Nonconceptual Demonstrative Reference

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The paper argues that the reference of perceptual demonstratives is fixed in a causal nondescriptive way through the nonconceptual content of perception. That content consists first in spatiotemporal information establishing the existence of a separate persistent object retrieved from a visual scene by the perceptual object segmentation processes that open an object-file for that object. Nonconceptual content also consists in other transducable information, that is, information that is retrieved directly in a bottom-up way from the scene (motion, shape, etc). The nonconceptual content of the mental states induced when one uses a perceptual demonstrative constitutes the mode of presentation of the perceptual demonstrative that individuates but does not identify the object of perceptual awareness and allows reference to it. On that account, perceptual demonstratives put us in a *de re* relationship with objects in the world through the nonconceptual information retrieved directly from the objects in the environment.

Introduction

It is common to perceive an object and then refer to it, on the basis of one's perception, by using a demonstrative such as, "that" or "this". The "that", or "this", when used to point to an object currently perceived are called "perceptual demonstratives". According to Campbell (1997) this is the most basic form of reference. The question is how the referent of a perceptual demonstrative is determined and how the corresponding thought can be about that object. Campbell (1997, 55) thinks that the problem of reference to objects by means of perceptual demonstratives is a problem of relating concepts to imagistic content: "the idea that there is a distinction between propositional and imagistic content is familiar and compelling. The problem is to explain the relation between the two types of content".

"Imagistic content" is the content involved in imagistic or pictorial representations, which largely preserve the spatial structure of the scene they represent. It is the content of our experiences as we consciously access it and use it to see things as being such and such: "looking out of the window, then we

may discuss the castle before us, identifying it as 'that castle,' the one we can see". Since this content can be the content of judgements and beliefs, it is clearly a conceptual content.

For Campbell, the reference of a perceptual demonstrative is determined by selective spatial attention, which is the selection of "imagistic" information from a perceived scene for further processing. Campbell's reasoning is simple. To demonstrate, one selects the location of the object of demonstration, and pays attention to it. One also need to be conscious of that object, otherwise one could not "point" to it. From these, it naturally follows that spatial selective conscious attention is necessarily involved in acts of perceptual demonstratives.

Campbell's (1997, 69) main point is that the "ability to perceive spatial relations between perceived items might be thought to be needed for reference to spatiotemporal objects", and that selective attention is the notion needed to describe the relation between imagistic and propositional content, since selective attention fixes the reference of terms figuring in propositional content. Campbell uses Treisman's (1993) *Feature Integration Theory* (*FIT*) theory of selective attention, according to which information from different feature maps is bound together and thought to pertain to a certain object that occupies that space, by extracting the location encoded implicitly in any feature information. Spatial attention makes the implicit location explicit.

Campbell's account faces two serious problems. The first is that the use of conscious attention and of concept-involving consciously accessible 'imagistic content' for an account of the reference of demonstrative thoughts is problematic since both propositional and experiential content are conceptual representations and the issue of reference is a matter of relating conceptual representations to the world, not of relating conceptual representations to each other. One needs a way to fix the reference of perceptual demonstratives without using descriptions, since the latter involve concept terms.

The second problem pertains to Campbell's reliance on Treisman's *FIT*. This theory assumes that objects are reconstructed in vision by binding together features found at the same location. However, empirical findings suggest that conscious attention and feature encoding may not be indispensable for object individuation; that is, for picking up objects in a visual scene. This may occur at an earlier stage by means of object-centered segmentation processes that index objects and attach mental particulars to things.

To eschew Campbell's first problem, one should analyze the role of some causal interactions in relating the semantic content of demonstrative concepts in the world in a way that, at a last analysis, does not rely on the possession of concepts. This presupposes that before one attempts to ground demonstrative concepts in the world, one should first solve the problem of the reference of perceptual demonstratives in a nonconceptual way. That is, one should

provide an account of the way deictic acts succeed to refer to objects in the environment in a nonconceptual way. Perceptions are not of objects in virtue of relating imagistic to propositional content, both of which depict or encode (meaning conceptually represent) the objects. The intentional relation between perception and events in the world, that is, the of-relation between perceptual mental states and events, should be sought at the level of the direct causal relation between perception and the world. Therefore, we need to show that the reference to objects and some of their properties emerges in conceptually unmediated causal ways from our viewing a scene, and that this referring induces in us perceptual states with nonconceptual content.

When we examine demonstratives we do not mean the linguistic expressions of the form "that X" (to use Kaplan (1989) "dthat + [demonstration]") but the mental state that could be linguistically articulated by such demonstrative expressions. Such a mental state occurs when attention is drawn by some object and we focus upon it; we are in an internal mental state whose content is somehow causally related to the object and its features. Were we asked to report what we are attending to, we would have replied "that X" pointing to the object. To do that, one need not be able to identify X or describe it using any concepts; one need not even possess the concept "objecthood." This is the reason we examine one's mental state when one employs a perceptual demonstrative, and not the linguistic expression that could articulate it. The latter, being an utterance, has a conceptual structure; it contains the concepts articulating the terms involved in the description accompanying the "dthat" and it also presupposes the knowledge that it is an object which one is attending to.

Here is another way to make this point, which we borrow from Smith (2002, 92). Suppose one perceives a red object, one possesses the concept "red", and utters the perceptual judgment "that is red". When one perceives the red object, the natural analogue in the perceptual act of the term "that", which occurs in the linguistic expression of the demonstrative, is the occurrence of the perception itself that constitutes a demonstrative reference to the world. Thus, the perception of red has the cognitive force of "that is red". This means that perception allows one to make a *de re* judgment about the world. It is exactly this "natural analogue" that we purport to explore here and which we have called the mental act of perceptual demonstration.

