passage purports to support the view that attribution of representational content in empirical psychology is "irreducibly metaphorical":

> What the frog's eyes do for the frog is to put it in touch with moving specks in its spatial environment . . . From the frog's point of view, its eyes enable it simply to pick up the fact that there is a moving speck (with luck, a bug) out there. From the point of view of the frog's 'motor control' (to speak in terms of the 'sub-personal' metaphor), the presence out there of a moving speck is rather (at most) the best hypothesis the . . . whole system . . . can come up with in order to account for the input of light (what is in fact light, though the system does not even know this much) to the eyes. If all goes well, the frog is in direct touch with a feature of its external environment; the internal information-processing system is in direct touch only with structural properties of the immediate inputs to it—which, in the metaphor, it interprets as clues to the nature of the external environment. (Of course the frog does no such thing.)
>
> What could an internal information-processing device really tell an animal? . . . What could an information-processing device *really* tell *anything* (including another component in a sub-personal or 'sub-personal' informational system)? It is essential to realize that the answer to this question can be, in fact is, 'Nothing', without the slightest threat being

> posed to the utility, or even the theoretical indispensability, of cognitive science.
>
> A sub-personal or 'sub-personal' informational system is a physical mechanism, connected to its surroundings by transducers that convert physical impacts from outside into events of the sort that the system can work on, and perhaps by transducers that convert the system's end-products into physical interventions in the exterior. The system knows nothing even about the character of the immediate physical impacts on the input transducers . . . let alone about the nature and layout of the distal environment. The operations of the system are determined by structures exemplified in the initial contributions of the transducers, and in intermediate events and states in the system, which have no meaning for the system. In short, in Dennett's . . . memorable and exactly right phrase, the system is a syntactic engine, not a semantic engine. The same goes for its parts.[52]

I can identify no clear argument here. This is the only passage that purports to support the claim that psychological explanation is metaphorical and instrumentalist. The ideas that the animal's perceptual subsystem makes hypotheses, tells the animal or other parts of a subsystem something, and interprets clues are themselves metaphors *from the point of the view of the ordinary understanding of the psychological theory*. Here they seem to have misled. It is part of the modular theory that subsystems know nothing and say nothing. They are systems of processing registrations and perceptions according to principles. Any argument to the conclusion that psychological theory is metaphorical from a premise that it rests on the metaphors of telling and interpreting would rest on serious misunderstanding of the theory.[53]

As I have explained in section III, the principles that govern the formation of representations are not hypotheses represented in or by the psychological system, though they are formally similar to hypotheses. The registrations of light arrays are not representations, much less evidence, for the perceiver. The transformations within the perceptual system are not, in the sense I explained, inferences. The representational content in a perceptual system and by a perceiver depends on the way it is employed. It depends on the role of perceptual states in the practical activities of the animal, and on the (perspectival) relations that these states and activities bear to the physical environment.

The *system*, not the animal, registers light arrays and does not perceptually represent them. Registrations are not perceptions. There is a series of transformations of such registrations. These transformations occur in the perceptual system and are not activities by the perceiver. The transformations are in accord with general principles, but the system does not represent these principles. The transformations issue in perspectival representations that are distinctive in representing objective features of the environment. These are perceptual representations, not mere information-carrying registrations. Some large subset of these perceptual representations are attributable to the perceiver as well as to the perceptual system. Some significant subset of these perceptual representations are accessible to consciousness in human beings. The principles that govern the transformations have the effect of providing a reliable but fallible connection between light registration and distal causes in the

environment whose discernment is directly relevant to the animal's basic activities.

Perceptual representations are perspectives on the physical entities that they represent. They mark, or are aspects of kinds of, the individual's perspectival abilities with respect to the environmental entities, types and tokens, that they represent. Neither the registrations nor the representations are themselves objects for the animal or its perceptual system. The perceiver perceives only environmental objects and properties, in ways marked by perceptual representations.

McDowell claims that the frog is in "direct touch" with its environment, but that the internal information-processing system is in direct touch only with structural properties of the immediate inputs to it. I believe that this claim introduces another false contrast.

McDowell does not explain his use of "direct touch." In section V, I explicated two notions of directness—referential directness and non-inferential directness. The referential relations between the perceptual system's representations and the environment do not go by way of representing anything else. So both the animal and the representational states in its perceptual system perceptually refer to the environment "directly" in this sense. Both the perceiver's perception and the perceptual system's perceptual representations are the causal products of a series of transformations that are described by perceptual psychology. The referential "directness" of both the animal's perception and the perceptual system's perceptual representations is dependent on a series of transformations, under principles that have the effect of hypotheses, that convert the proximal stimulus arrays into perceptions.

For the reasons I explained, the transformations are best not counted *inferences*, in the sense that most philosophers use this term. The perceptual system is no less *non-inferentially* direct in its representations of the environment than the animal is. The primary difference between perceiver and system is that the transformations are activities attributable only to the perceptual system, not to the perceiver. The system transforms registrations into perceptions through a series of stages. The animal does no such thing. So the perceiver's perceptual representations—though they are also products of the perceptual system—are not the result of the perceiver's activities, only the results of his perceptual system's transformations. In this weak sense, the perceiver's representations are (relative to the perceiver's activities) transformationally null ("direct"?), whereas (relative to the perceptual system's transactions) they are transformationally complex ("indirect"?).

The claim that the frog is in "direct" perceptual "touch" with the environment, but the subsystem is not, seems to me fundamentally mistaken. Both the frog's perceptions and (what are in relevant cases the same) the perceptions generated by the frog's perceptual system are representationally direct. Moreover, both are generated by a causal chain that runs from distal object to proximal stimulations through transformations by the system.

There is no basis for construing the representational features of cognitive psychology, which are fundamental to its explanations, in a non-realist, metaphorical way. There is no ground for taking the subject matter of perceptual psychology to be different from its declared subject matter—perception.[54]

The perceptual system, including its subpersonal aspects, is a psychological system. It works in relatively "mechanical" ways. Its relation to physical mechanism is open to inquiry. The perceptual system cannot be described in purely syntactic terms if it is to figure in fully adequate psychological explanation of perception. The vast preponderance of successful—including rigorous—explanation in perceptual psychology invokes representations and representational content. I see no sense in which the perceptual system is merely a "syntactic engine." The same goes for the perceptual states—including those shared by the perceptual system with the perceiver.

The claim that the theory answers an "enabling" question about the individual's perception rather than a "constitutive" one is not clarified or supported. Taken as it appears to be meant, it is opposed to the aims of the empirical theory of vision. The theory is intended to explain what literally goes on in perception, what perception empirically consists in. It explains the empirically constitutive elements of, as well as the causal processes that lead up to and include, perceptual states that are unquestionably perceptions by the whole animal. These states are integral to the network of states explained by the theory's fundamental principles. Many of the representations and representational states attributed to the perceptual system (as opposed to computational transformations of them, and the initial non-representational registrations) are equally perceptual representations or representational states of or for the whole animal. For example, perceptions as of three-dimensionally shaped objects, and the motions and colors of these objects, are among the representations processed by the perceptual system. They are equally the individual's perceptual representations.[55]

The empirical psychology of vision is in the business of explaining the processes involved in individuals' perceptual representations of the physical environment. McDowell has given no genuine argument for regarding psychological explanation as non-literal. Similarly, he has given no argument for seeing it as concerned merely with the transactions of a subsystem and not with the empirical nature of visual perception by animals and humans. His claims about the science rest on a string of misunderstandings that elementary familiarity with the science would have prevented. The main principles of the science have been in place since Helmholtz. Its maturation into a complex, well-established, and mathematicized body of knowledge has been evident over the last thirty years. The science is about the laws of visual perception, not about something else.

EVANS

Gareth Evans does not explicitly motivate disjunctivism by veil-of-ideas issues. He focuses on considerations about reference and understanding. He holds that information-based thoughts containing a demonstratively or indexically governed singular term *a* are individuated partly in terms of the referent of *a*. The object determines the nature of the intentional content associated with *a*. According to Evans, where there is no referent, there is no thought "in the strictest sense." Similarly, where there

is no referent, there is no understanding of the use of the demonstrative—presumably also in some "strictest sense." Perceptual beliefs are paradigm cases of demonstrative information-based thoughts. So on his view, there can be no perceptual belief type in common between an instance in which there is a perceptual object and an instance in which there is a contextually indiscernible illusion of a perceptual object.

Evans never explains his "strictest sense." Nor does he explain how this sense connects to psychological explanation. Failures of reference do not obviate the need to explain actions, inferences, beliefs, and desires. No theory of thought that connects to explanation can allow thoughts to disappear merely because of failures of reference. Evans's claims here seem to me idiosyncratic and quaint.[56]

Evans makes two sorts of argument for this form of disjunctivism. One centers on linguistic understanding. Evans maintains (1) that idioms that attribute singular reference in perceptual belief, and perhaps even all ordinary cognitive idioms, "have their home in the activity of interpreting, or making sense of, the speech of others."[57] He then maintains (2) that to understand a singular term intended to invoke identifying information, one must believe that there is something to which the term refers. For, he claims, to justify understanding of an utterance of the form *That G is F*, one must justify a belief that the speaker is referring to some object *a*. He holds (3) that if one does understand such an utterance, one's belief that the speaker is successfully referring to the designated object must be true. For he thinks (4) that understanding an utterance is constituted by knowing some proposition to be true, and he holds that (2) entails that the only such proposition knowledge of whose truth could constitute understanding is the proposition that the speaker successfully refers (to the specific object). He concludes (5) that utterances that contain singular terms intended to invoke identifying information but which fail to secure a referent cannot be understood. From (5) and (1) he infers (6) that no thought involving an indexical or demonstrative singular element can fail to have a referent. Lack of referent entails lack of thought.[58]

This conclusion, together with the view that a particular object helps individuate perceptual belief states, entails disjunctivism.

I believe that every one of this argument's four premises is mistaken—and three of them clearly so. As regards (1): There is perhaps some sense in which cognitive linguistic idioms are first used in understanding other people through their speech. But it is unacceptable to *assume*, as Evans frequently does, that understanding speech is the central issue in giving an account of the nature of perception and perceptual belief. The assumption is out of touch with the empirical study of perception. The account of perception in non-linguistic animals and human infants is distorted if linguistic paradigms dominate the account. Since perceptual belief is dependent on perception, such an assumption will also distort the account of perceptual belief. Even cursory consideration of psychological accounts of these matters shows how far Evans's view is from the natural and normal methodology of the psychology of perception and perceptual belief. The mistake in step (1) is fundamental and renders the rest of the argument largely irrelevant. I shall discuss it anyway.

Evans offers no argument for (2). He defends it only by claiming that he cannot see that in the absence of a common referent, understanding could occur. He thinks that having a demonstrative relation to the same referent is necessary and sufficient for communication. I think that (2) is clearly mistaken.

Relying on a referent is *neither* necessary *nor* sufficient for communication in the relevant cases.[59] First, the sufficiency claim. If two people have a common demonstrative referent, but have no idea that it is common, then communication may fail. What is needed in cases of a common referent seen from different perspectives is some ability to identify and track the other person's application and attributive perspective, even if one has different perspectives on a referent. Or one may make connection to a common historical file. Communication can succeed when communicants' files are connected and communicants capitalize on this connection.

