3 Psychological Content and Egocentric Indexes

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I discuss the role of psychological representational content in constituting psychological kinds. I focus on certain fundamental elements of psychological representational content—egocentric indexes.

I The Nature of Perceptual Representational Content

I begin with three large points about the nature of perceptual representational content.

The first is that perceptual representational content sets veridicality conditions, or more specifically, accuracy conditions. I use "accuracy" to distinguish these conditions from truth conditions, which are propositional. Perceptual representational content is not propositional. But it can be accurate or inaccurate—even if it cannot, strictly, be true or false. I think that, although there are many differences between perceptual representational content and *any* linguistic item, perceptual representational content is, at a very abstract level, structurally and functionally *analogous* to referentially applied singular noun phrases. Applied noun phrases can be evaluated as accurate or inaccurate. They are accurate when they refer to something and characterize it accurately. They are inaccurate when they do not fulfill both of these conditions. They may succeed in referring or fail to refer. They may refer but partially mischaracterize what they refer to. Or they may refer and characterize the referent accurately. Similarly for perceptual contents. The accuracy or inaccuracy of a perceptual representational content is the accuracy or inaccuracy, in these respects, of instances of perceptual states. A fundamental point about perceptual states is that they, and hence their representational contents, can be accurate or inaccurate, within some range of approximation.

Although this paper does not address Ned Block's work, I think of it as honoring him, somewhat as a musician would honor a fellow musician—by trying to play music well and in his spirit. Block is deeply committed to interpreting and clarifying good science. In his work on consciousness and perceptual attention, I think that he succeeds in a very impressive way.

The second point is that perceptual representational contents are ways of perceiving entities in the physical environment. Since a given entity can be perceived in psychologically different ways, there are different repeatable and occurrence-based representational contents for any given environmental entity that can be represented.[1]

The third point is that perceptual representational content constitutes a *kind* of psychological state, at a specific level that grounds psychological explanation. The content *is* the kind. When one specifies the content of a perceptual state, one specifies a kind of perceptual state at a very specific psychological level for understanding perceptual states per se. The kind embodied by the content is part of the nature of the state. It is the kind that grounds scientific explanation of the formation of such states and explanation of the representational accuracy or inaccuracy of such states.

This point requires two refinements. First, the content together with the *mode* of the psychological state are the full kind. Vision, hearing, and touch are perceptual modes. Belief, doubt, intention, supposition, and hope are propositional-attitude modes.

The second refinement is that the representational contents of all actual perceptual states contain both freely repeatable (ability-general) and occurrence-based aspects. The ability-general aspects are perceptual attributives and general aspects of egocentric indexes. The occurrence-based aspects are referential applications of attributives or of egocentric indexes. So the notion of *kind* in the third point comprises both ability-general kinds of perceptual states—which are freely shareable across individuals and freely repeatable across occasions—and instances of those general kinds, actual occurrent states on particular occasions.[2] The former, general, kinds of representational content are those that primarily figure in the laws of perceptual-state formation. The latter are the occurrent, context-dependent applications of the general aspects. The occurrent applications are central to the veridicality conditions of any given perceptual state and to psychological accounts of the accuracy or inaccuracy of perceptions. Clearly, only occurrent perceptual states are accurate or inaccurate, for perception is accurate only inasmuch as an occurrent perceptual state is caused by what it is a perception of. Occurrence-based aspects can be preserved in memory and shared by different psychological modes. All representational contents of real perceptual states include both ability-general and occurrence-based elements.

The basic explanatory aims, schemes, and practices of perceptual psychology support these points. The science concerns perceptual states both as freely repeatable kinds and as occurrent states that are instances of such kinds. The aim of the science of perceptual psychology is both to account for how ability-general, repeatable kinds of perceptual states are formed from repeatable kinds of proximal stimulation and to explain conditions under which particular occurrent perceptual states are accurate or inaccurate. Any good account of perception must treat both the repeatable kinds and the accurate or inaccurate occurrent perceptual states—instances of and applications of those kinds. The instances always involve both ability-general attributive elements and

occurrence-based referential applications. The repeatable kinds are just abstractions from the more specific occurrent kinds that are the accurate or inaccurate perceptual states.

I focus on the third of these three large points.[3] To repeat: perceptual representational contents, together with their modes, *are* specific psychological (perceptual) state kinds. A generic, ability-general, visual perceptual kind is a visual perception with the freely repeatable content that spherical red body. A maximally specific, occurrence-based, visual perceptual kind is a visual perception with the occurrence-based content that_1 spherical red body, where the subscript marks an occurrent referential application, on a particular occasion, of the freely repeatable content. The occurrent application depends for its referent, if any, on causal relations to its referent on the occasion of the state instantiation and the application.[4] The occurrence-based kind, together with its mode, is the prominent specific kind of perceptual state.

All actual perceptual states include occurrence-based referential applications. No actual perceptual state has *merely* the general, freely repeatable content that spherical red body. Such contents cannot be accurate or inaccurate, as actual perceptual states are—only accurate *of* or inaccurate *of* various entities. Accuracy and inaccuracy of perceptual states always depend on referential applications in particular contexts—together with those occurrent applications' causal relations to environmental entities. Perceptual states with occurrence-based content are instances of a freely repeatable kind of perceptual state. The ability-general, schematic content that spherical red body is an abstraction from occurrence-based, context-dependent applications of that content.

Similarly, a belief state kind is individuated by its being a belief—a state in belief mode—and its having a given representational content. A belief with the content twice two is four has a purely ability-general, freely repeatable content. Its content contains no occurrent, context-dependent applications. A belief with the content that_2 body is red and spherical is the occurrence-based kind of belief that it is by virtue of being a belief and having that content. The belief instantiates an ability-general, freely repeatable kind—the kind that body is red and spherical. But again, no actual belief has *merely* that ability-general, schematic form. Actual beliefs have representational contents that, like the beliefs that they individuate, are true or false. The schematic form cannot be true or false. It cannot be a fully specific kind of belief. It can only be *true of* or *false of* entities. Actual beliefs of that form are always occurrence-based instantiations of the form—instantiations that involve an occurrent, context-dependent, referential application of the schematic demonstrative element.

A difference between individuation of perceptual states and individuation of propositional attitudes is that the representational content of most propositional attitudes is potentially common among different propositional-attitude modes. One can believe, doubt, or hope twice two is four or that_2 body is red and spherical for the same representational content. There are subtle issues about infinitival forms for some attitudes:

wanting, intending, deciding to go. Here, I assume that the infinitival forms are propositional. Both obviously propositional forms and infinitival forms of content are shareable among modes. One can decide to, pretend to, want to X, for a given representational content X. By contrast, perceptual content is not intermodal among the standard perceptual modes. So for perceptual states, the representational content suffices to be the kind of perceptual state. The mode is not a separate determiner.

The representational content of a visual perception differs from that of a tactile perception, even when the two perceptual states represent the same entities. For example, a visual perception that instantiates a form that spherical body has a different representational content, at the finest grain of individuation, from any tactile perception as of the same spherical body. The difference derives not only from the applications' differing but also from the differences in how the shape *sphericality* and the kind *body* are presented.[5]

For example, vision uses color or lightness in determining shape. Touch does not. The point shows up phenomenologically. A tactile way of representing texture or shape differs phenomenologically from a visual way. Since representational contents are ways of representing, the contents differ. Coordinating the two ways is, although automatic, subject to possible error.[6]

Propositional states are not the only locus of cross-modally shareable representational states. Nonpropositional representational states may take input from perceptual modalities and produce states with contents with no perceptual modality.[7] Consider an actional state guided by representation of the size and location of a body that is to be grasped. The actional state may have to coordinate visual and tactile perceptions of the body. When visual and tactile perceptions provide discrepant information, a compromise in the actional representation is often reached, a compromise governed by complex psychological principles. The representational content that guides action may be neither visual nor tactile. It may be representationally incompatible with both types of perception.[8] It may be intermodal or amodel but still nonpropositional.