We argue that causal chains relating the world with mental acts of perceptual demonstration single out the demonstrata and attach mental particulars to things. In a linguistic context our claim is that these causal chains fix the reference of the perceptual demonstratives in a nonconceptual and nondescriptive way. The causal relation is provided by the nonconceptual contents of perceptual states that are retrieved in bottom-up ways from a visual scene by means of preattentional object-centered segmentation processes. The objects

that are singled out or individuated as the demonstrata of the demonstratives are not the objects as we experience them; they are invested only with "transducable" (Pylyshyn, 2003) properties that are retrieved bottom-up. The causal chains typically start with a perceptual encounter with an object, a "grounding" Devitt (1996, 164). We stress the point that there is a level of object individuation that does not encode features and does not presuppose concepts, and which, thus, precedes object identification.

The paper consists of two sections. In the first section we present, although we do not adduce evidence for, a theory according to which there are perceptual mechanisms that retrieve information from a visual scene in purely bottom-up ways, that is, in conceptually unmediated ways; these are the object-centered segmentation processes of early vision or perception. These mechanisms open a dossier or object-file for objects, which initially individuate a featureless object and allow its tracking; in other words they assign to the object its objecthood and its persistence in space and time. Then this file is filled with information that can be retrieved from a scene in conceptually unmediated ways. In this framework, we discuss the problem of demonstrative reference and we present a view of reference to show that the senses of demonstratives, which consist in the information retrieved from a visual scene in conceptually unmediated ways, individuate the demonstrata in a causal way. To that end we employ Garcia-Carpintero's (2000) theory of demonstratives and claim that reference is fixed by opening an object-file for the referent of the demonstrative. Once an object-file has been opened, information can be predicated to the object. This information is being assigned to the object file of that object, and it is about that object.

In the second section, we contrast our account with some other theories of reference of perceptual demonstratives, especially with Campbell's (2002) and Haugeland's (1998) theory. Then we relate our theory to Putnam's (1981; 1983) and Kripke's (1980) "causal theory of reference". Our claim is that the causal connection between the nonconceptual content of the object-files and the world provides causal chains that solve the grounding problem and overcome some of the problems associated with causal accounts of reference.

The argument supporting our thesis consists in: (a) empirical evidence supporting both the retrieval of bottom-up information in vision, and suggesting that the initial object files that are used for object individuation do not encode attributes. When they do, the properties are used to individuate and not identify the object.; (b) the epistemological requirement that the reference to object tokens should take place at a nonconceptual, nondescriptive level. By means of (b) we establish the epistemological necessity that the initial object file have exclusively nonconceptual content, and by means of (a) we substantiate the existence of such a file and the existence of perceptual mechanisms that implement it.

I. A Theory of Reference of Perceptual Demonstratives

I.1. Nonconceptual Object Individuation

Campbell's (2002) theory of demonstrative reference despite its problems has an important insight: spatial and motion information plays a crucial role in providing a nondescriptive mode of presentation of the demonstratum, which fixes the reference of the demonstrative. Thus, we start by discussing in some detail Campbell's theory. We aim to foreshadow its shortcomings and to propose a way they could be amended so that one could come up with a theory that retains Campbell's insight while avoiding its problems.

We sketch first the empirical grounds on which we criticize Campbell's account. The reader should refer to Raftopoulos (2006) and to Raftopoulos and Muller (2006) for a detailed exposition of a theory of vision on which the sketch is based and for references to the relevant scientific work. There is ample evidence for perception and featural binding without visual attention. More specifically, there is evidence that visual and even semantic features of objects can be detected even in the absence of attention. Studies of *Change Blindness*, *Inattentional Blindness*, and studies of perception in the absence of attention suggest that even when there is no awareness of stimuli, stimuli are nevertheless perceived, and grouping of features into some form of objects takes place along the ventral system. Moreover, there may be both perceptual and semantic processing of stimuli when the stimuli are not attended under conditions that preclude awareness of the stimuli.

Some models of attention assume that attention restricts various types of information processing to certain selected fields; attention is supposed to restrict visual processing to certain spatial areas of the visual array. However, there is substantial evidence that there is an *object-centered* component to visual attention, in which attentional limitations are characterized in terms of the number of preattentively defined discrete *objects* that can be processed simultaneously. This component consists in the preattentional object-centered segmentation processes that parse a scene and provide representations of objects as discrete spatiotemporal entities that persist in space and time; they function as an indexing mechanism that individuates objects, override featural information and do not lead to the identification of an object, that is, the representation of an object under a certain description.

The same studies render clear the role of attentional modulation in permeating perceptual processing with conceptual content. They also show that attentional effects are delayed in time. Before the onset of attentional modulation, information is retrieved bottom-up, that is, in a cognitively impenetrable way, and in parallel from a visual scene. Attention brings with it the involvement of memory circuits and higher cognitive centers and thus infuses perception with conceptual content. This is why the preattentional segmentation processes individuate but cannot identify objects; the latter task requires

the exercise of sortal concepts, which are not available in the preattentional stage of object segmentation.

Several theories of mechanisms of object indexing have been proposed, the common thread of which is the claim that there exists a level of visual processing in which objects present in a scene are parsed and tracked as distinct individual objects without being recognized as particular objects. Thus, they stress the point that object individuation precedes object identification. We will use here the theory of "object-files" (Kahneman et al., 1992).

Object-centered segmentation processes create object-files for the discrete objects they parse in a scene. The object-files individuate and index objects as discrete persisting entities. Though features that can be retrieved in a bottom-up way, like color and shape, may be used, the object-files are allocated and maintained primarily on the basis of spatiotemporal information, such as, temporal synchrony or continuity and proximity, which in its turn is based on information pertaining to location, relative position, and motion. Individuated objects can be parsed and tracked without being identified, and even when an object is mis-identified and then correctly recognized, it is all the time deemed to be one and the same object.