Having a common referent is not only not sufficient for communication. It is not necessary either. Communication can succeed in the absence of a referent. An ophthalmologist who creates illusions of objects to check a patient's sight can understand the patient's utterance "that red dot on the screen is larger than that green one"—even if the appearance of a red dot is produced by reflecting light in an abnormal way onto the retina. The patient's expression "that red dot on the screen" clearly fails to refer; it is demonstrative-governed, as opposed to purely descriptive. By noting the patient's standpoint and the causes of reference failure, the doctor can understand the patient's utterance.

Or to take a case that Evans mentions—but fails to give an acceptable account of: A community could be in the grip of a belief in a particular named witch, which is not identified with any actual human being. The community shares a name purportedly of the witch, and sometimes engages in purported demonstrative identification. Some claim to have seen her or at least her immediate effects (rustling in the bushes, for example). They use demonstratives "that witch" or "that witch in the bushes" in having those experiences and in telling about them. A mythology grows around her. Members of the community share overlapping parts of this lore and communicate about her. Even lacking individuating descriptions, members of the community can understand one another by all normal criteria for understanding—even though there is no object referred to.[60]

Even *belief* in a referent is not necessary for successful communication. Neither the ophthalmologist nor anthropologist sceptics who join the witch-crazed community need believe in a referent to understand sentences or thoughts involving use of the relevant demonstratives. In fact, we can imagine a case in which an individual is given—perhaps by a psychologist—illusions at some times, but is successful in referring (given indiscernible experiences) at other times. The individual comes to be apprised of the situation. The individual can carry on his identifying usage, but come to be agnostic about whether any given use of the demonstrative succeeds. I see no reason to think that the individual must fail to understand his own uses or fail to comprehend his own thoughts.

To understand an application of a demonstrative that fails to have a referent, it is enough to track the historical or perceptual file by relating token demonstrative applications to a single causally connected contextual network. This ability depends on competence with demonstratives and with one's own standpoint. It does not depend on successful reference, or even on belief in successful reference. In the case of understanding others, it requires some appreciation of others' standpoints. One need not share the others' standpoint or perspective.[61, 62]

The foregoing considerations undermine premises (2) and (3). Evans's assumptions (2) and (3) are elaborations of his view that understanding deictic demonstrative uses requires knowing *which object* is referred to. He understood the view as requiring the existence of an object referred to. So understood, the principle is mistaken in light of the sort of considerations just discussed.[63]

The idea that understanding by itself entails or guarantees reference or knowledge seems to me to be correct only in application to certain self-evident propositions. Understanding $2 + 2 = 4$ may yield knowledge of its truth and may entail successful reference to the numbers. Understanding an occurrence of one's own thinking of the *cogito* guarantees knowledge of its truth and a reference for the occurrence of *I*. Understanding ordinary uses of demonstratives in empirical contexts cannot tenably be claimed to entail successful reference.

I turn from premises (2) and (3) to premise (4). Perhaps because it is more abstract, premise (4) is not as obviously false as the other three. I believe contrary to premise (4), that linguistic understanding is not necessarily knowledge that a proposition is true. I believe that inferential capacities and capacities to apply terms correctly in normal conditions are sufficient. I believe that at relative primitive levels of language mastery, a language-understander might have the requisite inferential and applicational capacities, but lack true beliefs that express that understanding. A child need not know propositions that formulate the correct inferences that it can make. All the child's relevant applications of terms may occur in abnormal conditions, yielding perceptual illusions. The child's innate perceptual apparatus could enable it to understand basic empirical vocabulary even though it happens to be brought up in abnormal conditions that lead to false belief. A child need not know the Tarski biconditionals, since understanding does not require a mastery of meta-concepts like *truth,* or concepts of thoughts or sentences. These are large issues.[64] I think that I need not discuss them further here. For the unsoundness of the preceding premises already blocks Evans's argument to the independently unacceptable conclusion that no thought involving a demonstrative singular element can fail to have a referent.

Evans gives one argument for this conclusion that does not rely on a view about linguistic understanding. He claims that we *cannot coherently specify or have a coherent idea of* a demonstrative thought, or an indexical-based thought, absent a referent.[65] This argument avoids the problematic step (1). But it adds nothing to steps (2) and (3) of the earlier argument. It is refuted in the same ways.

John Campbell maintains a view that entails disjunctivism. He follows Evans in claiming that we can understand veridical demonstrative, perception-based psychological states only by specifying them as essentially individuated in terms of the physical objects that they refer to. He offers both positive arguments for the disjunctivist view and criticism of relevant aspects of my view.[66] The arguments centrally concern understanding, justification, knowledge, and the validity of context-bound argumentation. I will show that these arguments fail and then rebut the criticism.

Campbell maintains that any conception of perception-based reference that is not disjunctivist, and does not appeal to psychological states individuated in ways that are dependent on the particular object referred to, fails to explain certain uncontroversial facts. He calls the view that he opposes "the common factor approach." He claims, for example, that this approach cannot allow experience "its explanatory role: we cannot understand how experience, so conceived, could be what provides us with our concepts of the objects around us."[67] I believe that this claim is not well supported or even clearly explained, and is in fact quite mistaken. To deal with the complexity of Campbell's discussion, I insert capital letters into the quotations to mark points that I will comment on.

Campbell offers an argument against the view that "(A)…the way in which the object is given is independent of whether the object exists, and independent of whether the subject is experiencing one or many similar objects."[68] The argument goes as follows:

> (B) the way in which you are given an object has to be what causes and justifies the pattern of use that you make of the demonstrative. (C) But for the way in which you are given the object to justify the use that you make of the demonstrative, it really matters whether there is an object there at all, and if so, whether it is one or many. If, as on the Classical View, ways of being given objects are to be individuated in terms of which patterns of use they cause and justify, (D) then which way of being given an object is in question is not something that is indifferent as between cases in which there are many, one, and no objects there at all.[69]

Let us consider this argument. First, I want to clarify the notion of independence in the target (A), so that it is a view that I hold. The way in which an object is given in a perceptual belief is comprised of an ability-general representation and an ability-particular representation that marks the believer's contextual occurrent application of the general representation. The occurrent application in successful cases is linked to a causal effect of the perceived object. It is in that way *dependent* on it. I have maintained that there are reasons to acknowledge a way of individuating perceptual applications that leave them, in their essential identities, independent of the object referred to or perceived. That is, the same application could have been caused by another object or by processes that stemmed from no object. In that way, the application is *independent*, for its identity, of the perceived object.[70]

As regards (B), I accept that the psychological state is what causes the pattern of use that one makes of the demonstrative. I accept that the way in which one is given the object (a way that marks the psychological state) plays a role in justifying, or warranting, the pattern of use made of the demonstrative. This much seems trivially true. I also accept that justification (or rather entitlement) attaches to the particular belief that is held.

Some qualifications of (B) are needed. The ability-particular or occurrence-based representational element in a particular "way an object is given" is not essential to justifying the pattern of use. Another token could have been part of the same pattern of justification (entitlement) and use, if all else were equal. The representational *kind* or *type* that is part of the way an object is given *is* essential to the justification (entitlement) associated with the pattern of use.[71]

The key step in the argument is (C). The step is not meant to be precise. Insofar as it is supposed to lead to the conclusion of the argument, it is mistaken. An individual can be "justified"—epistemically entitled to his belief—whether or not an object is there. Take an actual case where the believer is entitled to his belief, and the belief is true. Then consider cases of indiscernible referential perceptual illusions or indiscernible substitutions, where the believer has no basis for discerning the difference. In such cases, other things equal, the believer remains entitled to his belief. The believer's being entitled derives from the same entitlement. Perceptual entitlements attach to types of beliefs deriving from types of perceptual belief formation, holding background information and other background circumstances fixed. These types of belief formation derive from *types* of perception formation and conceptualization. Perception formation relevant to warrant is individuated independently of *particular* successes or failures of perception.

Campbell may envisage some other conception of warrant, a factive kind. I believe that such a conception would make a mess of our understanding of warrant, justification, and rationality. What is relevant to the present context is that no argument is given against the straightforward, well-known conception of warrant (or justification) that my view and most "common factor" views rely upon.

The formulations of (C) and (D) suggest the same type-token conflation that has affected so much other disjunctivist reasoning. It does matter to justification (entitlement) whether, as a matter of rule, there is an object there or not. As a type of representational transaction, demonstrative reference is not "indifferent" as between veridical and illusional perceptual states. Justification (entitlement) presupposes a background of reliable, veridical perception in normal conditions. Justification must be a good route to truth. Demonstrative perceptual reference presupposes a background of successful reference and veridical perception. These are matters of rule, pattern, kind, and type.[72]

Even the token act of application is not truly "indifferent" to whether there is an object there or not. Its function is to refer. It refers to the object that causes it. Possible illusions or duplicates are not equally referred to. The identity or "essence" of successful occurrent applications has not, however, been shown to entail the

existence of the very object referred to. And some ordinary and scientific explication seems not to insist on any such view of identity. So far, no cogent objection has been raised to the token's being individuated in such a way that it is not guaranteed, in all possible circumstances, the perceptual reference that it in fact has.

The justification (warrant or entitlement) of a perceptual belief cannot guarantee that the token perceptual application is referentially successful. It cannot guarantee against contextually indiscernible substitutions. Patterns of use depend on general competencies. Justification attaches to exercises of general competencies of certain types (modulo constant background information). Justification does not side with a successful perceptual belief against an otherwise innocent perceptual belief based on an indiscernible perceptual illusion. Both beliefs, being of the same representational type, and being associated with the same background information and pattern of perceptual functioning, have the same warrant. Warrant survives perceptual illusion and contextually indiscernible substitutions. This point is fundamental to our concept and use of the notion of empirical warrant.

Campbell offers a second type of consideration in favor of his view and against any view that maintains that the same perceptual belief type is present in veridical, duplicational and referential-illusion cases. The idea is that such view cannot handle cases of perceptual tracking. Campbell writes,

> (E) Recognizing the validity of the inference "that woman is running, that woman is jumping, so that woman is running and jumping" should make the sameness of the object transparent to you; but on the common factor conception, that is what your experience of the object cannot do. (F) On the common factor conception, your experience of the object would have been exactly the same whether there was one woman there throughout, or many, or none. (G) So your experience in itself, on the common factor picture, can provide no guarantee of the sameness of the object throughout.[73]

Campbell goes on to claim that the "common factor" view cannot make the validity of the argument "comprehensible to us."

(E) "Transparent" is left unspecific. A person can be fooled by switches of objects or by illusions. Such a point must be acknowledged by any view. Yet, there are the senses that I have explained in which when one perceives an object, one perceives it directly. This point also must be acknowledged by any reasonable view.[74] Campbell does not explain his notion of a guarantee. On an ordinary understanding, contrary to Campbell's claim,[75] understanding a demonstrative application cannot suffice to "guarantee" the existence of a particular object (and rule out the possibility of substitutes). Campbell gives no objection to the ordinary view that *understanding* one's veridical perceptual belief is compatible with possible perceptual referential illusion.

As with any demonstrative appearing in a valid argument, the purported validity, as distinct from the soundness, of the argument can be viewed in different ways. I believe that these issues are quite subtle and interesting. I think that

Campbell's raising them is salutary. I believe that his positive account and his criticism of alternatives are, however, very seriously deficient. I will not present a detailed theory about the matter. I want to discuss three ways of looking at tracking arguments. The first way certainly applies to some cases. The second and third can be refined so as to be compatible. They, or refinements of them, seem to me to apply to other cases.