We know less about the psychology of propositional attitudes than we do about that of perceptual states. But I think that the three large points that I have made about perceptual representational content apply generally to psychological representational content. A reason is that perceptual content grounds much propositional content. I take the way in which perceptual content figures in perceptual psychology, our best psychological science, to be a model for how representational content figures in representational psychology generally.

I distinguish psychological representational content from linguistic representational content. Philosophy of language and linguistics give truth conditions and specify content for sentences and utterances in various ways. The variety has been fruitful. Although everyone knows that linguistic content depends on psychological content, theorizing about linguistic content has been less constrained than theorizing about

psychological content. The constraint of connecting content with kinds of psychological states for which there are psychological laws is absent from most theorizing about the semantics of language. In the long run, linguistic theory will have to be more integrated with psychology. So although I do not here apply my points to linguistic representational content, I think that they do have some bearing. As I recurrently note, thinking about psychological representational content as a spin-off from thinking about linguistic representational content has led to mistakes about psychological content.

II Representational Content as a Psychological Kind

The third large point about perceptual representational content is that it is a very specific, constitutive kind—or, with the mode, an aspect of a very specific constitutive kind—of psychological state. I extend this point about perceptual representational content to psychological representational content generally. To be in a state that has a content just *is* to be in a state of a certain specific, scientifically relevant representational kind.

Applying this third point about perceptual representational content to all psychological representational content tends to undermine some common philosophical assumptions about psychological representational content. These assumptions distort the methodology of determining the representational content of psychological states.

Consider the view that there is a general epistemic problem about how representational content is accessed. Usually, the worry arises in discussing understanding sense or linguistic meaning. Much representational content is abstract. Standard worries about epistemic access to abstract objects are raised. It is asked how anyone could "grasp" or "get in touch" with something as abstract as representational contents (meaning, sense) are supposed to be. The physical metaphors are inappropriate. When they are dropped, I believe that the worry about access to abstract objects looks rather weak in general. It appeals mainly to nominalist ideology.

But when one considers psychological representational contents as kinds of psychological states (repeatable kinds and their instances), the worry collapses. Kinds are shareable among different individuals' state and event instances. Propositional kinds can also be recursively constructed ad infinitum from simpler kinds. They are abstract, in these ordinary senses. Take the perception $\underline{\text{that}_1}$ $\underline{\text{spherical body}}$ or the propositional state of understanding $\underline{\text{dolphins are mammals}}$ or $\underline{2} + \underline{2} = \underline{4}$. The idea that an individual has a problem of psychological access to its psychological state kind—not to know it as object but to *be* an instance of its state kinds—is absurd on its face. Being instances of psychological state kinds requires having the powers and instantiating the laws that go with those state kinds. Talk of grasping, being in touch with, and accessing the representational contents of those states are misleading, metaphorical ways of characterizing being instances of those kinds.[9]

A second effect of taking the third large main point about perceptual representation as applying to psychological representational content generally is to undermine hyperintellectualized requirements on having such content. In the last century, it was common for philosophers to impose such requirements on being in states with intentionality, or having representational powers, or making reference to environmental entities. Most such requirements were based on bad theories of language. The theories underestimated the role of perception in developing both linguistic and psychological representational capacities.

I catalog some of these supposed requirements.[10] It has been said (1) that to be in an intentional state that makes reference to the physical environment, one must be able to "make sense," to oneself, of being in that state, or be able to explain its constitutive conditions. Or (2) one must have reasons for the states and situate them in a "space of reasons." Or (3) one has to have identifying knowledge of what one refers to by knowing some criterion for that thing to be what it is. Or (4) one has to locate that particular with respect to others in a comprehensive spatial framework. Or (5) one has to consider that particular as one among others. Or (6) one has to be able to articulate one's referring vehicle, making it explicit or conscious; and one has be able to consciously apply that referring vehicle to the particular. Or (7) one must have a concept of the sort of thing that a represented particular is an instance of.

None of these requirements applies to perception. None constitutes a necessary condition for intentionality or representation. An animal with visual perceptions of, and as of, bodies cannot "make sense" of the reference. It need not have reasons. It need not know any criterion for being a body: it is enough that the animal be able to discriminate and track bodies by visual perception. All animals lack a comprehensive spatial framework. Their frameworks are local and fitted to their needs. Many have spatial frameworks without being able to think with or about them. The frameworks can be purely perceptual. Lower animals are unable to consider anything. Many can perceptually discriminate one body or one shape from another in a given context, but this discrimination is purely perceptual. A lot of perception is unconscious. Some of it need not be accessible to consciousness. Perception—certainly unconscious perception—lacks any articulable vehicle, any vehicle, on an analogy to words, that one could articulate with its separate components. The instantiations of perceptual representational content—perceptual kinds—even in conscious perception, lack any conscious vehicles that can be individuated independently of the contents themselves. Animals need not be able to consciously distinguish—articulate—the structural components of their perception. Finally, lower animals lack concepts—components of propositional contents. Perceptual representation of particulars in the environment is a very primitive matter. It requires none of the capacities just catalogued.

I am taking perceptual representational content as a model for all psychological content. One might think that although the cited requirements do not apply to perception,

they apply to propositional attitudes. Let us go over the proposed requirements again with this view in mind.

Perception forms the basis for many propositional attitudes. The simplest perceptual beliefs incorporate perceptual content into a psychological propositional structure that enables the believer to make propositional inferences. Having perceptual propositional representational content certainly does not require that any of the first five conditions in the catalog be met. First, individuals with perceptual beliefs need not *have* the higher-order capacity to think about those beliefs. So they need not be able to make sense of them. Second, animals or young children with perceptual beliefs need have no reasons for those beliefs, although they are epistemically entitled to the beliefs.[11] The simplest reasons for perceptual beliefs require some reference to perceptions. To have perceptual beliefs, one must have perceptions. But one need not be able to think about perceptions. I do think that to have perceptual beliefs one must be able to use those beliefs as reasons for other beliefs. Third, animals and young children with perceptual beliefs need not know a criterion for identifying entities in the environment. Fourth, animals and young children never have a comprehensive representation of space. Fifth, the requirement to consider a particular as one among others suggests a capacity to quantify over others. I see no good armchair reason for requiring animals and children with perceptual beliefs to be capable of quantification. All their reasoning could use singular attitudes, together perhaps with generics. Quantification is not in any obvious way necessary.

The sixth requirement is that one be able to articulate one's vehicle of singular representation—make it conscious and apply it consciously to a particular. Not all perceptual beliefs are conscious. Some perceptual beliefs are very short term and unconscious. It is mistaken to hold that in each case, a believer must be able to bring a belief to consciousness, much less articulate its components.