Studies confirm that featural information other than spatio-temporal information is also used to individuate objects when the scene is complex enough, and that feature individuation (i.e., the perception of features as distinct properties of objects without the exercise/possession of concepts) precedes feature identification (i.e., the application of sortals that conceptualize these features). This goes against the view that feature perception requires the application of sortals or, equivalently, the view that any perception inherently involves the exercise of concepts. Campbell (2002, 68-74) calls this view "the Delineation Thesis" and Smith (2002, 94) "Conceptualism". The information on which individuation is based does not play the role of the binding parameter that binds the features observed at one location, as spatial information does in Campbell's account, but it ensures that a single object is being individuated. In other words, it provides the object that will carry the features observed at one location rather than constructing the object by binding features. Once an object has been individuated, it becomes the carrier of properties.

Object individuation and the retrieval of the transducable features take place in a nonconceptual way, which means that this information is retrieved bottom-up. The mechanisms of vision that process this information induce perceptual states whose nonconceptual content is information regarding the existence of an individuated persisting object, and its shape, size, surface properties, orientation, spatial relations, motion, affordances, and color.

Let us dwell upon the distinction between 'object identification' and 'object individuation'. 'Object identification' and 'object recognition' attempt

to convey the notion of an object that is represented as falling under a certain description (in other words it is recognized as a member of a category). This notion involves a strong conceptual component. The term 'object individuation' involves a weaker kind of representation with nonconceptual content. It purports to convey the fact that an object file has been opened for that specific object. The object has been "catalogued" or "indexed" as something that exists, occupies some space, and persists separately of other objects with its own continuous spatio-temporal history. 'Object individuation' purports to capture the perception of the 'objecthood' of objects ('perception' means that there is no conceptual involvement in object individuation).

The perception of 'objecthood' relies on spatiotemporal information and should this be not enough on further featural information (shape, color, orientation, size and so forth), which allow tracking of the spatiotemporal history of the object and thus render its individuation possible, but this information is not encoded, that is, conceptually represented. The representation of objects as discrete entities that persist in time based on spatiotemporal information precede a representation of the same objects based on featural information that is retrieved bottom-up from a scene. Both forms of representation allow object individuation and both precede representations based on semantic information that allow object identification.

Thus, weak representations allow access to the object for further investigation but they do not encode any of its properties. The object is indexed as an individual rather than as something that exists at a certain location and/or has a certain shape and color, although this information is perceived and has been used to allocate the object-file to that object. These properties are not used in the designation of the object *qua object*. That is why the object's features may change while the object is still perceived as being the same object that undergoes changes. There is no conceptual information involved (information about fragility, temperature, color, weight, usage, functions, etc.). The object file thus construed does not require the existence of concepts associated with that object. The spatiotemporal and featural information involved in indexing an object is not conceptualized, since it is retrievable from a scene in a bottom-up manner.

Lamme (2003) distinguishes between two kinds of awareness that may be attached to the contents of perceptual states. The one is "phenomenal" awareness and the other is "conscious" or "access awareness" (Block, 2005, draws a similar distinction). Phenomenal awareness is the result of local recurrent processing in the visual pathway (that is, processing that is restricted within the visual pathways), whereas access awareness results from global recurrent processing involving memory circuits and cognitive centers. Phenomenal awareness occurs before attentional modulation of perceptual processing and in that sense it is awareness of contents that are retrieved bottom-up; it is the

awareness which one can have of one's nonconceptual content of experience and thus it is the kind of awareness that befits the weak representations of objects. Access awareness, on the other hand, requires attention and thus it is awareness of conceptual content, and in that sense it is the awareness one has of the strong semantic representations of objects.

The processes involved in indexing or individuating an object and in retrieving its spatiotemporal features are not cognitively accessible in any form. One does not "know" or "believe" that an object moves in continuous paths or that it persists in time though one uses this information to index and follow the object. Object individuation may eventually result in the belief that an object is here or there but this individuation does not appeal to principles regarding objects that are used as premises in inferences. These principles, rather, constitute the *modus operandi* of the cognizer, without been represented in an accessible "knowledge" form.

Indeed, the computations involved in all levels of vision are constrained by some operational constraints. These constraints are needed, because perception is underdetermined by any particular retinal image; the same retinal image could lead to distinct perceptions. The problem is accentuated with regard to the underdetermination of the *21/2D* structure (three-dimensional) from the *2D* retinal stimulation (two-dimensional). Unless the observer "makes some assumptions" about the physical world which gives rise to the retinal image, perception is not feasible.

Most computational accounts hold that these assumptions operate as operational constraints that reflect general reliabilities about its optics and geometry of our world and are not assumptions about specific objects acquired through experience. They limit the kinds of information processing in perception, and thereby, contribute to solving the problem of interdeterminancy of the percept by the retinal image. These constraints are not the result of explicit knowledge acquisition about specific objects but are general reliable regularities about the optico-spatial properties of our world hardwired in our perceptual systems. The physical constraints at work in perception are reflected in the physiological mechanisms underlying the early stages of vision.

Among these principles (for a full account see Pylyshyn, 2003; Spelke, 1990) are those of "local proximity" (adjacent elements are combined), of "closure" (two edge-segments could be joined even though their contrasts differ because of illumination effects), of "continuity" (the shapes of natural objects tend to vary smoothly and usually do not have abrupt discontinuities), "compatibility" (a pair of image elements are matched together if they are physically similar, since they originate from the same point of the surface of an object), rigidity, etc.

Peacocke (2001, 241) argues that the nonconceptual content of experience represents things, events, or places and times in a certain way, as having certain properties or standing in certain relations, "also given in a certain way." Peacocke (2001, 257) distinguishes between ways that help to determine which object is perceived from those which do not. The determination of what object is perceived amounts to the individuation of an object and its indexing, which may be the product of the object-centred attention discussed here. The other ways refer to the ways features, say shapes and colors, are perceived. In this section we argued both for the existence of bottom-up object-tracking mechanisms that determine which objects are perceived, and for the retrieval of some properties from a scene in a bottom-up way.