In some arguments involving demonstratives and tracking, the demonstrative is used anaphorically. In such cases, the validity of the inference can be accounted for straightforwardly in terms of the logical form of the representational content. An individual who maintains anaphorical connections among the demonstrative pronouns can recognize the validity of the argument by reflection on its logical form. The account need not include the object as a "constituent" in experience. Individuals need not anaphorically connect later occurrences of demonstratives to earlier ones in a conscious way. It is, I think, an open question what cognitive and functional conditions result in an individual's connecting different occurrences as instances of a single application. I believe that not all arguments involving demonstratives and tracking fit this model. I believe that some do.

Second, the individual can use separate deictic applications of a demonstrative and assume or "presuppose" identities between the applications. Often such an assumption can be elicited through questioning, or is otherwise plausibly attributable. Sometimes it is not plausible that the connecting identities are represented in the individual's psychology. One can regard the psychology as implicitly relying on what would be a further premise, if it were represented. The further premise-analog would be the analog of an identity statement where different applications purport to be applications to the same particular. Such a premise-analog would provide the argument with an "implicit" validity. If a later application occurs in a perceptual belief about a contextually indiscernible substituted object (or in a failure of perception), the argument would retain its implicit validity, but go unsound.[76]

Refining and specifying the notion of presupposition would be necessary in any refinement of this second conception of demonstrative-involving tracking arguments. There are various notions of implicit representation. And there are probably various types of implicit reliance involved in context-dependent reasoning. These matters are not psychologically simple. In actual tracking cases, it is clear, however, that there is some kind of presumption in the operation of perceptual and belief systems that the perceptually tracked object remains over time, even though one has different perceptions of it—hence, prima facie, different applications to it. Analogs of Fregean informative identities seem to be a part of the natural functioning of perception and perceptual belief. Usually *perception* is deictic not anaphoric. This is shown by the fact that if a contextually-perceptually indiscernible object is substituted for a given object in the course of tracking, the individual will perceive the new object (just as he perceived the old one), even if the individual is completely unaware of the switch. The perceptual reference will usually switch. This

suggests, I think, that something like this second alternative is applicable to most cases of reasoning that rest on perception-based tracking.

A third way of thinking about perception-based tracking arguments is worth considering. Depending on how it and the second way are refined, they may be very similar. On this third conception, arguments involving tracking and separate deictic applications are strictly speaking *not valid*. They are, however, reasonable. The gaps in full deductive validity do not affect the reasonability involved in the reasoning. The individual is warranted in presuming on the normal case in which the different applications can be presumed to be applications to a single object.[77]

The precise account of tracking is a matter for further investigation. The issues here are interesting and subtle. The last two alternatives are, I think, crude anticipations of reasonable accounts of perception-based tracking. Empirical research and philosophical reflection should sharpen the roles of the two alternatives. Perhaps they will uncover others.

Psychologically plausible accounts cannot, in any case, content themselves with Campbell's disjunctivist proposal. Where there is a non-anaphoric, deictic usage—or separate successive perceptual states—, there is in principle the possibility that a different object could be switched for the original one. Or an application after the one in the first premise could fail of reference, through perceptual illusion. No amount of transparency can save the validity of an argument if the *form* of the representational content that purports to indicate an object is not maintained through the argument. The form of representational content should mark psychological ability. Our psychological abilities are perspectival and fallible. So forms of representational content that are psychologically real must include those for which there is no guarantee of sameness of object in perception-based tracking arguments.

These points bring out another ground for thinking that there can be differences in perceptual states that are not available to immediate introspective awareness. Whether perception and perceptual belief allow for the possibility of a switch or, on the contrary, track an object in the way analogous to anaphoric usage, may not always be available to introspective awareness.

(F), in Campbell's argument, is misleading in that it blurs a modal distinction. This distinction is important in my account. On the "common factor" view, an individual can (could) be in the same experiential state *type* regardless of whether or not perceptual experience is referential. If an object is *actually* switched and the perceiver and his system perceive the new object, the perceptual reference must switch since the veridicality conditions will be different. In cases of actual switches to duplicates, or actual switches from successful reference to referential failure, there will be, as a matter of necessity in accounting for veridicality conditions, a different application *token*.

As explained in section VII, this point is compatible with allowing that given an actual referent, a given occurrent application token *could have* been the same in a non-actual situation in which another contextually-perceptually indiscernible object had been perceived, or in which there had been an indiscernible failure of perceptual reference. (Cf. also note 36.)

This point about counterfactual situations does not affect the validity of actual arguments involving tracking. The validity of an argument in a particular context is guaranteed by its logical form. The logical form depends on particular occurrent applications as well as general types. No matter whether there is actual failure of reference or switch of reference, and no matter whether other objects could be referred to in counterfactual evaluative situations, an argument is valid if and only if its form is valid in the actual situation. Contrary to (G), what guarantees validity is not experience or successful tracking. Sameness of object cannot guarantee validity. For changes of perceptual perspective on the same object can yield different perception-based logical forms. And experience cannot *guarantee* sameness of object. No sequence of empirical experiences is referentially infallible. In ordinary perceptual tracking, *nothing*—certainly nothing in experience—can *guarantee* "the sameness of object throughout." What guarantees the validity of argument in perceptual tracking is a logical form that maintains the sorts of connection among applications just discussed. So sameness of object in perception is not sufficient for maintaining validity. One must have a valid logical form.

Sameness of object is also not necessary. An object is not necessary at all. One can make valid arguments through referential perceptual illusions, using anaphora. By assuming or presuming mistaken identifications through perceptual tracking, one maintains validity without soundness. Again, it is the logical form that matters, not the presence or sameness of the object of perceptual reference. Moreover, validity may not be necessary for being warranted.

Campbell offers a few pages of criticism of my version of the "common factor" view. Discussion of this criticism may be too detailed for some readers. They may happily skip to the next section. In the interests of explicitness, however, I will respond to the criticism.

The main idea of Campbell's criticism derives from Evans's conception of understanding discussed earlier. The idea is that the "common factor" view cannot account for our *understanding* of perceptual beliefs about particular objects. Campbell extends this point by claiming that the view cannot account for our perceptual knowledge of particular objects. I believe that Campbell does not articulate notions of understanding or knowledge fully enough to have given a genuine argument. The key shortfall is that no good objection is given to the idea that we can understand, and have knowledge through, a perceptual belief even though the content of the belief, in other circumstances, could have made reference to substitutes or could have been involved in illusion.[78] I lead up to Campbell's main claims, and my replies, gradually.

Campbell correctly characterizes my view as attributing a demonstrative element in the content of perception and perceptual belief. He does not distinguish the demonstrative form from the occurrent application. At this stage in the argument the distinction is not crucial.

I quote at some length his discussion of my view. I published the views that he discusses many years ago, but the relevant features of those views are unchanged. He holds that my account

> (H) gives no explanation of how it is that we are able to grasp that intentional content [of visual states]. (I) Consequently, it does not seem that the view can explain why experience of the world is fundamental to our ability to think about the objects around us. Experience of objects has simply itself become one among many ways of thinking about objects. (125)

Campbell recognizes that I distinguish between perceptual belief and perception. Perception is not propositional or conceptual. I will, for the sake of argument, count perception as "experience":

> thinking in terms of "non-conceptual" content does not help. The explanatory role of the perception is still limited. (J) All that is within the perceiver's subjective life is the demonstrative element itself. (K) The aspects of the context that fix the reference of a particular demonstrative element on a particular occasion are not themselves to be assumed to be available to the subject (Burge 1991: 203–6).[79] (L) The thing that is subjectively available—the demonstrative element—cannot of itself, therefore, distinguish between presentation of one object and presentation of another. (M) Nor can it, of itself, provide an assurance that the demonstrative refers at all. (N) It is, therefore, opaque how the demonstrative element could provide the subject with an understanding of the demonstrative term. (O) The demonstrative element itself could not provide knowledge of what the term refers to. (P) The only way to supplement the picture to provide the subject with knowledge of what the demonstrative element is referring to in this context, would be to provide the subject with knowledge of the context in which the demonstrative element is occurring. But this knowledge will evidently not be provided by the initial perception of the object itself, on Burge's account . . . So Burge's picture of the content of experience cannot acknowledge the role of experience of objects in explaining our understanding of demonstratives.[80]

(H): I find it hard to discern what Campbell means by an explanation of how we can "grasp the content" of visual states. There is psychological explanation of how we come to be in perceptual states and form perceptual beliefs. There is philosophical explanation as well. The anti-individualist account indicates how, through formation of perceptual abilities in a given environment, the content of the perceptual states and perceptual beliefs necessarily represent mind-independent entities. The states' having the content that they do is inextricable from the role of the states in grounding explanation of interactions between perceiver and physical environment. Perceptual reference to *particulars* is a combination of these general perceptual abilities and application of them through perceptual interaction with particulars. Minimal understanding lies in exercising perceptual competence and forming perceptual beliefs, with their associated applicational and inferential competencies.[81]

(I): Of course, perceptual experience is not just one of many ways of representing. It is the most salient type of *de re* representation. All representation depends on *de re* representation. *De re* representation is referentially non-derivative, non-inferential representation of particulars. Some experience is non-veridical, even ref-

erentially unsuccessful. Like other non-veridical representation, non-veridical experience depends (in the ultimate individuation of the representational state) on veridical, *de re* experience.[82] Nothing in Campbell's discussion shows why *de re* perception and *de re* perceptual belief turn out, on this account, to be any less fundamental than they seem to be.

So much for general points. Let us turn to Campbell's more specific charges.

(J) and (K): The perceiver's "subjective life" includes (a) a demonstrative capacity (marked by a schematic representation analogous to *this*); (b) an occurrent application of this "demonstrative element" in a context; and (c) the perceptual attributives, in many cases with their associated phenomenologies, that mark repeatable perceptual abilities and that characterize purported aspects of purportedly perceived particulars. The aspects of the context that, together with this three-element perceptual representation, fix a perceptual referent are not available to the subject *in this sense*: To perceive a particular, the individual perceiver need not be able to describe or otherwise represent as such the causal connections that fix the particular that is perceived. This is a piece of common sense.

The perceptual occurrence that constitutes the application is "subjectively available" in the sense that it is part of the exercise of the perceiver's abilities. Self-conscious believers can be aware that they are doing this. On this understanding, I accept (J) and (K). I think that no dire consequences follow.

(L): The "subjectively available" application within perception does, in cases of successful perceptual reference, distinguish the particular entity perceived in the context. It picks out that particular and not some other one that would be perceptually indiscernible if it had been substituted. Neither the application-governed perception nor the perceiver could discriminate the particular from a *would-be* duplicate that *might have been* substituted (or that might come later), or from a *would-be* phenomenologically indiscriminable perception that *might* fail to refer. That is a matter of empirical fact. In the actual context of successful perception, the perceiver and his perception distinguish or discriminate the particular by perceiving *it* and not the would-be substitutes. Perceiving it involves applying the attributives in a singular way in response to the effect of that object. The particular referent is not discriminated from all possible or actual look-alikes through general abilities that apply across contexts. It is discriminated ineliminably in a context-dependent way.

This account matches the perceiver's abilities. Apart from perceiving a particular, the perceiver cannot discriminate what he actually perceives from would-be duplicates or illusions. This inability does not diminish the fact that the perceiver and his perceptual representation represents the particular that is perceived. The lack of would-be discriminability is exactly what one should expect. The account of content should match the account of ability, since content marks ability.