The requirement of articulability derives from thinking of perceptual beliefs as linguistic performances. If an individual does not articulate a linguistic component in a sentence's logical form, it may seem natural to think that the individual could articulate such a component. I doubt this requirement even for language. But for perceptual belief, it is clearly mistaken. The relation between the form or kind of a perceptual belief and an individual's capacity to separate out components of the form or kind is not straightforward. The form (structure) of perceptual belief depends partly on the form (structure) of perceptual capacities. It is the structure of a psychological representational kind. Not all aspects of psychological representational kinds are accessible to individuals in those psychological states. Elements and aspects of the structure do mark distinct representational capacities in the psychological system. They correspond to some distinct sensitivity that is relevant to representation—to the veridicality conditions of the state or event. So the aspects are *psychologically* articulated. But the individual need not be able to articulate them.

What of the seventh requirement? As applied to propositional attitudes, the requirement is that, for attitudes about particulars, one have a concept of the sort of particular that one's attitude represents. I think that this requirement is correct for the aspects of perceptual beliefs that are about perceived particulars. Perceptions must be guided by perceptual attributives, and perceptual beliefs about a perceived particular must be guided by some *veridical* conceptual attributive. I have argued for this view elsewhere and do not repeat myself here.[12] I think, however, that as in perception, so in perceptual belief about particulars, some particulars that are not perceived are represented. Egocentric indexes that mark the present time, the origin or anchor of a spatial framework, or the believer represent particulars that are not perceived. Their referring depends on the structural framework of the perception or perceptual belief. These applied indexes require sensitivity to time, space, or individual. But they do not require abilities to identify the indexed (represented) particulars. Whether they require *concepts* of time, space, or individual depends on what counts as a concept.

On my view, *concepts* are ability-general representational contents that, constitutively, have roles in propositional structures. That view counts as concepts the ability-general representational contents (ability-general egocentric indexes) that mark the relevant temporal, spatial, and ego sensitivities in propositional attitudes. There are two ability-general aspects of egocentric indexes. The first is the schematic, repeatable indexical aspect that attributes time, place, or individuality. The second is the aspect that marks the privileged relation to the individual's motivations, needs, and perspective. The ability-general aspects embedded in egocentric-index analogs of now, here, and ego (in propositional attitude contents) *are* concepts.

Such concepts do not figure in *identifying* a particular in given situations, as concepts do in guiding perceptual beliefs about *perceived* particulars. Representing particulars via egocentric indexes is not perceiving them and is not an identificatory event. Such contextual representation of particulars need not be *guided* by attributives, conceptual or otherwise. Indexical reference to particulars derives from the orientation of the whole representational system with respect to time, place, or individual. The role of place and time attributives in egocentric indexes is not to help guide an identificatory singling out of a particular. It is to mark the type of framework that the indexing occurs within. Similarly, the element that marks privileged ego-relevance in all egocentric indexes does not guide selection of framework anchor. It marks a systemic, ego-privileged status for the anchor, thus marking an aspect of the psychological state kind.

Guidance is an ability that helps differentiate a particular from alternatives by limiting the *type* of particular that is differentiated. Such differentiation of a particular in a given context is the heart of identificatory representation. Guidance in identificatory representation is always supplemented by occurrence-based abilities that depend on contextual, usually causal, relations to a represented entity. The representation of particulars by egocentric indexes does not rely on *guidance* by attributives. Such indexical

representation derives from a systematic general ability that applies to a particular by virtue of structural features of the system exercised in a given context, given that those structural features are embedded in an environment that has corresponding structural features. Thus, the attributive, ability-general elements in egocentric indexes do not function to guide singular representation, even though they are modes of presentation of the particular that is represented.[13]

III The Nature of Egocentric Indexes

Egocentric indexes mark powers that are essential to being an individual with a representational mind. In some ways, these are the most basic representational powers. The powers realize two constitutive functions. One is to establish the origin or anchor of a representational framework in an indexical way—a context-dependent, rule-governed way. The other is to mark that anchor as having a privileged status with respect to the individual's needs, goals, and perspective. The two functions provide the representational basis for the individual's serving those needs, goals, and perspective—for the individual's doing things for him-, her-, or itself. The unity of individuals with representational psychologies, including persons, consists partly in having representational powers that unify and distinguish their psychologies by realizing these two functions.[14]

The two functions correspond to two conditions on being an egocentric index. An egocentric index is a representational aspect of a psychological state that meets the two conditions. First, it represents contextually—in fact, indexically—some origin or anchor for an indicated type of representational framework (temporal, spatial, individual oriented). Second, that anchor is represented as carrying systematic, immediate, and privileged motivational and perspectival psychological consequences for the individual.

The first condition might be met by a representational element in a perception or a belief that represents, indexically, the perceiver's position or some position on the perceiver's body. Or such an element might represent the time of the occurrence of a perception or perceptual belief. Such representation of a particular depends on an occurrent instantiation of a psychological state—a referential application of an ability-general content. For example, the content of a spatial egocentric index involves a restriction to a *place*, perhaps to where a particular part of the individual's body is, perhaps where, in environmental space, the midpoint between the individual's two eyes is. Such content tends not to specify a body part as such. Its use, however, is restricted to applying contextually to the place at which the cyclopean eye is located. The egocentric index represents that position when a relevant perception or perceptual belief occurs.

The occurrence-based aspect of the representation is an *application*. The ability-general content of the representation restricts the application in the way just described. So the index, as applied in a given context, includes something like the content of $\underline{\text{here}}_1$, where here stands for the ability-general place restriction and for the repeatable

indexical capacity and the subscript stands for an occurrence-based application of the place restriction.[15]

The second condition is met by these framework anchors' (place, time, or individual) being systematically and immediately privileged, within their frameworks, with respect to the individual's motivations, needs, and perspective. For example, a spatial origin marked by a spatial egocentric index is a position in the represented space that is immediately associated with motives to protect what is at that position. A temporal origin in an actional state is privileged in being central to initiating action or to measuring the time to initiation of an action.

The privileging is functional. It does not *represent* motivations, needs, or perspective. The indexes have egocentric content by being types of states that connect functionally, immediately, and in a privileged way to the individual's motivations, needs, and perspective.

What I have said entails that egocentric indexes need not represent an individual—say, the perceiver. They can represent places or times. Egocentric indexes are *egocentric* by virtue of meeting the second condition. They are *indexes* by meeting the first.

In the psychologies of many animals, *no* egocentric indexes refer to the whole animal. Egocentric reference to individuals probably emerges only when an individual can represent its whole body and coordinate such representation intermodally with spatial and temporal egocentric indexes. There are at least two, and probably more, levels of egocentric index *that represent an individual*. These levels are comprised, first, of indexes that represent the individual's whole body in an egocentric way and, second, of indexes that represent the individual as a self—as a being with certain specific, higher-order psychological capacities. This latter sort of egocentric index is a genuine concept of self and is expressed in language by the term "I."[16]

As I have noted, "here," "now," and "I" are linguistic counterparts of egocentric indexes. Not all linguistic occurrences of these words express egocentric indexes for the user, however. If you say, "I am tired," or if I read a Churchill memo that states, "Now is the time to strike," and if I comprehend the sentence occurrence, further instances of these types are instantiated and understood in my language system. However, the occurrence of "I" instantiated in my understanding of your utterance and the occurrence of "now" instantiated in my understanding of Churchill's memo are not associated with motivational or perspectival matters for me. The instances in the *speakers'* psychological systems are analogs of egocentric indexes. But the occurrences of those indexical types in the *recipient* are not analogs of egocentric indexes in the recipient's psychology. So comprehending indexicals that express egocentric indexes in others does not produce an egocentric index that operates egocentrically in the comprehender's psychological system.