Let us assess now Campbell's (1997; 2002) account. Campbell proposes a theory of reference of perceptual demonstratives that purports to be nondescriptive. Campbell thinks that the problem of the sense of a perceptual demonstrative is a problem about conscious selective attention, given that he considers the mode of presentation to provide imagistic information related to the demonstratum. It is the role of spatial attention to isolate that information in a scene that pertains to the demonstratum. Campbell uses Treisman's (1993) theory of selective attention or *Feature Integration Theory* (*FIT*) in which conscious spatial attention is indispensable to object construction and to the individuation of objects. Campbell takes the mode of presentation of a demonstrative to include information that could individuate the demonstratum on the basis of its observable features, specifically on the basis of its spatial location (Campbell 1997, 61). Furthermore, he thinks that consciousness is required if one is to be able to perceptually demonstrate an object, since one needs to be conscious of the presence of the object one demonstrates. Campbell is wrong on all accounts.

First, *FIT* assumes that objects are reconstructed in vision by retrieving features found at the same location and binding them together; object individuation presupposes feature binding. However, evidence suggests that object individuation takes place primarily by means of spatio-temporal information and is independent from and precedes the retrieval of features. Moreover, picking up objects in a visual scene occurs to a significant extent in a preattentive parallel stage of visual processing through the mechanisms of object-centered segmentation that index objects. Object-files are opened before attentional effects modulate perceptual processing.

Second, Campbell's assumption that object individuation presupposes feature encodings, which means that the subject identifies object features and thus exercises sortal concepts, implies that the application of sortals precedes object individuation. This view, apart for the problem that it reintroduces the grounding problem that Campbell attempts to solve, is simply wrong. There is substantial evidence that object individuation through the opening of

object-files precedes feature and object identification. Even when features are used to individuate objects these features are not encoded; the subject does not exercise any sortals.

Third, the demand that one be conscious of the object of demonstration is problematic. Campbell construes "consciousness" to mean that when one is conscious of an object one applies sortals to it and can identify at least some of its properties, although not necessarily the object it self. In other words, Campbell's consciousness is the "access or report consciousness". Access consciousness presupposes attention, which is exactly what Campbell requires of perceptual demonstratives. Perhaps, it is his construal of consciousness as access consciousness that has led him to cede that sortals are necessary for perceptual demonstration despite his claim that no descriptions are involved in perceptual demonstration. Since consciousness is obviously required in perceptual demonstratives, one needs a notion of consciousness that does not require concepts. Though this kind of consciousness cannot be the access awareness that Campbell envisages, phenomenal awareness could well play this role; phenomenal awareness is a kind of awareness, and it does not involve concepts, only nonconceptual content.

Thus, Campbell's attempt to found the reference of demonstratives on spatial attention through *FIT* seems to be in trouble. To help Campbell escape from these problems while retaining his useful insights, it suffices to show that object identification is not necessary for fixing the reference of perceptual demonstratives, and that object individuation is enough to single out the demonstrata. In the next subsection, we explore a theory of reference that shows how object individuation determines the reference of perceptual demonstratives.

I.2. A Causal Account of Fixing Demonstrative Reference

We have said that we are interested in the way mental states of perceptual demonstration are related to the world; that is, in how "deictic reference" works. "Mental" demonstratives involve two factors. First, there is the object that is being perceived. Second, there are the features of that object, as the viewer perceives them. Consequently, there are several problems concerning the way such a state is related to the world. How is the object that is being attended to singled out in a visual scene? How does the shape that one perceives when one sees an object, even though one may not possess the relevant concept, is the perception of an objective property (as opposed to a mental construction that does not present a feature of the object) of an object in the world? Finally, what is the role of these features, if any, in singling out the object attended to?

To address these problems, we model our examination upon discussions concerning the way the expression 'that [...*X*...]', as it occurs in a judgement

based on the perception of an object X, refers to the object. The reason is twofold: First, the problem of singling out the object being perceived in a mental perceptual demonstrative is parallel to that of fixing the referent in the linguistic articulation of the perceptual demonstrative. Second, the issues involved in the linguistic domain, namely issues pertaining to the content of the demonstrative and its mode of presentation, are relevant to the aforementioned problems concerning the mental demonstratives.

When one perceives a round object, points toward it and utters "that shape is round", then the perceptual demonstrative "that" exemplifies the most direct way of referring to something in the world. It seems apt, therefore, to start with this case. Our account draws on Evans' (1982) work on "demonstrative reference" of experiential concepts, where these concepts refer through the usage of perceptual demonstratives. The experiential concept F refers through the demonstrative "that object is F" while pointing to an object that is F. An experiential concept is *of* a particular object X or of one of its features if one's attitudes toward contents containing that concept are sensitive in an appropriate way to perceptual information about X. Evans claims that this information cannot be conceptual; if it were, it could not explain how an experiential concept is related to the world.

As Heck Jr. argues (2000), if that information had the conceptual articulation "That object is F," then one would attempt to explain a concept by reference to other concepts and that would initiate a vicious circle. Although some concepts are being understood by falling under a certain description involving other concepts, this process must bottom out at some point, lest the conduct of our conceptual apparatus to the world be severed. Demonstrative reference is supposed to intervene exactly at this level and allow us to "touch," as it were, the world. Thus, the information involved in establishing this reference must not involve any concepts and descriptions.

We claim that the information involved must be that contained in purely causal chains that relate us with the world. We agree that though there is nothing conceptual in these causal interactions, they can ground semantic content, by fixing the reference of the concept terms. Thus, when one sees a certain shape and says "that" by pointing to the shape, the reference of the demonstrative concept that articulates the shape involved is fixed in a nondescriptive way, by means of the causal chains implemented in the mechanisms of vision. The last remark makes it possible that the same way of fixing reference is involved when one sees (in the phenomenal sense) a round object without possessing or exercising the concepts "round," "objecthood," and "shape," and who, if asked "what do you see?" one would point to the round object.