Campbell does not explain "of itself" in (L). The demonstrative- (application-) governed perception does discriminate the perceived object from all other objects. Of course, the application depends on its association with general perceptual

attributives. And it depends for successful reference on a causal relation to the perceived object. Apart from this causal relation, the perception would not succeed. If "of itself" means that the nature and identity of the perception do not suffice, independently of causal context, to apply successfully to an object, this is certainly true.

(M): Campbell does not make clear what sort of assurance he expects demonstrative reference in perceptual experience to provide, or why.

Indeed, the perceptual application *cannot* "provide an assurance" of perceptual success, if assurance is meant to be an infallible guarantee of reference. No perceiver and no perception has such a guarantee on any occasion of perception. Assuming that they do would simply beg the question.

There is the general anti-individualist background that I mentioned in discussion of (H) that indicates constitutive connection between perceptual ability and perceptual content, on one hand, and relevant physical entities on the other. And there is the assurance of a reliable perceptual system relative to the normal environment, and the fact that the perceptual system (and perceiver) have been given no cue that anything abnormal is afoot. This assurance commonly underwrites an entitlement to perceptual belief and commonly makes the perceptual belief a piece of knowledge.

(N): Campbell claims that it is opaque how the demonstrative element in perception could provide the subject with an understanding of a demonstrative term. Again, the relevant issues have not been well distinguished or explained. Campbell does not justify his transition from a lack of guarantee/assurance about perceptual reference to the lack of an account of "understanding" of demonstrative element.[83] I believe that the points I made in discussing Evans reapply here. I think that understanding lies in competence in the use of perceptual and conceptual demonstrative applications and in the competent employment of perceptual and conceptual attributives. Competence does not require referential success in every given instance, much less a guarantee of referential success.

In empirical domains, understanding does not entail successful reference. Understanding, in the relevant sense, is the competent exercise of general cognitive abilities in particular cases. Since our perceptual abilities do not discriminate among the three sorts of cases, understanding of the representational content that marks our abilities does not either.

(O): Here Campbell moves, without comment, from understanding to knowledge. Knowledge that a given object has a given property does not require that one be able to discriminate non-actual, not-contextually-relevant alternatives. Of course, knowledge depends not on the demonstrative element alone but on the reliabilities and competencies involved in applying it—and on the lack of known counter-considerations. Perceptual beliefs that depend on fallible, perspectivally limited perceptual states constitute knowledge when they are true, warranted (entitled), and free of special defeating conditions.[84] Campbell does not articulate his assumptions about what is needed for knowledge. I see no plausible assumptions in play that would require the disjunctivist view.

Campbell *seems* to assume that if the individual is to have knowledge, *the perceptual state in itself, given its identity* must guarantee that the object of perception

exists and is not a contextually indiscernible duplicate. There is no defense of this assumption. It would amount to begging the question. Nearly all serious views of knowledge would reject the assumption. It is enough for knowledge that the possibilities of a switch or an illusion are not contextually relevant threats and that one has no reason to think that such threats are in play. Assurance lies in the reliability of experience, the way the nature of perceptual representational *kinds* depends on the nature of the environment, and so on. One need not know these facts in order to have warrant grounded in them. No guarantee against error is necessary.

(P): It is true that "meta" knowledge of the context is not normally available. It is also true that specific knowledge that could discriminate the context from contexts where reference fails or where duplicates are substituted is not normally available. Such knowledge is not needed for understanding or for perceptual knowledge.

MARTIN

Michael Martin offers a complex argument for the naive realist version of disjunctivism and against what he calls the "intentionalist theory."[85] The argument begins with a sub-argument for what he calls "The Dependency Thesis":

(DT) to imagine sensorily a phi is to imagine experiencing a phi,

or to take the specialization of the thesis that he works with:

(DT') to visualize a phi is to imagine visually experiencing a phi.

The considerations pro and con regarding these theses are interesting and complicated. I do not find the theses convincing, however. It seems to me that in a certain clear and natural sense, one can visualize an object and *not* imagine visually experiencing the object. One imagines the object from the perspective of a visual experience, but no experiencing of the object (either by oneself or by anyone else) is imagined to be included in the imagined scene. One might visually imagine El Capitan in Yosemite from a certain perspective, but not imagine any experiences of it. One might even imagine that there are no experiences of El Capitan in the imagined scene. Prima facie, this seems to be visually imagining El Capitan without imagining an experience of El Capitan. Prima facie, there seems to be nothing contradictory in this claim, as there would be if (DT') were (constitutively) true.

Whether or not there is a sense in which (DT') is true, Martin's argument for it certainly fails. He begins by rightly noting that visualizing an object involves taking an imagined visual perspective on the object—for example, visualizing it from a perspective according to which the object is to the left. It is quite true that one could have such a perspective on the object only if one were to have an experience of the object. It does not follow that if one imagines something from a perspective that one *could have* only if such and such were the case (only if one were experiencing the object from that perspective, or only if there were an experience of the object from that perspective), then in imagining something from that perspective one *must imagine* such and such to be the case. Prima facie, the experience-like visual imaginings that are employed in imagining El Capitan need not themselves be the objects of visual imagination as such.

As far as the argument has shown, one could imagine an object from a perspective that one imagines is not the perspective of any experience in the imagined scene. Or one could simply fail to imagine the perspective as being a perspective of any experience in the imagined scene. As far as the argument has shown, this is so even though one could work out just where in the imagined scene the perspective would have to be from. It simply does not seem to follow that one has to *imagine* an experience from that position *to be* in the imagined scene. Martin assumes that since the perspective is from some position in the imagined scene, it must be the perspective of an imagined experience in the imagined scene, or of an experience imagined to be in the imagined scene. This seems tantamount to begging the question in an argument for the Dependency Thesis.

Still, I propose to grant (DT'). Martin's argument for disjunctivism based on (DT') still fails.

Martin takes the "is" in (DT') to be a constitutive identity rather than merely an entailment. I think that there are difficulties with this assumption, but I will grant it also.

Martin cites two aspects of visualizing that need explanation. The first is the lack of an "introspectively evident" psychological medium. This point alludes to G. E. Moore's remark that in introspecting an experience of an apple (whether this is understood as factive or as an experience as of an apple), one seems from a naive, phenomenological point of view simply to be confronted by the apple. Normally, one is not confronted by the apple plus a medium or sense datum through which one experiences it. Taken conservatively, this point seems correct.[86]

The second aspect of visualizing that needs explanation is that, in visualizing, one is "non-neutral" or "committal" about whether the imagined situation contains the entity, say a blue expanse of water, that one is visualizing. This is just the point emphasized in the preceding paragraph but one: To visualize a phi entails placing a phi in the imagined scene.

I accept this point as well, certainly for the sake of argument. I grant that visualizing a phi entails that one imagines a phi, in the sense that one imaginatively places a phi in the imagined scene that is being visualized. With respect to the imagined scene, visualization is "factive." Hence, assuming (DT') to be true, if one visualizes a phi *or* if one imagines visually experiencing a phi, one takes a phi to be in the imagined scene. On this view, one cannot visualize a pig by merely visually imagining having a visual illusion as of a pig. Nor can one visualize or imagine visually experiencing a pig, in the sense allegedly entailed by (DT'), by imagining having a visual experience in which one imaginatively takes oneself to be neutral about whether one is having an illusion of a pig or is seeing a genuine pig. In those cases, according to the view that I am granting, one is only visualizing or imagining a visual illusion of a pig; or one is only visualizing or imagining having a visual experience *as of* a pig.

Martin holds that the "intentionalist" has difficulty accounting for these aspects of visualizing. He believes that the *non-neutrality* of visualizing in the con-

text of the *transparency* of visualizing (the lack of an introspectively evident medium) is difficult for the "intentionalist" to account for.

As he notes, the obvious thing for his opponent to claim is that "the state of imagining itself comes with a commitment to the imagined situation's being a certain way." This should be understood as a reassertion of the fact that visualizing entails placing the visualized object in the imagined scene.

Then, oddly, Martin replies that this claim "fails to take into account the full consequences of the Dependency Thesis":

> Certainly, in imagining a visual experience one is thereby actually committed to there being a visual experience in the imagined scene, but (A') the extra move that is needed is a commitment to the presence of what the imagined experience is an experience of. When one entertains the supposition that there is a pig in the room, one does not have to entertain the supposition that one believes that there is a pig in the room. (B') What the intentional theory is required to do is to explain how in imagining an experience with a certain content one thereby also takes up a similar suppositional attitude toward the content of the imagined experience.[87]

I believe that there is a confusion here about what needs to be explained. (A') The commitment to the presence of what the imagined experience is an experience of is not an extra move. It is part of the intuitive starting point. We are granting (DT')—that visualizing a pig is imagining an experience of a pig. We are also granting that visualizing a pig requires visualizing a scene in which there is a pig. So we are granting that in visualizing a pig, one is imagining a *veridical* experience of a pig, an experience that is factive. Visualizing a pig is placing a pig in the imagined scene. So any experience that one imagines as part of the visualizing must itself be taken to be veridical with respect to the imagined scene.

(B') The "intentional theory" is not required to explain how by merely imagining an experience with a certain representational content one *thereby* supposes that the content is veridical. I deny that this supposed *explanandum* is even true. In the imagined experience which, according to the Dependency Thesis, is involved in visualizing, one does not take the representational content of the imagined experience itself to involve or entail the presence of the visualized object. Rather one has begun with the supposition of veridicality. One simply takes the content of the imagined experience to be veridical. The content itself might not have been veridical. That is the position of the "intentional theory." Certainly, it is my position. To assume otherwise would be to beg the question.[88]

Martin writes, "There seems to be a serious challenge here for the intentional theorist to explain the phenomenology of our sensory imagining, to explain how such imagery seems to give us the presence of an imagined scene rather than a mere imagined experience of the scene."[89] This claim again seems to evince confusion about what is to be explained, or else to beg the question. I hold that the imagery does not by itself guarantee the presence of the imagined scene rather than a mere

imagined experience of the scene, possibly an illusory experience. What gives us the imagined scene is the fact that we are visualizing the scene. Assuming (DT'), we have to be imagining a *veridical* experience of what is being visualized. The imagined veridicality is not derivative from the imagery itself. *Visualizing* something with a given imagery has to do with how the imagery is *used*. One could have imagined having an illusory visual experience, using the same imagery. Visually imagining an eidetic perceptual illusion would yield the same imagery. The imagined veridicality in visualization derives from the act of the imagination in construing the imagery. That is what the act of visualizing consists in. Martin's challenge simply assumes his own point of view. It does not present an independently agreed upon fact that his opponent must explain. It thus begs the question.