The capacity to understand others' indexicals involves an objectifying process. The recipient can attribute egocentric relevance to others that is lacking, for a given occurrence of the linguistic indexical, for the recipient. But in comprehending an occurrence

of "here" or "now" and in imputing that occurrence to another individual, the recipient may not attribute any ego-relevance to the speaker at all. Arguably, these two indexicals do not have ego-relevance *as part of their linguistic meaning*. I doubt that to fully understand "here" or "now," a child has to connect the words systematically with some ego-significance. The linguistic rules seem to govern simply contextual place or time determination. In uses of such indexicals to express an individual's own perception or thought (not to comprehend another's language), the indexicals are, I think, normally associated with egocentric indexes in the individual's psychology.[17] At any rate, egocentric indexes as psychological contents always have ability-general, ego-relevant content.

IV Egocentric Indexes and So-Called Relativized Propositions

Psychological representational contents constitute psychological kinds, including instantiations of kinds, of psychological states. Since egocentric indexes are elements in such contents, they are aspects of psychological state kinds. Such indexes represent anchors or origins of frameworks on particular occasions. There has been a persistent tendency by some philosophers of language to ignore the role of occurrence-based applications in linguistic representational contents of indexicals. Such accounts fail to account for basic, committal aspects of indexical thought. They are also out of touch with how indexicals are understood in the science of perceptual psychology—surely the basis for understanding indexicals in thought.

I have in mind philosophers who appeal to "relativized" propositions in accounting for uses of indexicals. According to these views, the psychological representational content (content with intentionality) of the proposition, the part that marks the individual's psychology, is the content of a predicate or open sentence. The full proposition expressed on a given occasion is supposed to include an entity beyond the representational content. For example, the psychological representational content of a *de se* statement, "I am Hume," is supposed to be that of an open sentence. The full proposition, on these views, contains the speaker.

I doubt this approach even as a linguistic account of indexical sentence occurrences. But here I remain officially neutral on whether such accounts correctly apply to the semantics of language use.[18] I focus on such accounts as theories of psychological representational contents—the representational contents of beliefs. All the philosophers who have pursued this sort of linguistic account have applied it directly—with, I think, only superficial discussion—to psychology. In my view, these psychological accounts are off track.[19]

I reiterate my third large point about psychological representational contents: such contents—or the contents with a mode—constitute psychological kinds at a very specific level relevant to psychological description and explanation.

The fundamental representational kinds are *committal* kinds. A committal kind is one whose representational success or failure hinges on whether it is, was, or will be veridical. Belief, doubt, perception, intention, desire, and fear are all committal kinds. A belief or perception undergoes a representational failure if the belief is not true or the perception is not accurate. An intention undergoes such failure if it is not realized—made veridical.[20] By contrast, suppositions, imaginings, entertainings, and open questions are not committal. I will not argue that committal kinds are psychologically more fundamental than noncommittal kinds. I think the view intuitive. I assume it here.

Committal kinds are kinds of commitment. I focus on the aspect of the commitment that does not include the mode. That aspect sets a condition for veridicality, which is the condition for the psychological commitment's success—the condition of success for the mode. Psychological committal kinds are individuated by the condition for the commitment's being realized. In this sense, the representational content *is* the commitment—what the committal mode is committed to being (or making) the case or not being the case. The kind of commitment given a mode, the representational content, and the veridicality condition are all the same.

But the representational content—the content with intentionality—in relativized propositions is *not* a veridicality condition. It cannot constitute the commitment of a committal state like belief. It cannot constitute the condition of success for any propositional committal state. It can be true *of* or false *of* something. It cannot be true or false. So it cannot be the full psychological representational content of a committal psychological state. It is not the commitment in the sense specified in the previous paragraph. The psychological representational content of the commitment that sets the conditions under which a committal state like belief is successful must be a condition on truth. Since committal psychological states are those that underlie explanation of all other representational psychological states, the appeal to relativized propositions cannot be a full account of the psychological representational content of *any* propositional psychological state. The idea that a full account of the *psychological* content of a belief state could appeal purely to a subpropositional representational (or psychological) content—together with the particular that the content is true *of* or false *of* in given instances of a belief—rests on a mistaken conception of committal psychological kinds.

The mistake derives partly from failing to think of psychological representational contents as specific psychological kinds. Thus, the representational content of a perception is a kind of perception. That of a belief is a kind of belief. Perceptions and beliefs are veridical or nonveridical, not merely veridical-*of* or nonveridical-*of*.

The mistake also derives from overlooking the role of occurrence-based elements—applications—in psychological representational content. Psychological representational content is regarded by these philosophers, and many others, on an analogy with sentence types.[21] This way of thinking completely overlooks a central aspect of any context-dependent psychological representation, including indexical representation.

Many committal psychological states are context dependent. An aspect of the representational content—of the commitment's content—in such cases is therefore occurrence-based application. Applications do not correspond to word or sentence types—such as the type of a given indexical, like "now," "here," or "I." They are events, or preservations of events, of application of ability-general representational contents that do correspond (roughly) to such types.

The weakness of argumentation for taking relativized propositions to correspond to belief states emerges from considering the two points just made: that psychological representational content is a specific kind of psychological state that grounds psychological description and explanation, and that an aspect of the representational content of context-dependent attitudes—the aspect that represents particulars—is an occurrence-based application.

David Lewis's argumentation is typical.[22] Lewis argues as follows. Suppose that a crazy person (CP) believes mistakenly that he is Hume. Hume believes that he is Hume. So they believe alike. CP could have gotten his head (or psychology) into a perfect match with Hume's in every way that is relevant to what he believes. Any respect in which they differ—that results in Hume's belief's being true and CP's beliefs being false—must be outside the head [psychology] of the two people. The point of assigning objects [psychological contents] to the attitudes is to characterize states of the head [psychological states]. So the objects of the attitudes [psychological contents] must be the subpropositional content that Hume and CP have in common. The difference in the truth values of their attitudes must derive from a difference in the individuals, Hume and CP, that is not part of the psychological contents.

Lewis is right to hold that attitudinal "objects" [psychological contents] "characterize" attitudes. But he fails to recognize that the psychological contents that he takes to characterize beliefs cannot fully do so. The commitment involved in having a belief is not subpropositional. Commitment content is psychological content. Commitment content for belief is propositional. Lewis's object "characterizes" only a commitment's predicational aspect. So although Lewis is right to think of a belief's psychological content as "characterizing" [kind-individuating] the belief, he is wrong to think that a belief—the nature of the commitment involved—can be "characterized" subpropositionally. Lewis provides no good reason for taking the psychological representational content of a belief (the content of the committal state) not to be propositional.

The misstep in Lewis's argument is the claim that CP could have gotten his head (psychology) into a perfect match with Hume's in every way relevant to what he believes. CP's and Hume's beliefs are different commitments and involve different occurrent applications. A sufficient ground for differentiating applications is that they actually refer to different entities. Applications are part of the psychological content, and must be, given that the truth conditions set by the two belief states—the beliefs' commitments—are different. One is false; the other, true.