The reference of demonstratives as used in written texts depends on the context in which they occur, and the grammatical relations between its terms.

The reference is determined by an external context, i.e., by the relations between the token demonstrative and the state of affairs of the world, including the producer or the token. It also depends upon a "lexical" convention that determines the way the type of the demonstrative can be used in language. Thus, a token of the type "I" conventionally refers to the speaker that utters, a token of "that" refers to an object "pointed to" by the speaker, and so forth.[1] This convention purports to capture that part of the meaning of a term that is invariant from occasion to occasion.

There are two influential accounts of demonstratives. The first is the Fregean analysis of demonstratives that treats them like any other expression, assuming that their tokens have a reference by virtue of their sense, i.e., "the way in which the reference is given", their "mode of presentation." As Sellars (1963) would put it, a perceptual experience one has when uses a perceptual demonstrative is of a certain object if the subject has a perceptual belief that correctly represents and thus describes at least some of the object's properties. The description fixes the reference of the demonstrative since the object that fits that specific description is the referent. The standard problem with this account is that if one takes demonstratives to function like definite descriptions (as Katz, 1994, does), then demonstratives cannot be rigid designators—but Kripke (1980) has given us very good reasons to think they are.[2] Another serious problem with the descriptive theories of reference is that such descriptions involve concepts. However, this is undesirable when one attempts to show how the reference of perceptual demonstratives is grounded in the world. Though we will examine in detail the shortcomings of the descriptive theories of reference in the second section of this chapter, we think it is clear now that we do not agree with Frege that the reference of demonstratives is determined by a descriptive sense. Rather, we argue that the reference of demonstratives is determined by causal chains that ground them in the world.

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[1] This conventional usage of an indexical type is what Kaplan (1989) calls the "character", as opposed to "content" of that type, and Perry (1977), the "role" of the type. The content of the type is not repeatable from context to context, as the character; it corresponds to what a particular tokening of the type expresses (and that is why it is the semantically relevant part of the token). Evans (1990, 72) calls the "character" of a type a "semantical convention." Devitt (1996, 222), calls the conventional way the demonstrative functions in context "the property of referring to a specified object under the general demonstrative mode." This property is distinguished from the property of "referring to a specific object by a specified demonstrative." Devitt takes this last mode of reference to narrow down the mode ascribed by the general demonstrative mode, which is determined by convention, to one particular demonstrative mode.

[2] The reason is that a definite description could have a different denotation in another possible world. The definite description "the president of the USA in 1970", to use Kripke's example, refers to Nixon, but it could refer to Humphrey, had the latter won the elections. A demonstrative or a name, in contrast, designates the same object in every possible world where the object exists, hence the term "rigid designator".

Even though we think that demonstratives are not definite descriptions, we agree with Garcia-Carpintero (2000), and Devitt (1996) that the difference between definite descriptions and demonstratives does not discredit the role of the senses of demonstratives in determining their content. The content of a demonstrative is both its reference and its sense. We will not argue for this second view in any detail, however, because it is not crucial to the main argument developed in this section, namely that reference construed as object individuation can be fixed by means of bottom-up perceptual processes, and this is independent of whether the referent is part of the meaning of demonstratives. Our argument essentially involves the "mode of presentation" of the demonstratum of a perceptual demonstrative in individuating objects in conceptually unmediated nondescriptive ways. We agree with Campbell that spatial and motion information regarding an object constitute its mode of presentation in a perceptual demonstrative and that this mode fixes the reference of the demonstrative, not, however, by drawing attention to the object, as Campbell claims, but by individuating the referent. Thus, one should not associate the sense of the demonstrative with a description of the object's features and location.

By making room for senses in fixing the reference of demonstratives, we go against the second important construal of demonstratives, the direct reference theory, according to which the only content of a demonstrative is its denotation; the only linguistic function of a demonstrative is that it refers to its demonstratum (Kaplan, 1989; Salmon, 1981). Paraphrasing Kaplan's (1989) account of the theory, one could say that a demonstrative does not describe its referent as possessing any identifying properties, it only refers to it.

We have already stated our misgivings regarding Campbell's attempt to determine the reference of demonstratives. Thus, we prefer to model our account of demonstrative reference on Garcia-Carpintero's (2000) descriptive account, modifying it to suit the fact that we do not wish to examine the way the linguistic expressions of demonstratives refer but, instead, we are interested in the way mental acts of perceptual demonstration might refer to objects in nondescriptive purely causal ways without possession or exercise of any concepts whatsoever.

Garcia-Carpintero (2000) and Devitt (1996) offer a thorough account of the senses of demonstratives. They claim that indexicals establish their reference by means of their denotation and senses. The latter, according to Garcia-Carpintero, are ingredients of "presuppositions of acquaintance" with the demonstratum, by which he means "propositions that are taken for granted" when a statement is uttered. Suppose one sees something as being a house and utters the statement "that is F" pointing to the house and assigning it the property F. The term "that" is a singular term associated with the description

"the *F* object". According to Garcia-Carpintero (2000), when one uses the singular term "that" one takes oneself to be acquainted with an object by having a dossier for "the *F* object", which picks it out. The truth condition of the term is the object itself. The presupposition is the proposition "there is a unique object most salient when the token *t* of 'that' is produced and *t* refers to that object." Now, the proposition "most salient when t occurs" is equivalent to the expression "object in such and such a location with such and such visual features." The "in such and such a place with such and such visual features" is the mode of presentation of the demonstrative "that" that individuates the object to which the demonstrative refers.

The dossier of the object, by means of which the acquaintance with the object takes place, can be updated by new incoming information. One notes a distinction between an object being singled out as the demonstratum of a demonstrative and its dossier. The latter ontologically presupposes the former; one needs an object to create its dossier (I do not discuss fictional, illusional, and abstract objects). One also needs to ensure that the object with such and such features at time t_1 is the same object with such and such features at time t_2.