Martin summarizes his argument as a dilemma:

> On the first horn, the theorist accepts that introspection of imagined visual experience reveals no more about its character than does introspection of actual visual experience. A consequence of this is that it seems as if visualising is as committal to what the imagined situation contains as visual experience is with respect to the actual situation. As we have seen, the intentionalist cannot extend the account of commitment from the experiential case to the case of visualising. On the other horn, the intentionalist may seek to deny that visualising does carry any such commitment with respect to the contents of the visualised situation. In that case, the theorist must offer a different construal of what can be introspected of one's visualising, and admit that something other than the putative objects of experience are open to introspection at least in the case of imagining experience, if not in the case of experience itself.[90]

I think that neither horn of the dilemma is very sharp. For present purposes I grasp the first. It is not a consequence of accepting Moore's point about introspection that visual experience is "committal" in the same way as imaginative visualization. The commitments of experience and visualization have this much in common: Both perceptual experience and visualizing are committed to the veridicality of their presentations. That is, in both cases it is the representational function of the psychological state to present veridical representations. (In the visualizing case, the veridicality is, of course, relative to the imagined scene.) There is, however, a major difference in the commitments. Epistemically, perceptual experience yields only a prima facie empirical entitlement to believe in its veridicality. Every perceptual state is empirically fallible. We cannot *stipulate* of any actual given perceptual state that it is veridical. We do not have that power. Visualizing is different. The veridicality (relative to the imagined scene) of our presentations lies in our power to imagine visually. We can simply place, in imagination, the object of imagination in the imagined scene.[91]

So in visualizing an apple—by imagining a veridical experience of the apple, if (DT') were correct, one gives oneself a veridicality that must be earned in actual experience. None of these points creates the slightest difficulty for an opponent of

naive realism or of disjunctivism. The points are natural expressions of the central claim that Martin is contesting. Neither the perceptual experience in itself nor the imagery in "factive" visualization in itself ("in itself" in the sense: given their metaphysical identities) "include" the objects, or entail their existence. Martin's argument for a naive realist form of disjunctivism has no force.

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I believe that the various disjunctivists have collectively failed to make a single successful point in favor of disjunctivism—or against the natural alternative. The fact that the theory is incompatible with empirical knowledge should give pause to those tempted by the arguments, assertions, and metaphors that mark this line of thought.

NOTES

I have learned from comments by Ned Block and Johannes Burge.

1. Many philosophers distinguish representations and representational contents. Representations are token, structured instances of, or vehicles (like inner symbols) expressing, representational contents. Representational contents are abstractions that help type psychological kinds. Although this distinction is plausible in application to perceptual psychology, I am non-committal about whether it has a useful general application in psychology. The need for shareable, repeatable representational contents is very clear in both perceptual and cognitive psychology. The need for psychological states with representational contents is also very clear. In this paper and elsewhere, I use "representation" and "representational content" interchangeably, in effect leaving out representations in the sense just outlined, except insofar as they are the states themselves. In any case, I shall avoid the ontological issues that token representations raise.
2. I think that anti-individualism may not apply to certain aspects of thoughts about the qualitative features of sensations. I doubt that the thought *This is pain* depends on relations to the environment beyond the body for its specification of pain. By contrast, the aspect of the mental state marked by the present-tense index does, I think, constitutively depend on such relations.
3. For an elaboration of this framework in a context that centers more on the functions and norms governing simple perceptual systems, see my "Perceptual Entitlement," *Philosophy and Phenomenological Research* 67 (2003): 503–48, especially section I.
4. For a much more detailed account of different types of general elements in perception, and their various roles, see my "Five Theses on *De Re* States and Attitudes," in a volume honoring David Kaplan (New York: Oxford University Press, forthcoming). Also see section VII.
5. I believe that singular representation suffuses the perceptual representation. I think that every general element (property-, kind-, or relation representation) is accompanied by a singular element that represents a particular that purportedly instantiates the property or relation attributed. Such particulars are in addition to particulars that purportedly *have* the properties or stand in the relations. I do not rely on this belief here. I assume only that perception normally represents particular objects, events, and places and attributes properties, kinds, and relations to them.
6. The neglect stems, I believe, from a combination of a correct view—that perception is non-conceptual/propositional—with an incorrect view—that singular reference requires a backing of concepts. Cf. P. F. Strawson, *The Bounds of Sense* (London: Routlege, 1989), originally published 1966; cf., e.g., 97–112. An example of neglect of singular elements in perception is Gareth Evans, *The Varieties of Reference*, ed. John McDowell (Oxford: Oxford University Press, 1982). Evans develops a notion of non-conceptual content that carefully avoids allowing singular elements in the content (cf. 122–25, 181). Evans's view influenced subsequent writers—for example,

Christopher Peacocke, *A Study of Concepts* (Cambridge, MA: MIT Press, 1992), chapter 3. Peacocke allows egocentric markers and time-specifications to be fixed in a singular way. But his scenario content and proto-propositional content both lack singular elements that refer to particulars. Like Evans, he holds that genuine experience of particulars requires concepts and propositional abilities. (Peacocke has since changed his view.) Martin Davies, in "Externalism and Experience," in *The Nature of Consciousness*, ed. Ned Block, Owen Flanagan, and Guven Güzeldere (Cambridge, MA: MIT Press, 1998), originally published in 1996, holds a similar position. Following Evans, he gives an account of perceptual content that treats it as analogous to an existential generalization. All of these views seem to me inadequate as accounts of the representational content of perception. The function of perception, even in preconceptual animals is to enable the individual to target and track environmental particulars. The veridicality of perception must be evaluated in terms of the particulars perceived, not merely in terms of the presence of general traits somewhere in the universe. These considerations provide apriori ground for taking perceptual content to include singular representational elements. Of course, naive realists also leave out singular representational elements. I criticize this view below.

7. The distinction between referent and mode of presentation derives, of course, from Gottlob Frege, "On Sense and Reference" (1892) in *The Philosophical Writings of Gottlob Frege*, ed. Peter Geach and Max Black (Oxford: Blackwell, 1966). Frege applied the distinction to an ideal language of thought. An analog applies equally to perception. The import of the distinction is independent of any particular ontological account of sense or of representation. I think that all philosophically and scientifically reasonable accounts do and must find a place for the distinction.

8. To be *egocentrically indexed*, or to be *de se*, a representational content must meet two conditions. It must include an element that indicates the individual, or a part of the individual's body, in such a way as to mark other entities indicated by the content as being in relation to the individual's position and perspective. And the element must mark other entities so indicated as being of immediate relevance to the individual's needs, aims, or perspective. For further discussion of the role of *de se* markers in psychology, see my "Memory and Persons," *The Philosophical Review* 112 (2003): 289–337. Peacocke, in *A Study of Concepts*, 70, also makes the point that framework considerations such as these require distinguishing modes of presentation from the spatial relations perceived in the environment.

   These frameworks cannot be seen merely as what are sometimes called "perspectival properties," taken as properties that are independent of representation. An example of such a property is *in front of object y*. Something is in front of y relative to a spatial position or range of positions. First, the position and direction relative to which one object is in front of another has relevance in psychology only to representations from a *viewer's* perspective. The relativity is not merely to spatial positions, but to the viewer's perspective in space. The frameworks are essentially psychological, not frameworks in objective space. So the representational mode of presentation of objects and spatial relations is what is fundamentally at issue. Second, the position and direction of the "perspective" from which one object is in front of another is marked in a *de se* way. The representational content of *de se* markers contains motivational elements that cannot be attributed to the world being viewed. The perspectival framework is that of a representing individual or perceptual system, connected to a set of functions, needs, and aims.

9. For discussion of the role of framework and perspective in the psychology of visual representation, see David Marr, *Vision* (San Francisco: W. H. Freeman, 1982); Goodale and Milner, *The Visual Brain in Action* (Oxford: Oxford University Press, 1995), 88–119 and *passim*; Roger N. Shepard, "Ecological Constraints on Internal Representation: Resonant Kinematics of Perceiving, Imagining, Thinking, and Dreaming," *Psychological Review* 91 (1984): 441–42. Different forms of framework interact when the individual uses—for navigational purposes, for example—a remembered allocentric map and matches it to an egocentrically anchored map of a currently perceived scene.

10. I intend to discuss the distinctions among registration, sensation, and perceptual representation more fully elsewhere.

11. It has often been pointed out, since Gibson, that this illusion depends on the observer's not moving. Cf. J. J. Gibson, *The Ecological Approach to Visual Perception* (Hillsdale, NJ: Lawrence Erlbaum, 1979). This point does not affect the example. Psychology must explain why the illusion occurs where it does occur (in the absence of motion). Moreover, there are illusions that persist through

bodily motion. Gibson's insensitivity to the importance of explaining illusion is now widely recognized in psychology. Cf. Roger N. Shepard, "Ecological Constraints on Internal Representation: Resonant Kinematics of Perceiving, Imagining, Thinking, and Dreaming," 417–47.

12. Most of the points made in the last eight paragraphs can be found in introductions to any mainstream work in visual psychology. For example, see Stephen E. Palmer, *Vision Science* (Cambridge, MA: MIT Press, 2002), 9–11, 18–24, 55–59, 247–48.

13. An account of lightness constancy can be found in Palmer, *Vision Science*, 122–33. For more background, see E. H. Land and J. J. McCann, "Lightness and Retinex Theory," *American Journal of the Optical Society of America* 61 (1971): 1–11; Irving Rock, *The Logic of Perception* (Cambridge, MA: MIT Press, 1983), 279; A. L. Gilchrist, "Lightness Contrast and Failures of Constancy: A Common Explanation," *Perception and Psychophysics* 43 (1988): 415–24; A. L. Gilchrist, *Seeing in Black and White* (Cambridge, MA: MIT Press, forthcoming); A. L. Gilchrist, "Perceived Lightness Depends on Perceived Spatial Arrangement," *Science* 195 (1977): 185–87; E. H. Adelson, "Lightness Perception and Lightness Illusions," in *The New Cognitive Neurosciences*, ed. M. Gazzaniga (Cambridge, MA: MIT Press, 2000).

14. For detailed discussion, see David C. Knill, "Surface Orientation from Texture: Ideal Observers, Generic Observers, and the Information Content of Texture Cues," *Vision Research* 38 (1998): 1655–82; "Discrimination of Planar Surface Slant from Texture: Human and Ideal Observers Compared," *Vision Research* 38 (1998): 1683–1711. For elementary discussion, see Stephen E. Palmer, *Vision Science*, 234–36. I do not know whether the textural elements are registrations of pre-perceptual retinal information or early perceptual representations of two-dimensional shapes on a surface. Here, the answer does not matter.

15. This is a minimum characterization of the "explicit" presence of perceptual states and their representational contents. I believe that there are causally relevant token realizations—neural or psychological—of each component in an "explicitly represented" perceptual content in the perceiver. I will not go into this complex matter here.

16. For an article that discusses other biasing principles in an illuminating way, see Elizabeth Spelke, "Principles of Object Perception," *Cognitive Science* 14 (1990): 29–56.

17. For a discussion, see Roger N. Shepard, "Ecological Constraints on Internal Representation: Resonant Kinematics of Perceiving, Imagining, Thinking, and Dreaming."

18. C. R. Gallistel, "Animal Cognition: The Representation of Space, Time, and Number," *Annual Review of Psychology* 40 (1989), 155–89; Charles R. Gallistel, *The Organization of Learning* (Cambridge, MA: MIT Press, 1990); C. R. Gallistel, "Insect Navigation: Brains as Symbol-Processing Organs," in *Invitation to Cognitive Science*, vol. IV (Cambridge, MA: MIT Press, 1996); Christa Neumeyer, "Comparative Aspects of Color Constancy," in *Perceptual Constancy*, ed. Vincent Walsh and Janusz Kulikowski (Cambridge, UK: Cambridge University Press, 1998); David Ingle, "Perceptual Constancies in Lower Vertebrates," in *Perceptual Constancy*, ed. Vincent Walsh and Janusz Kulikowski.