Lewis mistakenly moves from the correct idea that the two people believe "alike" to the mistaken idea that the psychologically relevant contents of the two beliefs are the same and that their psychological belief states are the same in every psychologically relevant respect. They do share the ability-general aspects of their beliefs, the content I am Hume. That is the respect in which they believe "alike." These ability-general aspects are made up of concepts, the psychological analogs of linguistic *types*. This general, indexical content cannot be either true or false. So it does not fully individuate their psychological belief states. This aspect of belief, which they share, is a part of the contents of their beliefs. But it is not the full psychological content of their belief commitments. Their beliefs necessarily involve occurrence-based applications of this ability-general content. And these applications—and the full psychological contents of the respective beliefs—are different. Applications are not freely repeatable. They are occurrence based. They are, however, representational; and they occur in individuals' psychologies.[23]

John Perry offers a similar argument. The argument motivates a whole program for accounting for indexicals in psychology and language. Perry thinks, insightfully, that indexicals like I, now, and here cannot be replaced by cognitively equivalent, nonindexical types of representation. He argues from this point that the traditional view that the "objects" of belief both have truth value and individuate beliefs in a cognitively fine-grained way is unsustainable. The argument fails.

Perry's argument starts by noting that indexical sentence types do not express a proposition that is true or false. "I am making a mess" as a sentence *type* is neither true nor false. The argument considers some possible supplements for yielding an "object" of belief that is true or false. Perry shows that the supplements that he considers yield "objects" of beliefs that are not cognitively equivalent to the indexical-involving "objects." He concludes that relevant belief states are not associated with a fully propositional content. He concludes that such belief states are individuated by what he calls "new-fangled propositions," expressed by an indexical sentence *type*. Such relativized propositions are neither true nor false—only true *at* or false *at* some parameter—the person, time, or place that the indexical sentence type contextually applies to.[24]

Perry proposes a sharp distinction between belief states and "objects" of belief. Belief *states* correspond to the relativized proposition, which is neither true nor false. This proposition is meant to capture the *psychological* content of the belief. *Objects* of belief include both the relativized proposition and the contextual parameter outside the individual's psychology that is needed to determine a truth value. So, unlike Lewis, Perry gives up the function of "objects" of belief in individuating, or corresponding to, propositional attitude states. In effect, for indexically infected attitudes, he eliminates belief as a psychological state that can be true or false or that constitutes a commitment to a truth. He proposes to replace such a state with a hybrid relation that consists of a *psychological* state and a parameter in the world outside the individual's psychology. He

leaves the psychology with a state of *believing-of* or *believing-true-at*. Like Lewis, he takes the psychological state to have a subpropositional structure.

This armchair revision of psychology, and of the ordinary notion of belief, has no sound basis. Perry's argument provides no good reason to introduce relativized propositions, much less for revising commonsense or scientific psychology. Beliefs are committal, cognitively fine-grained states in individuals' psychologies. Belief states have truth conditions and can be true or false. The truth conditions are conditions for representational success of beliefs—for the success of the committal states. The representational contents that set the truth conditions are the contents of commitments of psychological belief states—commitments to something's being true.

Perry's argument depends entirely on overlooking occurrence-based applications as elements in psychological representational contents. He assumes that the supplements for context-independent types of indexical content that would be needed to yield something with a truth value must be *concepts*. He does not specify what he means by a concept. But his discussion is congenial with my view of concepts as ability-general psychological elements that function in propositional structures. Occurrence-based applications are not concepts.[25] But they are representational, and they occur in individuals' psychologies. Indexical beliefs involve occurrence-based applications of the context-independent indexical content. The psychological representational contents of such beliefs both individuate the state of belief and are true or false, not merely true or false *in*, *at*, or *of*.[26]

Of course, there is an ability-general kind shared by different beliefs, expressible by the *type* "I am making a mess." Some instances of this kind are true; others, false. But actual indexical (and demonstrative) belief states are never fully ability general at the most specific level of psychological classification. The states of the ability-general type I am making a mess are different, at the most specific level, for different thinkers represented by the type I.[27] Their states are different commitments. These different commitments hinge on differences in occurrence-based applications of the ability-general concept I in the psychological representational contents.

Lewis, Perry, and others[28] err in omitting *applications* of egocentric indexes—or other indexicals—from psychological contents of indexical attitudes.[29] The mistake derives from unsound argument. It runs counter to psychological science.[30] Egocentric indexes that designate particulars that establish origins or anchors of representational frameworks are postulated in science, beginning with perceptual psychology and the psychology of action. Such indexicals are clearly taken to refer to particulars (places, times, individuals) when they occur in psychological states on particular occasions. There is every reason to think that they should be treated similarly in the psychology of higher cognition as well.

The basic point is that actual perceptual states are accurate or inaccurate; belief states are true or false. The psychological representational contents of such states are veridical

or nonveridical, not veridical-of or -at. Lewis and Perry's constructs are hybrids of psychological content and nonpsychological parameters—not natural kinds. They are monsters made by mangling natural psychological kinds—abstracting some of their ability-general psychological aspects and grafting them onto the referents of omitted occurrence-based applications.

To summarize my criticism. I make two points against taking relativized propositions to be the representational contents of belief states. One point is a priori. Since the committal psychological aspect of belief states and other committal propositional attitudes is a truth commitment, it has truth conditions, not truth-of conditions. So representational content that individuates specific kinds of committal states must be capable of truth or falsity. The a priori point is defeasible. But no remotely adequate reason has been given to think it defeated.

The other point is empirical. The science of perceptual psychology postulates, as part of the representational content of perceptual states, egocentric indexes. The states and their contents are taken to be accurate or inaccurate, not merely accurate-of or inaccurate-of. There is no reason to doubt that the practice, in perceptual psychology, of postulating indexicals with occurrently established semantical values (referents) in the representational contents of perceptual states is not equally applicable in the psychology of propositional attitudes. Analogs of perceptual egocentric indexes occur in the representational contents of beliefs. Taking the indexes to occur in representational contents of beliefs, and taking instances of the indexes to apply in given contexts to environmental anchors, yields representational contents with truth conditions. Assuming that the practice in our best psychological science, perceptual psychology, is applicable in propositional-attitude psychology, there is empirical reason to believe that indexical propositional states have truth conditions, not truth-of conditions.

One finds various excuses—usually expressed in offhand ways—for omitting a psychological representational content that represents the relevant parameter (time, place, or individual). These excuses are poorly motivated. I briefly discuss a sampling.

One reason offered for not including a representational element in the psychological contents of indexical psychological states that specifically refers to an extrapsychological parameter is that an entire perceptual or doxastic structure provides the parameter, without any need for a representation of the parameter.[31]

To be sure, the indexing of parameters does derive, not from contextual acts specific to selecting those parameters, but from occurrence of a state that is structurally sensitive to them as anchors of a representational framework. But that is no reason at all for taking indexing of those parameters not to be a structural aspect of the state. Again, thinking of indexes as like words articulable by, and under control of, the individual can lead one to think otherwise.

A similar ground cited for omitting egocentric indexings in psychological representational content is that they do no *work* to differentiate one *representatum* from others.

The idea is that since the representation occurs automatically and derives information in a single recurrent way from the extrapsychological world, it can be omitted in specifying the state's content.

Again, this idea presents no reason for its conclusion. Indexicals just *are* applied automatically. They are not parts of identifications. To be elements in psychological content, applications need not be separately articulable by an individual, as long as they mark a sensitivity to the parameter's role in the representational framework.

Similarly, it is assumed that occurrences of indexes in psychological states should cost extra time or effort, as using a longer sentence would cost more than using a shorter sentence.[32]

Given that the indexes are aspects of kinds of states, they and their instantiations earn a place in psychological representational content, not through extra time or effort in producing them, but through constituting instantiation of a specific kind of psychological state with a specific type of sensitivity.