In Garcia-Carpintero's account, the dossier may contain any kind of information that the user associates with the referent and helps him individuate and/or identify it. Since our project is to show how perceptual demonstratives can single out their demonstrata in nonconceptual ways, we have to modify the term "dossier" to fit this requirement. It is crucial for the success of reference fixing that the whole process should be carried out in a purely bottom-up conceptually encapsulated manner. We discussed the mechanisms of perception that retrieve such information from a scene in a bottom-up way, and on the basis of that information allocate and maintain an object-file on objects in the scene. Thus, we are going to use "dossier" so that the contents of the dossier are restricted only to information that can be retrieved bottom-up from a scene. The information in the dossier, in the sense of the term intended here, does not suffice to identify the object as being such and such. However, it suffices to individuate the referent. Since the information contained in the dossier is nonconceptual, the dossier attached to the object does not carry any descriptive information. The best candidate for the substitution is naturally the "object-file."

Thus, although we agree with the direct theories of reference that demonstratives do not provide identifying descriptions of their referent, we think that demonstratives refer to a singular persisting object by means of object-centered segmentation processes that provide the causal chains that ground the demonstrative. The information that these processes process constitutes the sense of the demonstrative. More specifically, these processes use spatio-temporal, and perhaps other transducable, information, that constitutes the

nonconceptual content of the mental states induced by these processes. This nonconceptual content is the mode of presentation of a perceptual demonstrative. It is causal and not descriptive, in that it does not involve concepts that would describe the content. It is causal in that the information involved, being retrieved directly from the environment, precludes concepts from intervening between the world and the perceiver, allowing thus a direct causal contact with the world. In this sense, modes of presentation play a decisive role in fixing the referents of a demonstrative, and acquaint one with it.

Being acquainted in perception with an object means that one is in direct (without any conceptual intermediaries) contact with the object itself and retrieves information regarding that very object from the object itself and not through a description that by depicting it would secure reference. On that account, perception puts us in a *de re* relationship with the object (as opposed to a *descriptivist* relationship). When one forms a *de re* belief, one stands in "an appropriate nonconceptual, contextual relations to objects the belief is about" (Burge 1977, 346). In perception, the reference of perceptual demonstratives is fixed through the nonconceptual information retrieved directly from the environment that allows one to individuate the objects. Thus, Smith (2002, 87) is right to claim that "contextual, nonconceptual relations are involved in the perception of any normal object, but such relations help put us in a situation in which we can receive information from the world in a way that is sufficient for acquaintance with objects in it". It has been our main thesis that nonconceptual information constitutes the nondescriptive mode of presentation of the demonstratum in perception. Thus, the nonconceptual content of the perceptual states functions as a *de re* mode of presentation of the object in perception.

The individuation of objects in a nonconceptual way by the object-centered segmentation processes of perception constitutes that mechanism that allows one to refer to an object even though one misdescribes it by, say, assigning to it the wrong properties, as in the case of an illusion. Nonconceptual object individuation justifies, thus, the intuition that one should be able to say that one sees an object but one formulates the wrong beliefs about it or that one perceives (in the phenomenal sense of the term) a thing but sees (in the epistemic sense of the term) it wrong.

The referent of the demonstrative is not the usual object of one's experience. The representational content of the perceptual state induced when one perceives an object and one's perceptual system singles it out from the scene and indexes it, is the kind of weak representation of an object. However, once the object-file indexes the object and allows reference to it, by ensuring that the object with such and such features at time t_1 is the same object with such and such features at time t_2, further properties may be added.

To elucidate the point we are trying to press home, let us modify Garcia-Carpintero's example. Suppose one sees a scene and the segmentation processes of one's perceptual system have singled out an object and have allocated an object-file to it. Let us assume that one does not possess any concepts whatsoever that could apply to that object, including the concept "object-hood" (one does not recognize something *as an* object, one just *perceives an* object). Suppose one is asked what one is looking at, and one replies by pointing to the object "that". When one uses the singular term "that" one is acquainted with an object by having an object-file for the object, which picks it out. The truth condition of the term is the object itself. However, unlike Garcia-Carpintero's example, the presuppositions of acquaintance with the demonstratum are not a (or a set of) proposition(s) that are taken for granted by the subject (because that would presuppose that the subject exercises the concepts associated with the terms of the proposition). The presupposition in our case is the nonconceptual content of the perceptual states, which are induced by the subject's perception of the object. Since the nonconceptual content of such states consists in spatio-temporal information and other transducable information, were one to put this content in a propositional form, this would read as the description "object in such and such a location with such and such visual features." The "in such and such a place with such and such visual features" is the mode of presentation of the demonstrative "that" which individuates the object to which the demonstrative refers. However, it is important to bear in mind that, as Campbell (2002, 106-8) states, that "description" completes the character of the associated occurrences of 'dthat' but makes no contribution to content. It determines and directs attention to what is being said, and thus directs us to look at the point at which one is pointing to when uttering "that," but induces no complex, descriptive elements to content. The object has been indexed as an individual rather than as something that exists at a certain location and has a certain shape and color (which would mean that these properties would have been encoded, sortals would have been applied and the mode of presentation would have been a description), although this information has been used to allocate the object-file to that object.

Consider Loar's (1976) example, which is also used by Garcia-Carpintero to drive home the argument that descriptive senses fix the referents of the terms with which they are associated. Notice, however, that the example by its nature demands that the discussion take place in a conceptual framework. Suppose that Smith and Jones see a man on the train every morning. One evening they watch a man being interviewed on a TV show, they do not know that this man is the same man they meet on the train every morning, and it so happens that while watching the show they are talking about the man on the train. Suppose now that Smith switches his attention to the man

on the TV show and says, "he is a stockbroker", referring to the man on TV. Jones, unaware of Smith's attention switch, takes Smith to refer to the man on the train about whom they have been talking. Though Jones has identified the referent, since the man in the train is the same as the man on the television, one feels that Jones failed to understand Smith's utterance. This shows that for grasping meaning the mode of presentation of singular terms is important, even in extensional contexts.