19. There is a conception of objective, relational, "perspectival" properties that is popular among some philosophers. This notion goes back at least to C. D. Broad, *Scientific Thought* (London: Routledge and Kegan Paul, 1923), chapter 8; *The Mind and Its Place in Nature* (London: Routledge and Kegan Paul, 1925), chapter 4. It got its more recent impetus from Gilbert Harman, "The Intrinsic Quality of Experience," in *Philosophical Perspectives*, J. Tomberlin, ed., vol. 4 (Atascadero: Ridgeview Pub. Co., 1990). These properties are commonly taken to be phenomenologically accessible. For example, perspectival size is taken to be a plane of a size that would exactly occlude vision of an object from a certain viewing distance. I do not deny the existence of such properties. The association of those like size and shape with phenomenological aspects of experience, however, seems to me a mistake. There are effectively infinitely many plane sizes set at different distances between any given object and any given viewing position that would occlude the object. None is objectively privileged. It is not plausible that all of these sizes are phenomenologically accessible as such. Phenomenology cannot be explained purely by reference to the individual's relations to objective, relational, non-psychological properties. I believe that it is a philosophical and scientific mistake to regard any objective "perspectival" properties, such as perspectival size, shape, color, as among the objective environmental entities seen, unaided by background theory. Cf. note 8. I hold a similar position on the views of Sydney Shoemaker in "Introspection and

Phenomenal Character," *Philosophical Topics* 26 (2001): 71–88. He does not construe perspectival properties as fully objective or mind-independent. They are relational properties that depend on perceptual states. He does hold that they are perceived when objective, mind-independent properties are. I believe that such properties are not normally represented in vision. Representing them requires background knowledge. Vision science does not take perspectival appearances as perceptual referents. I see no need for it to do so. I think that taking them as objects—referents, *representata*—of perception rests on a confusion about what an object of perception is, and a failure to recognize the role of perspectival modes of presentation as representational, but not normally represented, in perception.

The main point I want to make here is that even if these properties were among the objective environmental entities that are perceived, they do nothing to obviate the need to postulate representational perceptual contents that apply to them. Empirical psychology must explain how objective properties (or any properties that we fallibly represent) are perceived on the basis of proximal stimulation and co-occurring internal states and events. Relational "perspectival" properties are by hypothesis in the environment. Insofar as they are either fully objective or dispositions to produce certain mental states, we are (*pace* Broad) fallible in our perception of them. One can have an illusion of being presented with them perceptually. Visual psychology must explain how veridical perception is achieved, given proximal stimulation. Moreover, perspectival color, size, and shape will always occur together in nature. Visual psychology has to explain how perceptions of different properties are extracted from a mix of proximal stimulation. What are the mechanisms and series of transformations that make possible vision of relational "perspectival" color, as distinguished from relational "perspectival" shape, or size? Giving empirical explanations of such capacities would require substantially the same representational framework that standard empirical theory uses. Vision science gets on well with perspectival representational contents that represent non-perspectival colors, shapes, and sizes—the colors, shapes, and sizes that are properties of objects.

20. Although I regard this point as obvious, I make it explicit because it has been denied. Cf. Noam Chomsky, "Internalist Explorations," in *Reflections and Replies: Essays on the Philosophy of Tyler Burge*, ed. Martin Hahn and Bjorn Ramberg (Cambridge, MA: MIT Press, 2003); Frances Egan, "Computation and Content," *The Philosophical Review* 104 (1995): 181–203. I think a serious, unbiased reading of any mainstream textbook, and more especially the most serious research papers of the sort that I have cited in discussion of the two examples, will show such denials to be misinformed.

21. A prominent psychologist who rejected visual representational content was J. J. Gibson, *The Ecological Approach to Visual Perception* (Boston: Houghton Mifflin, 1979). Gibson contributed a lot to visual psychology. He emphasized the importance of the organism's relation to the environment in determining what is seen. He argued the value of not taking the unit of perceptual experience to be momentary and of taking motion in the object and perceiver as key factors in perception. He sought invariants in the light array from which perception can be recovered. These insights and others have been incorporated into vision science. But Gibson's extremist rejection of visual representation is empirically discredited. Like virtually everyone else in his time, Gibson underestimated the complexity of accounting for invariants. His avoidance of investigating misperception was empirically stultifying. Most significantly, he gave *no* detailed empirical account of processes that lead to veridical perception. For discussion of these matters, see Shimon Ullman, "Against Direct Perception," in *Behavioral and Brain Sciences* 3 (1980): 373–415; J. A. Fodor and Z. W. Pylyshyn, "How Direct Is Visual Perception?: Some Reflections on Gibson's "Ecological Approach," *Cognition* 9 (1981): 139–96; David Marr, *Vision*, 29–31 and *passim*; Roger N. Shepard, "Ecological Constraints on Internal Representation: Resonant Kinematics of Perceiving, Imagining, Thinking, and Dreaming"; Vicki Bruce and Patrick Green, *Visual Perception, Physiology, Psychology, and Ecology* (Hillsdale, NJ: Lawrence Erlbaum, 1985, 2001). For discussions of ways in which Gibson's anti-representationalism failed to account for empirical evidence, see Stephen S. Palmer, *Vision Science*, 10, 53–56, 74, 82–84, 318–19, 409–13. Ken Nakayama, in "James J. Gibson: An Appreciation," *Psychological Review* 101 (1994): 329–35, discusses some of Gibson's contributions while criticizing his unwillingness to acknowledge mental representation.

There remain Gibsonians in psychology. Cf. M. T. Turvey and R. Shaw, "The Primacy of Perceiving: An Ecological Reformulation of Perception for Understanding Memory," in L-G.

Nilsson, *Perspectives on Memory Research: Essays in Honor of Uppsala University's 500th Anniversary* (Hillsdale, NJ: Lawrence Erlbaum, 1979), the journal *Ecological Psychology*, and various books on ecological psychology. Although this work contributes insights, it provides no convincing ground for resisting several decades of experimentally supported, mathematically sophisticated explanations that appeal to representation in visual perception. This aspect of Gibsonianism is a fringe position.

There are a few near-adherents to Gibsonian ideas in philosophy of psychology as well. Cf. several essays in *The Embodied Mind*, ed. F. J. Varela, E. Thompson and E. Rosch (Cambridge, MA: MIT Press, 1991); J. K. O'Regan and Alva Noë, "A Sensorimotor Account of Vision and Visual Consciousness," *Behavioral and Brain Sciences* 24 (2001): 939–73; and Alva Noë, *Action in Perception* (Cambridge, MA: MIT Press, 2004). Some authors in this group make, or intimate, wholesale criticisms of representationalist theories. They provide no detailed empirical criticism or detailed empirical alternatives. The criticisms are offhand in comparison to the science being criticized. Often this body of work presents the mainstream representationalist approach in misleading and sometimes mistaken ways. (A side remark: the empirical phenomenon, change-blindness, presented in the 2001 paper as an original motivation for opposing representationalist theories, in fact seems to support standard representationalist theory, although change-blindness is in one of the less-well-developed areas of vision science. Cf. D. J. Simons and R. A. Rensink, "Change Blindness: Past, Present, and Future," *Trends in Cognitive Science* 9 [2005]: 16–20.) The science has gone too far to be vulnerable to empirically unspecific, wholesale anti-representationalist criticism of this sort. Some representational aspects of vision are very well understood. There are literally hundreds of empirically well-supported, mathematically detailed explanations of aspects of vision in the representationalist framework. If one requires less in the way of mathematical detail, there are thousands. These explanations can be overturned only through demonstrations of specific empirical errors or through presentations of comparably detailed, superior empirical explanations.

22. Visual representation depends in some cases on input from non-visual modalities—such as the vestibular system or proprioceptive signals from the eye and head. In representing simple matters like motion of a physical body under time pressure, it depends little or none on thought. Cf. Z. W. Pylyshyn, "Is Vision Continuous with Cognition? The Case for Cognitive Impenetrability of Visual Perception," *Behavioral and Brain Sciences* 22 (1999): 341–65, esp. 361.

23. Cf. Shepard, "Ecological Constraints on Internal Representation," 422: "Precisely because our own internal constraints so well match the external constraints in our world, these internalized constraints reveal themselves only when externally available information is degraded or eliminated. Being tightly controlled from without, activity in the perceptual system is then necessarily guided more by whatever constraints operate within." Cf. also Shimon Ullman, *The Interpretation of Visual Motion* (Cambridge, MA: MIT Press, 1979); Roger N. Shepard, "The Role of Transformations in Spatial Cognition," in *Spatial Cognition: Brain Bases and Development*, ed. J. Stiles-Davis, M. Kritchevsky, U. Bellugi (Hillsdale, NJ: Lawrence Erlbaum, 1988); Roger N. Shepard, "Perceptual-Cognitive Universals as Reflections of the World," *Behavioral and Brain Sciences* 24 (2001): 581–601. This mode of study carries over to the study of imagery and the rotation experiments for which Shepard is famous. The content of images is widely seen to derive from perception. Perceptual illusions have loomed large in showing that perception is governed by constraints that mirror regularities of the physical world. Cf. Irving Rock, *The Logic of Perception* (Cambridge, MA: MIT Press, 1983), 319; J. A. Wilson and J. O. Robinson, "The Impossibly-Twisted Pulfrich Pendulum," *Perception* 15 (1986): 503–4; A. L. Yuille and S. Ullman, "Computational Theories of Low-Level Vision," in *Visual Cognition and Action: An Invitation to Cognitive Science*, vol. II, ed. Daniel N. Osherson, Stephen M. Kosslyn, and John M. Hollerbach (Cambridge, MA: MIT Press, 1990); Stephen E. Palmer, *Vision Science*, *passim*, e.g. 365.

24. I think that most supporters of anti-individualism reject disjunctivism. I will not cite specific works. The interested reader would do well to consult work by Ned Block, Fred Dretske, Donald Davidson, Jerry Fodor, Barry Stroud, Michael Tye, and others. Their work is not centered on disjunctivism, but much of it involves anti-disjunctivist commitments.

25. Because I am assuming that perceptually relevant types of proximal stimulation are the same, cases of change-blindness are not at issue. In those cases, the scenes are not contextually indiscernible to perceivers. Perceivers just commonly fail to discern the differences.