An even less cogent excuse for not including egocentric indexings in psychological representational content, at least for certain individuals (say, children), is the claim that the individuals lack concepts for times, places, or themselves and thus lack these parameters in their ontologies. I have already addressed the issue of concepts. Nonconceptual, ability-general aspects of spatial and temporal egocentric indexes occur in primitive perceptual states. Conceptualization depends only on these perceptual aspects' functioning in propositional structures. Then they become ability-general propositional elements—concepts. That an *individual* does not articulate the abilities—say, in language—is irrelevant.

Determining an individual's ontology is posterior to determining the representational contents of the individual's beliefs. An individual's ontology depends on what *representata* there must be for the individual's committal propositional states to turn out true. Thinking intuitively that an individual lacks times, places, or itself in its ontology often derives from thinking of individuals' ontologies as deriving from their conscious, linguistically articulated views. One can think of an individual's ontology that way. But that way carries no weight in determining an individual's psychological representational content. Conscious, linguistically articulated beliefs are a small subset of an individual's beliefs.

Since indexes of times and places occur in the perceptual states of very simple individuals, and since perceptions are partly constitutive of the representational contents of perceptual beliefs, times (or temporal relations) and places (or spatial relations) are represented in the perceptual beliefs of the least sophisticated thinkers. The fact that these thinkers do not consciously articulate these representations, or cannot "make sense of them" to themselves, is irrelevant.[33]

Indexing the present time does not precede, phylogenetically or developmentally, representing past or future. Representing past and future does not depend on a general

grasp, or any *understanding*, of past or future. Perceptual indexing of the present is always linked with memory—in perceptual tracking—and with guidance of anticipated action. Present-past-future representation occurs in perceptual systems long before *understanding* temporal relations. Such systems are incorporated into propositional attitudes and underlie learning tenses in language.[34]

V Uses of Individual, Spatial, and Temporal Egocentric Indexes

I focus now on the three main types of egocentric index—individual, spatial, and temporal. I believe that egocentric indexes of *individuals*—first of their bodies, then, later, of persons with the I concept—are late phylogenetic developments. Such indexes emerge only when a psychological system can relate inputs of different sensory modalities to a continuing proprioceptive whole-body image. Apes, dolphins, elephants, and a few other creatures evince such capacities.[35] We do not know whether somewhat more primitive animals have them too.

Whole-individual egocentric indexes probably occur in prepropositional perceptual systems. The animals known to have them, however, also may have propositional attitudes. So the prepropositional indexes may be immediately incorporated into the individuals' propositional attitudes, thus yielding conceptual analogs. Whole-individual indexes in prepropositional states are the antecedents of first-*person* concepts. They are antecedent, first, in not being concepts and, second, in not requiring a capacity to think *about* psychological states. There are surely also whole-individual egocentric *concepts* that are not first-person concepts.

Spatial egocentric indexes are phylogenetically more primitive than whole-individual egocentric indexes. Spatial egocentric indexes represent various positions on individuals' bodies. For example, in representational actional systems there are spatial egocentric markers for the positions of parts of an arm or hand that govern reaching and grasping guided by perception. Sometimes several egocentric indexes are applied to positions of different parts of a limb in a single action. Different motor subsystems have their proprietary spatial frameworks, and action coordinates movements via coordinations among these frameworks.[36] Tactile perceptual systems harbor a similar multiplicity of frameworks.[37] In the human visual system, the position of the cyclopean eye—an anchor located on the plane of the two eyes, midway between them—is primary. But multiple egocentric anchors figure in visually guided action.[38]

All these spatial egocentric indexes have two things in common. First, when they are applied, they apply to locations on the body that are represented as being in relation to other things in the environment. So if the body moves, the represented location changes. The function of representing that position is to provide a psychological marker, which figures in psychological coordination of perception and action, of an

origin or anchor in relation to which the positions of other entities that are perceived or acted on are systematically represented.

Second, the applications mark the positions that they represent as privileged with respect to other positions represented in the framework. They are privileged in being immediately connected to the individual's needs, motivations, or perspective. The privileging does not require that the individual be able to represent such psychological matters. It consists in immediate, noninferential functional connections in the psychological system. Again, this component of psychological representational content is an aspect of a kind of psychological state. It is not something that the animal need understand, grasp, or articulate. As an aspect of a kind of psychological state, it individuates sensitivities and functional aspects of the system.

Now, to temporal egocentric indexes. There are at least three types of timing capacities in the informational systems of most reasonably complex animals.[39] One is a capacity that operates, very short term, in milliseconds. It figures in responses to motion and in the most elementary aspects of sensory-motor systems.[40]

Second, oscillators that time various cycles are important in animal life. For example, there are timers of the day, the year, the time it takes for flowers to regenerate sugar, and so on. The most common of these capacities is a circadian oscillator, tuned to the light-dark twenty-four-hour cycle. Such cyclic timing capacities figure in feeding rhythms, traveling schedules, and various other sensorimotor activities.[41]

A third capacity times intervals. Until recently, the length of some of these intervals was not fully recognized by psychologists. Some animals—mammals and birds—learn, very quickly in one trial, intervals between significant events that can range freely from a few seconds to several days or longer. The intervals appear to be essentially almost arbitrary in length. Learning them seems to depend only on the informational significance of the paired events.[42]

The first two capacities, and perhaps all three, have *pre*perceptual, *pre*representational forms. The first two are encoded into the physiologies of very simple organisms—organisms incapable of perception or representation, as distinguished from mere information processing.[43] Such encodings phylogenetically antedate emergence of the objectification marked in perceptual constancies. Perceptual constancies mark emergence of genuinely representational systems. For example, the light-dark cycle can be registered in one-cell organisms so as to affect movement. I see no reason why interval timing *must* be associated with representational systems—even if it were, in fact, to occur only in animals with representational capacities.

In my view, retention in the first two types of timing systems becomes *representational memory* when what is retained derives from perceptual representation. That is, in systems of timing that *use* perception—where retention functions to retain perception for further use—the timing capacity, coded in memory, is representational.

For example, once very short-term memory retains perceptual input for guiding action, the temporal aspects of the memory, which mark some matters as past, are representational. And the use to which the perception is put—in guiding motor activity—itself is representational. Perception's guiding use requires coordination between the time of the perception, as retained in memory, and the subsequent time of the use. Thus, sensitivities to order and interval are incorporated into a representational system.

Let us look further at the role of an egocentric temporal index in timing an action guided by perception. Suppose, first, that a perceptual-actional system has co-opted a system of circadian timing. A timer runs in intermodal or modality-specific memory. The timer is like a twenty-four-hour clock. The clock runs automatically, though it gradually goes out of phase unless it is entrained by sensory exposure to the light-dark cycle. *Use* of the timer requires a psychological sensitivity to when in the twenty-four-hour cycle the present time is.

Suppose that an animal must seek prey at some point in the evening—say, 7 P.M.[44] Its perceptual system can guide it to an ambush position. If it goes too early, before light fades, it may alert the prey. If it goes too late, the prey will have disappeared. The egocentric index that marks the present time must be coordinated with the circadian timer that marks the time of day, so that the animal can move into position at the best time.

Moving into position itself requires coordinating the indexed time of perception with the anticipated time of crouching into attack position. A perception that indexes the present time at 6:40 P.M. must begin to guide movement whose goal is to be in the attack position by 6:45 P.M. Perception must guide a series of movements that anticipate crouching at the appropriate future time. The representation of the future time in the actional states must represent that time as being in appropriate temporal relations to given present times—both in the relevant perceptual states and in preparatory actional states. So both perception and action must locate themselves, via a present-time egocentric index, with respect to a clock running in memory.