The upshot of Loar's example is that although Jones' belief to the effect that the man on the train is a stockbroker has the same truth conditions as Smith's belief that the man on TV is a stockbroker, since the referent in both beliefs is the same person; Smith is justified in holding his belief, for suppose that he had formed this view on hearing some piece of information in the television show, whereas Jones' belief is not justified, since by thinking of the man in the train Jones does not deem this same piece of information to apply to the man in the train. Thus, Garcia-Carpintero concludes, examples like this vindicate the Fregean core claim that the relation between singular terms and their significations is mediated by semantically significant ways. By "semantically significant", Carpintero means that senses are essential in determining the reference and meaning of the demonstrative.

Why had Jones missed some information that would have justified his belief? Because Jones does not know that the man on TV and the man on the train are one and the same person and this is why information pertaining to the former does not apply to the latter. Jones has two different object-files (dossiers); one for the person on TV and one for the person whom he meets on the train. The role of the sense, or mode of presentation, of a singular term is to clarify exactly this point, namely whether the object under consideration has been individuated in the appropriate way. Had Jones had the same object-files for the two persons, then his belief would have been a justified one. Spatiotemporal information purports to do exactly that; if Jones had followed the spatiotemporal path of the person on the train, he would have known that it is the same person as the one that appears on TV and he would have used all relevant information to update that person's object-file.

How does this "mode of presentation" differ from Frege's sense? We construe the mode of presentation as a causal chain that connects a specific token of a demonstrative to its referent. For reasons explained above, this is clearly a nondescriptive mode of presentation of the demonstratum. The picture we have drawn is away from the standard modern accounts of the Fregean notion of reference of concepts in a public language as a correspondence between a symbol and something in the world, the correspondence being determined by the inherent descriptive sense of the sign.[3] In the view developed here, con-

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[3] It is not at all clear what Frege actually thought of concepts and their references and sense. Frege saw concepts as functions, (as in "x is a Greek") that produce a truth value

cepts, which according to Frege are the references of "concept-terms" and which via their senses pick up the entities in the world that constitute their extension, have an inherent meaning that depends of the nonconceptual content retrieved from the world in which they are grounded.

The discussion of the distinction between object identification and object individuation allows us to address a problem raised by Kelly (2001) in his discussion of McDowell (1994) and Brewer's (1999) notion of demonstrative concepts. McDowell and Brewer have claimed that the correct way to articulate the conceptual content of experience is by means of demonstrative instead of general concepts. A demonstrative concept (such as, "that shape"), unlike a general one (such as "shape"), applies only to one entity, the demonstratum of the demonstrative act, and that entity constitutes its semantic value, being the referent of the demonstrative. This way one could discredit Evans' rejection of the thesis that experience has a conceptual content, on account of the "Richness Argument" which states that the content of our experiences is usually much richer than any attempts to report it using states whose content is conceptually articulated (Evans 1982, 229).

McDowell and Brewer believe that this way they can escape the richness argument and retain the core of their thesis that the contents of our experiences must be conceptual. The motive behind their thesis is, roughly, the following: since experience stands in justificatory relations with the beliefs and judgments that we may form on its basis, and since these relations can hold only between conceptually articulated contents, experiences must have a conceptual content. In other words, experience must be within the "space of reasons."

Furthermore, the introduction of the notion of "demonstrative concept" allows them to claim that one can conceptualize the content of an experience without acquiring a concept that is independent of that experience. For McDowell (1994, 56-57) the demonstrative concept exploits the presence of the sample that constitutes the referent of the demonstrative, and for Brewer (1999, 171) the grasp of demonstrative concepts depends essentially on the subject's relation with the actual entities that constitute their semantic values.

Several philosophers (Heck, 2000; Kelly, 2001; Smith, 2002; Tye, 2005; Vision, 1998) have criticized that move. One of the criticisms levels at an issue discussed in this book. This is that the possession of a demonstrative concept requires that one should be able to re-identify that an object in one's

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if an argument is fed in, i.e., an object, not an object-word. He took the view that a concept is the reference of a concept words like "Greek", but this concept is not an object—since it is a function. What is now called the "extension" of a concept is his "value range", this is not the reference of the concept word in Frege. So, though Frege saw reference as a relation between a symbol and an object, he did not apply this view to concepts because there is no object here, just the function itself.

experience falls under that concept. Now, the first problem with such a view is that since recognition requires awareness on the part of the perceiver, perceptual experience is made to require perceptual awareness. We have seen that this claim is simply false. Perception is independent of any form of awareness.

Kelly (2001, 403) claims that McDowell's theses require the existence of the "re-identification condition on demonstrative concept possession". This is the condition that subject *S* must satisfy if it is correct to say that she possess the demonstrative concept for *X*: "in order to possess a demonstrative concept for *X*, a subject must be able consistently to re-identify a given object or property as falling under the concept if it does." McDowell (1994, 57) speaks of such a recognitional capacity, which reminds us of Frege's "recognition judgements". Kelly argues that such a condition is not necessary for perception, and that demonstrative concepts cannot be said to articulate the content of our perceptual states.

Kelly (2001, 410-412) claims that a subject can discriminate between two colors, yet she cannot re-identify any of them at some time later, and argues that "it is perfectly conceivable…and there is nothing about the nature of perception to keep it from being true, that our capacity to discriminate colors exceeds our capacity to re-identify the colors discriminated." Kelly says that whether perception can be like that is an empirical question, though that it can be like that is certainly perfectly imaginable. Well, Kelly is right. As our discussion on individuation shows, our individuative capacity does precede and often override the capacity to identify objects and properties as being such and such. Thus, we discriminate objects without being able to re-identify them, and we can discriminate properties without being able to re-recognize them as such in future encounters. The subject can distinguish between, say, two colors by having opened two different object files for the two patches, without possessing any concepts at all, and being unable, thus, to reidentify these colors. She could "experience a shade without picking it out thus" (Vision 1998, 426).