26. Cf., e.g., A. David Milner and Melvyn A. Goodale, *The Visual Brain in Action* (Oxford: Oxford University Press, 1995), *passim* and 199–203; and their *Sight Unseen* (Oxford: Oxford University Press, 2004), 108–15. Milner and Goodale use the term "perception" in a way that I think is very misleading. They associate the term purely with the ventral stream and with a capacity for consciousness. The accounts of the formation of perceptual representations in vision science apply to both conscious and unconscious perceptual states. Both conscious and unconscious representational contents can be veridical or non-veridical. They offer evidence that even in the ventral stream numerous representational aspects of unattended-to perception (in their narrow sense) are unconscious. In my view, the term "perception" should be applied to objectifying aspects of sensory systems, whether or not these are conscious. I believe that perception is (or is best taken as) fundamentally a functional category, not a phenomenological one. Since the dorsal stream manifestly produces visual constancies (abilities to treat objective, environmental properties systematically as the same through a great variety of perspectives and proximal inputs), I take it that there is *perception* in the visual dorsal stream in a wide variety of animals, including humans. Most or all of the perceptual representational states that depend on the dorsal stream are unconscious, even those that involve attention or selective orientation.
27. One could imagine a form of disjunctivism that denies a common state between only two of the cases. I know of no form that takes this up this line.
28. I do not endorse this view. Timothy Williamson, "Is Knowing a State of Mind?" *Mind* 104 (1995): 533–65, argues for taking factives like *seeing-that*, *remembering-that*, and *knowing-that* to be states of mind. I do not know whether Williamson is committed to disjunctivism. I am not, however, persuaded by his claim that "knowing is a mental state in *every* reasonable sense of that term." (He regards this as equivalent to "there is no more restrictive but still reasonable sense of 'mental' in which knowing can be factored like believing truly into a combination of mental states with non-mental conditions." These are definitely not equivalent. There could be no natural "factor" constituting the non-mental conditions, so that knowledge is a primitive kind, but knowledge could still entail truth and belief, where belief is conceived as a mental state in a sense that knowledge is not.) I am sympathetic with Williamson's animus against analyses of knowledge. But I think that non-factive psychological states comprise a natural genus of mental state that excludes knowing. Such states enter into causal, law-like patterns governing the use and processing of representations, given the limited input and background information that individuals typically have. The states' content constitutes an individual's representational perspective and marks the individual's fallible representational abilities. Williamson gives no argument for the position quoted above. He only provides a case for taking factives to be states in a certain sense of "state" and a case for knowledge being present when propositional attitudes are. I think that his use of "state" is more likely to mislead than to illuminate.
29. Cf. Hilary Putnam, "The Meaning of 'Meaning,'" *Philosophical Papers*, vol. II (Cambridge: Cambridge University Press, 1975); my "Other Bodies," *Thought and Object*, ed. A. Woodfield (London: Oxford University Press, 1982), reprinted in *The Twin Earth Chronicles*, ed. A. Pessin (New York: M. E. Sharpe, 1996). These sorts of cases are much less easily produced in purely perceptual cases, although I think that they can be produced. The issues about the relation between perceptual cases and higher-level cognitive cases are complex.
30. This is not to say that there is no sort of consciousness in sensations or qualitative elements in ordinary, unsophisticated perception. It is just to say that those elements are not objects of perceptual representation. They are not perceptual referents. There is no cognitive move on the part of the individual subject from qualitative awareness to perceptual reference.
31. The transformations are not in propositional form. This is further reason not to call them inferences. I think the distinctions I have emphasized are worth reflecting in the terminology.
32. Applications are individuated in terms of concrete occurrent acts or events. Applications can be preserved in memory and shared. So I take representational contents marking them to be abstract.
33. I first developed this distinction in my "Belief *De Re*," *The Journal of Philosophy* 74 (1977): 338–62. The framework was developed more fully in "Descartes and Anti-Individualism: Reply to Normore," *Reflections and Replies: Essays on the Philosophy of Tyler Burge* (Cambridge, MA: MIT Press, 2003). The most systematic account of the framework is layed out in "Five Theses on *De Re* States and Attitudes."

34. The notion of ability-generality is also not the contrary of object-dependence-on-a-particular. If there is object-dependent representation that represents a concrete particular and that is also learnable by any number of different people who could have no relation to one another, and who are not related to any ur-act (e.g., a baptismal act), then the representation would count as ability-general, even though it is individuated partly by reference to the object of reference.

    Although concepts expressed by numerals are, I think, individuated partly by reference to their referents, and are thus object-dependent, such concepts are ability-general. Their individuation hinges purely on types of psychological activity and psychological capacity—not on any particular, specific, occurrent acts or exercises of capacities.

35. I discuss this sort of singular context-dependent representation, insofar as it occurs in thought, in "Belief *De Re*"; "Russell's Problem and Intentional Identity," in *Agent, Language, and the Structure of the World*, ed. James Tomberlin (Indianapolis: Hackett Publishing Company, 1983); "Vision and Intentional Content," in *John Searle and His Critics*, ed. E. Lepore and R. Van Gulick (Oxford: Basil Blackwell, 1991). I discuss such singular representations insofar as they occur in perception and thought in "Perceptual Entitlement"; in "Descartes and Anti-Individualism: Reply to Normore," *Reflections and Replies: Essays on the Philosophy of Tyler Burge*; and at greatest length in "Five Theses on *De Re* States and Attitudes." Cf. also "Postscript: 'Belief *De Re*,'" in my *Foundations of Mind: Essays by Tyler Burge*, Volume II (Oxford: Oxford University Press, 2007).

36. Our evaluations of modality are two-sided in this regard. We can abstract from the referent and truth value of a perception-based thought and conclude that the same thought event, with the same perspectival content—with its token-dependent elements—might, in a different world, have failed to refer. Then the associated thought might have had a different truth value. The type-individuated representations are the same, and we can imagine that the same application token-event had a different immediate-contextual-causal ancestry. Then the thought event that is in fact true could have been false or truth-valueless. This point undergirds our view that representations in perceptual beliefs—both concepts and applications—are referentially fallible in any particular instance. An analogous point applies to perceptual representations. Nevertheless, when we evaluate the modal status of a thought considered as a truth (or a perception considered as veridical), we take the singular applications in perceptual beliefs to be rigid. We evaluate the modal status of the actually *true* thought even in situations in which it might have been false. That truth might have been false if the object had not had the relevant properties. We would not be evaluating the same truth if in considering counterfactual situations, we take the object of reference out from under it. Some perception-based thoughts can thus be regarded as necessary truths—necessarily: that object is self-identical; necessarily: that object is a fruit.

37. I leave open the full individuation conditions of applications: for example, whether applications can be the same if they are guided by different fundamental ability-general, semantically general attributives.

38. Token applications are also crucial in accounting for the connection of perception and perceptual beliefs with particular acts—such as initiating ingestion of food or attack on prey. In this paper I focus narrowly on the role of perception in the *acquisition* of information.

39. From a broader perspective, one can see reference to any particular individual as the result of lawful interactions. Still, psychological explanation succeeds because it centers on psychological kinds that are not sensitive to all referential illusions and duplications.

40. All serious defenders of disjunctivism that I know of are British. In addition to insular influences, this is to be explained, I think, in terms of a preoccupation with the excesses of the British empiricists, and of their British successors in the early and early-mid part of the twentieth century. The idea of disjunctivism is suggested briefly by J. L. Austin, *Sense and Sensibilia* (Oxford: Clarendon Press, 1962). The first defense of disjunctivism that I know of is J. M. Hinton, "Visual Experiences," *Mind* 76 (1967): 217–27. Hinton's motivations are not clear, but I think that rejection of sense-data is probably central. This seems to be the motivation of Paul Snowdon, "Perception, Vision, and Causation," *Proceedings of the Aristotelian Society* 81 (1980–1981): 175–92; and "The Objects of Perceptual Experience," *Proceedings of the Aristotelian Society*, suppl. vol. 64 (1990): 121–66; and Michael Martin, "The Reality of Appearances," in *Thought and Ontology*, ed. M. Sainsbury (Milan: Franco Angeli, 1997). Some of the arguments in John Campbell, *Reference and Consciousness* (Oxford: Clarendon Press, 2002), have this motivation.

41. Paul Snowdon, "Perception, Vision, and Causation," esp. 186–90. In later work Snowdon argues only that rejection of disjunctivism is not a conceptual truth. Cf. his "The Objects of Perceptual Experience." I doubt this claim, but will not discuss it here. I emphasize empirical grounds for rejecting disjunctivism. Snowdon's characterization of the opposition view as holding that "experiences are amongst the events, the intrinsic natures of which are independent of anything outside the subject" (Ibid., 123) is typical of disjunctivists in assuming that the opposition is caught in a veil-of-ideas, individualist view. He shows no awareness of anti-individualist rejection of disjunctivism.
42. Cf. his "Singular Thought and the Extent of Inner Space," in *Subject, Thought, and Context* (Oxford: Clarendon Press, 1986). McDowell seems to have been influenced in this version of disjunctivism by Gareth Evans, whose position I shall discuss below. McDowell's motivations seem, however, closer to Snowdon's than to Evans's. Veil-of-ideas worries seem to motivate such remarks as: "countenancing object-dependence as a feature of intentionality is a direct response to a threatened loss of contact with objects" (McDowell, "Singular Thought and the Extent of Inner Space," 167).
43. Ibid., 151–52, 158–59. I can find no place where the metaphors are clearly explained.
44. Note that the formulation "exactly as it is however things stood outside it" is typical of disjunctivist discussion in ignoring anti-individualist rejection of disjunctivism. It thus suggests that opposition is caught in veil-of-ideas views of perception.
45. Ibid., 164–65 (my emphasis in the quotation).
46. I mean that they do not suffice to specify the thought or perception even with the help of a specification of the attitudinal or perceptual mode—for example, *belief* or *visual perception*. Epistemic and semantical features of the psychological state depend on token events of application that are not specifiable in terms of representational or psychological types.
47. McDowell holds that disjunctivism is needed to answer scepticism. This view rests on the considerations about "darkness" just discussed. For this reason, and because the issue of scepticism is complicated, I shall not pursue the matter here. I believe that what help anti-individualism offers in dealing with scepticism is not enhanced by disjunctivism. An anti-sceptical answer that rested on disjunctivism would underrate the subtlety of the sceptical challenge. Moreover, making claims that are incompatible with empirical knowledge is not a promising anti-sceptical strategy. I touch on relations between scepticism and anti-individualism in "Other Bodies," *Thought and Object*, ed. Andrew Woodfield (London: Oxford University Press, 1982), 97–120; reprinted in *The Twin Earth Chronicles*, ed. Andrew Pessin and Sanford Goldberg (New York: M. E. Sharpe, 1996); in *Problems in Mind: Readings in Contemporary Philosophy of Mind*, ed. Crumley (Mountain View, CA: Mayfield Publishing Company, 2000) and in my *Foundations of Mind*. I also discuss these issues in "Some Reflections on Scepticism: Reply to Stroud," in *Reflections and Replies: Essays on the Philosophy of Tyler Burge*, ed. Martin Hahn and Bjorn Ramberg (Cambridge, MA: MIT Press, 2003).
48. John McDowell, "The Content of Perceptual Experience," *Philosophical Quarterly* 44 (1994): 190–205. Evans might have encouraged these attitudes. He suggests that the sort of experience that can be ascribed to a whole person requires the presence of thought. This encourages the idea that the representational states theorized about in perceptual psychology are simply unconscious "informational" states ascribable only to the brain or to some subpersonal system. Cf. Evans, *The Varieties of Reference*, 157–58, 227.
49. McDowell, "The Content of Perceptual Experience," *passim*; the last quote is from 197.
50. McDowell inveighs against "equating" the animal's perception with "computationally described goings on in their interiors." Ibid., 203. This is to attack a strawman. It is part of the modular account that the processing events are not attributable to the animal. As emphasized in the first point in section IV, many of the perceptual representations that are processed are, however, the individual's as well as the system's. The end points of the perceptual processing are certainly the individual's. The theory assumes overlap, not equation. I believe that the availability to action and to consciousness goes much deeper into the primitive "early" stages of the perceptual processing than is commonly thought by philosophers or even by some well-informed psychologists. Be that as it may, it is uncontroversial among empirical psychologists that representations of three-dimensional shapes, generated by the perceptual subsystem, are perceptions by the individual—available to consciousness and the control of activity.

51. It does not follow, nor is it true, that genuine perceptions (as opposed to registrations of information) are conscious. There is massive evidence that a good bit of human perception—which involves constancies and a rich representation of the physical environment—is unconscious.

52. "The Content of Perceptual Experience," 197–98. McDowell goes on to say that animals are "semantic engines" and to indicate his understanding of the role the instrumentalist use of content attribution plays in psychological explanation:

> We could not make sense of the competence that enables us to make sensible use of the claim that *animals* have dealings with content if we could find nothing inside them but, say, a completely homogenous jelly. And nobody knows how to make sense of an animal's internal control mechanism, and connect it conceptually to the competence it is supposed to explain, except by describing it *as if* it were, what we know it is not really, a semantic engine, interpreting inputs as signs of environmental facts and, as output, directing behaviour so as to be suitable to those facts in the light of the animal's needs or goals. To insist that the attribution of content at this sub-personal or 'sub-personal' level is 'as if' talk is in no way to debunk it … it is surely clear, at least in a general way, how content-attribution that is only 'as if' can even so pull its weight in addressing a genuine explanatory need: the question is what enables us animals to be the semantic engines we are.