A similar story applies to interval timing. Suppose that an animal has been regularly fed in a certain way at intervals of fourteen hours or thirty-one hours. The animal holds in memory fourteen- or thirty-one-hour intervals of relevant perceived feedings. Suppose that the pattern is broken. Then after a long time, the animal perceives a feeding of the relevant type. The perception indexes the present time of the episode, and that time is tracked in memory. The animal's psychological system coordinates that marking with a continuously running interval timer. So in effect, the perception sets a fourteen- or thirty-one-hour stop on the continuously running timer, coordinating the beginning of the interval timing with the egocentrically marked present time of the reinstituted feeding.

Again, the animal's present-time indexes must measure the time that elapses on the interval stopwatch. The measuring not only times the anticipated action but allows

the animal to do other things before the end of the interval. The interval itself is an objective time span. But to use it, the animal's psychology must connect that span with present times indexed in perceptual, and subsequent actional, states. The indexes mark egocentrically starting points for the temporal interval from now to the time of the feeding; further markings place further perceptual or actional states on the temporal interval.

Applications of indexes mark coordination of present perceptions with measured time intervals and the cyclic ticking of the circadian clock. They constitute a key aspect of perceptual and actional states. The applications need not be occurrences of discrete items in the neural or psychological system that require effort, as production of linguistic items in speech requires. Coordination is a structural aspect of the psychological system. It can get disrupted and fail. But its occurrence is an aspect of the instantiation of whole psychological states. Regarding subcomponents of psychological representational contents as aspects of psychological kinds rather than as discretely produced linguistic items is one way in which philosophy can coordinate better with psychology—and help us understand the nature of psychological representation.

Notes

1. I make the stronger point: there is a many-one relation between most *primitive* ability-general perceptual representational contents of full perceptual states in a given modality and whatever entity in the environment such content indicates. I believe that differences of defocus, differences in probability estimates associated with different specific proximal inputs, differences in compromises among different routines that lead into final (full) perceptual states, and other differences in often phenomenologically discriminable perspectives all suffice to produce such many-one relations even for primitive perceptual attributives in a given perceptual modality. I believe that in fact—though perhaps not a priori—perceptual constancies exhibit this stronger point, stronger than the point in the text. I have benefited in thinking about this matter from a discussion with Michael Rescorla.

2. I discuss ability generality elsewhere (Burge 2009, sec. II, 259–261; 2010, 242, 394).

3. I discuss the first two points in detail in Burge (2010, e.g., 379–396). See also "representational content," "accuracy," and "veridicality condition" in the index of that book.

4. I do not exclude pluralized applications in perception, of the form those. I focus on singular applications because I think that they are more basic. See note 23.

5. There is, however, always this degree of cross-modal shareability even for perceptual states: a visual perception can be retained in visual memory and can visually guide an actional state. The point is that the cross-modal shareability of perceptual states is more restricted than that of most propositional attitude states.

6. I lay synesthesia aside. It is an interesting condition, but it is not normally a source of reliable perceptual information.

7. See Carey (2009) for a marvelous discussion of what may be postperceptual, amodal, nonpropositional states. A weakness in the book is that it does not provide a clear account of the difference between perceptual states and postperceptual, iconic, nonpropositional states. See Burge (2011a).

8. Discrepant information in one modality can interact with representation in another modality. See Ernst and Banks (2002); Ernst and Di Luca (2011).

9. For more detailed discussion, see Burge (2005a, 29–31).

10. I criticize most of these requirements in Burge (2010, chaps. 1 and 5–7).

11. See Burge (2003a). I do think that children and animals must be capable of engaging in inferences *from* perceptual beliefs—if they are to have propositional attitudes at all.

12. Burge 2009, sec. II.

13. For discussion of guidance in occurrence-based perceptual applications to particulars, and of exemption of egocentric indexes from guidance, see Burge (2009, sec. II, esp. 257–258).

14. I make these points in greater detail elsewhere (Burge 2003b, 2013, esp. sec. I).

15. As noted in the text at the end of this section, there are differences between here and spatial egocentric indexes. One difference is that most such indexes are governed by psychological rules that tie them to places that are more specific than the "where the speaker is" linguistic rule that seems to govern "here" and its corresponding concept here. A second difference is that "here" can be equally understood as used by oneself or by someone who is in another place from oneself; and it is not obvious that the linguistic rule associated with "here" requires that one associate with the term (for oneself or for another speaker) ego-significance. I conjecture that the meaning of "here" is an abstraction from some aspects of the content of egocentric indexes.

16. For discussion of this point, see Burge (2011b, Lecture 1: "Some Origins of Self"). There are probably intermediate levels between these two—levels of indexes whose content is essentially associated with representations of the individual as having psychological capacities but not the specific psychological capacities constitutive of selves.

17. Ego-relevance is part of the sense, but not part of the meaning, of linguistic occurrences that express propositional thoughts. For discussion of the difference between sense and ordinary linguistic meaning, see Burge (2005a, part 2; 2012). See note 15.

18. Such accounts produce convenient and heuristically useful semantical systems. The *point* of semantical representations in language study is, I think, less agreed upon than the point of attributions of psychological content in psychological science. This lack of agreement is one reason for not taking as hard a line on linguistic accounts as I do on psychological accounts.

19. See Lewis (1979); John Perry (1979 [reprinted in Perry 1993]); Barwise (1988); and Recanati (2007). Lewis goes for properties rather than representational contents, but the structural issues remain the same.

20. Committal kinds are what they are by virtue of their function. Committal kinds do not connote commitment by the individual, much less a conscious commitment. In having perceptions, insects have instances of committal kinds of states.

21. The focus on types is common in semantical theory because of convenience of representation; the associated logic is more easily formulated by relativizing types to contextual parameters than by operating directly on occurrences.

22. Lewis (1979, 525–526). Lewis's position that context-dependent beliefs cannot be beliefs in propositions (but must be beliefs in something subpropositional—like propositional functions or possible properties) falls directly and trivially out of his idiosyncratic combination of the view that propositions are sets of possible worlds and the view that different possible worlds share no individuals. But Lewis's poor argumentation has influenced many who do not share his metaphysical views about propositions and possible worlds. I think that the basic kinds relevant to understanding propositional attitudes are representational and cognitive, not modal. Although modal approaches to the "objects" of propositional attitudes can illumine aspects of psychology, I think that they are not fundamental. So I think that Lewis's attempt to explain psychological states *fundamentally* in terms of the modal notion possible world is a mistake.

23. For extended discussions of occurrence-based applications, see Burge (2009, esp. sec. II; 2005b, esp. sec. VII; 2010, 381–394, 538–546). My first appeal to occurrence-based applications was in my 1977 paper "Belief *De Re*." See the retrospective discussion in "Postscript to 'Belief *De Re*,'" both reprinted in Burge (2007).

24. In this paragraph and the next I draw on Perry (1993, 33–34, 37–38, 42–43, 47–48).

25. This point is explicit in Burge (1977). The present conception of concepts is broached in Burge (2009, 261; see also Burge 2010, 540).

26. See Burge (2009); and "Postscript: 'Belief *De Re*'" in Burge (2007). Since I think that perception and belief are fundamental in psychological representation, indeed in the underpinnings of linguistic representation, and since they are states that are committal with respect to veridicality, I believe that a semantics that relativizes truth (or accuracy) cannot be fundamental for psychological representational content. I conjecture that similar points apply to the psychology of modal representation, representation of necessity and possibility. Although we know how to think in terms of truth-in-a-world, I conjecture that the *fundamental* semantics for the psychology of modal thoughts involves a truth predicate, not a truth-in-a-world predicate.