It is certainly not true that no one knows how to describe the animal's modular psychology without describing it as if it interpreted signs. Attributions of *interpretation* to the subsystem, or indeed the animal, play no role in the theory.

53. Perhaps McDowell is assuming that if an animal or subsystem knows nothing it cannot have genuine (non-metaphorical) representational content. Such an assumption would need argument. It is out of keeping with the practice of empirical psychology. Perceptual psychology attributes perceptions to lower animals that lack knowledge. The perceptions have objective reference to objects and properties in the environment and exhibit perceptual constancies much like ours.

54. There are many signs that McDowell thinks that the veil-of-ideas picture is endemic to cognitive psychology's explanations. In addition to the passage just quoted, cf. "The Content of Perceptual Experience," 197, 200, 203. He seems to think that the modular system is "blocked off" from the environment, and that regarding the system's representational states as non-metaphorical would commit one to taking the animal to have "direct" access only to its "interior." Such views misunderstand the science. I think that they are encouraged by taking the telling metaphor and (even worse) the interpretation metaphor as literal parts of the science. Some of the difficulty may lie in McDowell's accepting Dennett's remark about the brain's being a syntactic engine (which I regard as already at best misleading) and transferring it, without discussion, to the perceptual system. McDowell describes the perceptual system as a physical mechanism, ibid., 198. That may be so in a metaphysical sense. From the standpoint of science, it is basically a *psychological* system. Theorizing about syntax in psychology is vastly less developed and central than theorizing about changes among states with representational content. Syntax (the form of perceptual organization and processing) serves representational content. It has no serious role in visual psychology independent of it.

55. McDowell's appeal to Gibson seems to me ill-considered. Gibson saw his work as empirical explanation of seeing of objects on the causal basis of sensitivity to ambient light. He did not found a science of ecology separate in its objectives from empirical psychology. McDowell's "reading" of Gibson as doing something completely different from what cognitive psychologists do is not borne out by how Gibson's work has been assimilated and criticized in psychology—as any number of textbooks will bear out. Gibson's denial of a role for representational states in the causal account is empirically discredited on numerous grounds. The status of Gibson's work ultimately is, of course, not the central issue. (Cf. note 21.)

56. Gareth Evans, *The Varieties of Reference*, 136. Evans's strange view that no thought is thought when there is a failure of reference is inessential to disjunctivism. His holding this view shows how far his approach is from reflecting seriously on psychological explanation or representational abilities. Although Evans made important contributions in directing attention to issues about thought, I think that he was much too fixed on considerations regarding language and semantics in his

discussion of mental states. Psychological explanation and epistemic considerations are secondary in his account, and poorly developed. He also had an exceptionally restrictive and regressive view of what—in the way of background knowledge—is necessary to succeed in referring, even in language. Evans believed that thought is necessary for reference to particulars. Perception alone is, in his view, insufficient. For discussion of this view, see note 6. It is part of a neo-Kantian conception of reference that I shall criticize elsewhere. For some discussion, see "Five Theses on *De Re* States and Attitudes."

57. Evans, *The Varieties of Reference*, 129–30.
58. Ibid., 326–31. I have numbered the steps for convenience.
59. Cf. Evans, *The Varieties of Reference*, 333–34. On sufficiency: "what makes it communication, rather than misunderstanding, is *simply* the fact that there is a single inclusive object" (my emphasis).
60. The case comes from P. T. Geach, "Intentional Identity," *Journal of Philosophy* 64 (1967): 627–32; reprinted in Geach's *Logic Matters* (Oxford: Blackwell, 1972). Evans discusses the case in *The Varieties of Reference*, 333ff. He relies mainly on attacking an oversimple view of the situation which would require that for understanding, members of the community can and need to share the same descriptive thoughts and same perspective.
61. For an account, see my "Russell's Problem and Intentional Identity."
62. Evans gives supplementary arguments. Cf. *Varieties of Reference*, 332–37. I believe that I have already discussed all the main ideas in them.
63. There are many other errors, I believe, in Evans's elaboration of this view, associated with what he calls "Russell's Principle." Most of these are not germane to the present discussion.
64. Cf. my "Comprehension and Interpretation," in *The Philosophy of Donald Davidson*, ed. Lewis Hahn (Chicago: Open Court Publishers, 1999).
65. Evans, *Varieties of Reference*, 133–39.
66. Campbell, *Reference and Consciousness*. Unlike Evans, Campbell appears to be a naive realist (cf. 115).
67. *Reference and Consciousness*, 123. This claim is accompanied by a series of criticisms of a neo-Fregean view (McDowell's), which is, like his own view, disjunctivist, but which he thinks "robs experience of its explanatory role." Campbell supports a "relational view" of experience, according to which experience "reaches all the way to the objects themselves." Apparently the object is itself part of the experience. The view appears to be a naive realist view. I find both Campbell's characterization of his own view and his criticisms of the neo-Fregean view obscure. I think that the criticisms of the neo-Fregean view are no more successful than the criticisms of my view. I will, however, concentrate only on the latter criticisms.
68. Campbell, *Reference and Consciousness*, 126.
69. Ibid.
70. As I have indicated, I believe that this issue is not fundamental. Disjunctivism claims that there is no common, explanatory *kind* in common between cases of perceptual referential illusion and cases of perceptual belief in which perception is referentially successful. Whether one individuates application *tokens* in terms of their distal causes is, I believe, not fundamental. I believe that there is a natural and defensible understanding of representations marking such events that accords with human and animal fallibility: One's perceptual belief could have been based on illusion if abnormal conditions had been substituted, indiscernibly, for the actual causal conditions. But even if applications were object-based, the same explanatory perceptual state kind (and the same belief kind) would have been involved.
71. For the distinctions among justification, warrant, and entitlement, see my "Perceptual Entitlement."
72. In fact, Campbell's general line that the "common factor view" cannot account for the role of experience in explaining how it is possible to understand and be justified in believing propositions about our surroundings seems to me to systematically conflate explanation of patterns with explanations of particular successes on particular occasions.
73. Ibid., 129–30.

74. In addition to the argument just quoted, Campbell gives an argument regarding reasoning that uses perceptual beliefs from different modalities—sight and hearing. Since this argument has essentially the same difficulties as the one being discussed, I shall not discuss it separately.

75. Ibid., 128.

76. For some discussion of these ideas, see my "Memory and Self-Knowledge," in *Externalism and Self-Knowledge*, ed. Peter Ludlow and Norah Martin (Stanford, CSLI, 1998).

77. This idea has been urged by my student Mikkel Gerken.

78. Campbell's discussion of knowledge is exceptionally inexplicit. I think that it may be influenced by McDowell's claim that if disjunctivism were not true, all would be dark within, and we would have no defense against scepticism.

79. The reference here is to my "Vision and Intentional Content," in *John Searle and His Critics*, ed. Lepore and Van Gulick (London: Basil Blackwell, 1991), 195–213.

80. *Reference and Consciousness*, 126.

81. Cf. "Perceptual Entitlement," and "Five Theses on *De Re* States and Attitudes."

82. This matter is developed in some depth in "Perceptual Entitlement," and in my "Some Reflections on Scepticism: Reply to Stroud."

83. Campbell may be relying on Evans's claim—discussed above as premise (2) of Evans's argument —that *understanding* a singular representation requires knowledgeable, successful reference.

84. For a discussion of the conception of warrant here alluded to, see "Perceptual Entitlement." The main line of the conception of knowledge and justification that I have outlined is accepted by a wide variety of epistemologists—epistemological internalists and epistemological externalists alike. The main line holds that the nature of a given perceptual experience which yields perceptual knowledge, when appropriately connected to perceptual belief, does not entail the existence of the perceived object. Perceptual knowledge depends on the absence of relevant alternatives, not a guarantee that they are not present. Campbell does not discuss this position.

85. M. G. F. Martin, "The Transparency of Experience," *Mind and Language* 17 (2002): 378–425. Some of Martin's argument depends on taking his "intentionalist" opponent to have views that I do not myself accept. He seems to mean by the "intentionalist" not only someone who rejects disjunctivism and takes perceptual states to have representational contents, but someone who also believes that qualitative properties are reducible to representational properties. I call this view "representationalism." I do not accept it. The special issues raised by qualia are, I think, not fundamental to my opposition to disjunctivism. Martin is arguing for naive realism, not simply against a particular opponent. So replies that a particular "intentionalist" approach would not make can be relevant to his positive argument for naive realism and disjunctivism.

    Martin discusses disjunctivism in other places. For example, in "The Limits of Self-Awareness," *Philosophical Studies* 120 (2004): 37–89, he offers a long argument for disjunctivism that depends on attributing a principle about self-knowledge to all opponents of disjunctivism. I think that this argument is unsuccessful on several grounds, but I will not discuss it here. For a criticism, see Susanna Siegel, "Indiscriminability and the Phenomenal," *Philosophical Studies* 120 (2004): 90–112.

86. Visual blur, floaters, and illusions do suggest a medium over and above the apple. Even waiving this point, one should not conclude that with background knowledge of the existence of experiences and qualitative aspects of them, one cannot introspectively attend to the experience or qualia as distinct from the apple. If one knowingly introspects an illusion of an apple, one does not attend to any apple; one attends to the illusion. This is plausibly a sensory experience, with its qualitative, sensory content. For further discussion, see my "Qualia and Intentional Content: Reply to Block," in *Reflections and Replies: Essays on the Philosophy of Tyler Burge*.

87. Martin, "The Transparency of Experience," 415–16. I insert capital letters in parentheses to mark passages that I will discuss.

88. Some of Martin's formulations suggest that he is not careful to distinguish the fact that it is a factively construed experience that we imagine when we are visualizing. For example, he writes, "When I visualise an apple, I imagine it through imagining a visual experience as of an apple"

ibid., 411. This statement is true—at least if (DT') is true. However, it is not strong enough from the point of view of his opponent, who distinguishes sharply between having a visual experience as of an apple which is veridical and having a visual experience as of an apple that is illusory. The cases are very different even if the type of representational content is the same. The cases are different even if counterfactually or in the imagination, the very same type *and* token could have remained the same. In visualizing an apple, one imagines a *veridical* visual experience as of an apple—if in visualizing one imagines a visual experience at all. I believe that Martin allows himself to interpret the Dependency Thesis in a way that takes his opponent to regard the imagined experience as neutral as to whether it is veridical, and then challenges his opponent to come up with an explanation of how the veridicality is to be accounted for. This mistake is also suggested by Martin's handling of an objection at ibid., 412–13, and in the main body of his argument against the "intentionalist," which I am in the midst of discussing.

89. Ibid., 416.

90. Ibid., 417–18.

91. Such placement is subject only to very general constraints. One cannot visualize something in the scene both to have a property and to lack it, from the same perspective—although one can perhaps visualize Escher cases which present impossibilities, incompatibilities that emerge from different perspectives on the same image. One cannot visualize something and its absence in the same visualization. The object must have visually discernible properties. And so on. The point is not that visualization is in all ways infallible. It is that its sources of fallibility are more limited than and different from those of visual perception.