27. There is an analogous difference in occurrent applications of the ability-general present tense.

28. Other unconvincing arguments for taking relativized propositions to be fundamental psychological representational contents have appeared in the literature. I cite two without discussing them in detail. Barwise's (1989, 24) argument fails to consider demonstrative applications (to the salt and pepper), in the same way that Lewis's argument does. It also conflates ability-general aspects of what is said with the whole representational content. The argument in Barwise and Etchemendy (1987, 121–122) fails to consider demonstrative-like referential applications to the event of having a poker hand and—I think, through the proper name—to the person holding

the hand. I believe that discussion of "it is raining" in Perry (1993) along with much of the subsequent literature, is hampered by failing to recognize applications in relevant psychological states—especially applications to an occurrent event of a raining.

29. Lewis omits the occurrence-based application *and* the ability-general content of the index. Perry omits only the application. In "Postscript" to "The Problem of the Essential Indexical" (Perry 1993, 50–52), Perry embraces as "part of the story" a diagonal proposition that is conceived as a set of possible worlds that includes a token of an indexical like "I." It has been suggested to me that this sort of proposition—allowing transposition from taking propositions to be sets of possible worlds to taking them to be structured representational contents—is the application-based content that I am committed to. This suggestion is three ways mistaken. Perry's token is individuated independently of the user. The token is not rigidly referential across possible worlds; and, as Perry clearly sees, the diagonal proposition is not what is believed.

First, since applications are mental occurrences, I think that an occurrent application of I cannot be individuated (across possible worlds) independently from the individual who produces the application occurrence. Occurrence-based applications are grounded in mental occurrences. I think that the same grounding mental occurrence could not have occurred in a different mind. Hence, in the case of applications of I, the referent of the token application cannot be different across worlds. I do not think it a momentous matter whether application events in general must be individuated in an "object-dependent" way—so that they could not have had a different referent in different worlds. I am inclined to think, however, that demonstrative-like applications in perception should not be individuated in that way. (This view is compatible with all occurrence-based referential applications' being rigid.) But in the particular case of applications of I, the referent cannot vary across worlds, because I refers to the user, and the user of an occurrence-based application could not have been different from its actual user.

Second, all occurrence-based referential applications refer rigidly. *Given* the referent in the actual world, the application is evaluated with respect to that referent in all possible worlds. Cross-world evaluation of any thought containing referential applications requires that the referent be held constant.

Third, the propositional representational contents that I am committed to are, unlike any of Perry's, both contents of beliefs and the individuators of belief states: they *are* occurrence-based kinds of belief states.

Perry's postulation of a mélange of "propositions" (some of which cannot be either true or false) may have some uses in understanding language. But they do not do the work of belief contents—constituting what is believed and simultaneously individuating the belief state. Perry's arguments that this work cannot be done by any one type of entity fail. His position is incompatible both with a normal a priori warranted understanding of what a belief is and with empirical scientific practice in accounting for indexicals in perception, perceptual belief, and other psychological states whose structure involves the uses (applications) of indexicals.

30. For examples of uses or discussions of egocentric indexes in science, see Gallistel (1990, chaps. 3 and 5, esp. 106–109); Jeannerod (1997); Klatzky (1998); Musto et al. (1999); and Crawford, Medendorp, and Marotta (2004, 10–19). Egocentric indexes are taken, in the science, to be contextually applied representations. It must be said that explications of the "ego" aspect of the

representations by scientists tend to be inept. Nearly all philosophical explications of this aspect are also mistaken, usually by being hyperintellectualized.

31. I have heard oral versions of this point, especially from Lewiseans. In the literature, see Perry (1993, 148–149; and 1986a, 216). The point is strongly implied by Recanati (2007, 148).

32. See Dokic (2007, 210–211) for an articulation of this assumption. Perry may make the same assumption (1986a, 219; see his term "burden"). He clearly assumes that the indexes that represent individuals would have to "identify" the thinker, or would have to represent something perceived or articulable. Perry provides no serious reason not to take an applied index to help individuate perceptual beliefs and hence to be a component of the psychological representational content. His idea (219) that an extrapsychological factor suffices to coordinate perceptual belief and action—patently a *psychological* coordination—seems to me unsupportable.

33. Michael Dummett writes, "We first learn what it is for something to be warm, … that is to say, for the predicate 'is warm' … to be applicable to it, where the verb 'is' is in the true present tense. From this we advance to an understanding of what is meant by saying of an object that it was or will be warm … at some other time. The advance is made by our acquiring a general grasp of the past and future tenses. That is to say, to understand 'was warm' or 'will be warm,' we apply to our prior understanding of what is meant by saying that something is warm our general comprehension of what it is to speak of how things were or will be at another time." Quoted in Recanati (2007, 127). Recanati goes on to claim that a "temporally neutral" present tense is developmentally more basic than representation of past or future. I believe that both Recanati's views and Dummett's are out of touch with what is known in ethology and developmental psychology. Indexing present time—which is not temporally neutral—occurs in the most basic perceptual states. When these perceptual capacities are conceptualized in perceptual beliefs, there are conceptual indexes of times. Present tense, from the beginning, is not neutral and is coordinated psychologically with perceptual memory of the past and perceptual anticipation of the future. Although I write of representation of times and places and believe that such representation occurs in very primitive psychological states, nothing that I say here depends on my view that individuals' ontologies are committed to times and places as particulars rather than merely temporal and spatial relations among other entities. What is important for my purposes is that temporal and spatial concepts enter into the most primitive indexing in perceptual beliefs.

34. For discussion of the phylogenetic emergence of timing in perceptual systems, see Burge (2010, 518–529). In the quoted passage in note 33, Dummett's view that learning what it is to be warm just *is* learning what it is for a *linguistic* predicate to apply to it is a typical hyperintellectualization, as is his view that learning temporal relations—past and future—to the present depends on acquiring some general understanding. Learning temporal relations to the present rests on incorporating perceptual tracking capacities into propositional attitudes. Such incorporation does not require any generalized understanding of time.

35. See Burge (2011b, Lecture 1). For psychological work on body images, see Paillard (1999) and Graziano and Botvinick (2002). For philosophical work, see O'Shaughnessy (1995).

36. See Jeannerod (1996) and Graziano (2001).

37. Zampini, Harris, and Spence (2006).

38. For work that cites the cyclopean eye, see Banks, Bacchus, and Banks (2002). Of course, insects with multiple eyes have different types of spatial anchors.

39. For overviews, see Wing and Beek (2002); Buhusi and Meck (2005); Crystal (2009).

40. Bermejo and Zeigler (1998); Karmachar and Buonomano (2007); Ivry and Schlerf (2008).

41. Farner (1985); Kolterman (1974); Albrecht and Eichele (2003).

42. Crystal (2006); Cordes and Gallistel (2008); Balsam, Sanchez-Castillo, et al. (2009); Balsam and Gallistel (2009); Balsam, Drew, and Gallistel (2010).

43. For discussion of the distinction, see Burge (2010, chap. 8 and 529–531).

44. Of course, the term "7 P.M." does not stand for the actual content of the representation of a position in the circadian cycle. But that time of day is represented in terms of its temporal distance from the time marked in the circadian temporal system.

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