We started this section by asking three questions. How is the object referred to in a mental demonstration singled out? What is the role of the object's properties in singling out the object? How is it possible that the perceived properties of objects that are the referents of demonstratives are perceptions of real properties of distal objects? Here are the answers.

A preattentional mechanism in early vision parses a scene into objects by singling them out as separate persisting things. It individuates objects and relies on spatiotemporal information and on other information regarding transducable properties, but none of this information is conceptually represented at this stage. The objects thus individuated can be tracked and accessed; one can make further inquiries about the properties of these objects and this

information is stored in the file of the object. Since this information is stored into the object-file assigned to the specific object, it is information that refers to that object. Thus, the mechanism of early vision by individuating objects allows reference to those objects. The object file that fixes the referent of a mental demonstrative individuates the object from other objects in a scene. It also contains nonconceptual information regarding transducable properties of the object, information that acquaints us with the object and which functions as the mode of presentation of the mental demonstrative referring to that object.

Since the information required for object individuation is retrieved bottom-up from the visual scene, the process is a causal one. Perception makes possible an immediate contact with objects in the world, and this contact precedes the application of sortal concepts that would describe the object. It also renders possible the exercise of our classificatory schemes, since it provides the object to which they will be applied. If perception yields a unified, coherent separate object that persists in space and time and undergoes changes, then one does not need conceptualism to explain the unity of the object given the diversity of perception. Perception is directed to objects in the world prior to the exercise of concepts.

II. Object Individuation And Reference

In this section we relate our theory to other theories of demonstrative reference, we discuss it in relation to Putnam and Kripke's causal theory of reference, and we address some of the problem besetting accounts of causal reference.

II.1. Objects Files and Other Theories of Reference

Haugeland (1998) has offered a somewhat similar account according to which we share with non-concept possessing creatures various innate 'object-constancy' and 'object-tracking' mechanisms that automatically 'lock onto' medium sized lumps. These mechanisms can provide the discriminatory capacities necessary for the individuation and recognition of environmental objects in a bottom-up, nonconceptual way. Haugeland claims that the objective character of perception, that is the fact that perception is about objects *qua* objects, is due to the role of some normative standards that constitute thinghood. Unlike those animals, we have the capability to apply normative standards when we perceive and that it is these standards that allow us to distinguish between possible and impossible object configurations, and thus, render perception objective, meaning perception of objects. The "constitutive standards for thinghood" Haugeland (1998, 261-262) has in mind, are cohesiveness and compatibility. However, the term "normative" goes hand in hand with the application of concepts that determine what is correct or false, right

or wrong, and this seems to commit Haugeland to the thesis that perception must be conceptual.

It is easy to see that these standards are in fact results of the operational constraints on perception that constitute the *modus operandi* of our perceptual systems. Haugeland (1998, 248-249) is right that neither the perceiver has a discursive cognizance of the standards in some explicit formulation, nor are these standards articulated as rules. But then, Haugeland's appeal to normativity seems displaced, since normativity involves application of rules and most importantly involves the application of concepts of right or wrong, or true or false. However, in the case of the operational constraints at work in perception, neither of these prerequisites applies. It is therefore hard to see why Haugeland hastens to exclude animals from using these constraints. It is likely that their perceptual systems, to the extent that their experience is experience of objects, implement some form of operational constraints.

The present account of reference also shares many common themes with Campbell's theory of reference. Campbell (1997; 2002) thinks that the problem of the sense of a perceptual demonstrative is a problem about selective attention: "the understanding of a demonstrative depends on the act of visual attention" (Campbell 2002, 7). It is the role of selective spatial attention to isolate that information in a scene that pertains to the demonstratum. Campbell (2002, 31) distinguishes between two kinds of attentional mechanisms. On the one hand, there is spatial attention that singles out a single location on the map of locations so that all features at that location could be bound together to constitute the object of our experience. This attention can operate without being consciously felt by the subject. This low-level phenomenon is contrasted with the kind of conscious attention that is required for knowledge of the reference of a demonstrative; it is through this kind of attention that one attends to the object consciously, and act intentionally on it. It is the latter attentional mechanism that allows us to verify propositions containing the referent of the demonstrative. It is not clear whether both kinds of attention are needed to fix demonstrative reference.

Campbell hesitates as to whether object identification is required for demonstrative reference. Sometimes it seems that object individuation that does not assume sortals is sufficient, whereas other times reference fixing requires *knowledge* of the demonstratum and object identification. As Campbell (2002, 94) notes, the use of a demonstrative is grounded on the fact that you use it on "the basis of your having bundled together all the information from that location as from a single object." Thus, the representation of an object requires feature detection. Our account differs from Campbell's in that we claim that objects are singled out in a visual scene and a weak representation of them is formed before the onset of conscious attention and feature encoding. We have seen that conscious attention is preceded by the representa-

tion of an initially featureless object that persists in time and will be the carrier of features bound later together. This weak representation allows the perceiver to perceive the same object undergoing feature changes instead of perceiving a new object with different features.

For Campbell, conscious attention binds together features found at the same location and constructs the object that carries these features. Thus, conscious attention solves Quine's (1995) reification problem; how one passes from the feature-placing level of experience to the particular involving level of experience. However, as Strawson (1959) has pointed out, perception of a bundle of features does not necessarily mean perception of a thing that carries these features. One may respond to the presence of certain features that one has encountered before without being able to single out an object as an object that carries these features. To use Bermudez' (2003, 75) example, an animal may perceive a tree as affording shelter without perceiving it as a tree; without attributing to it "objecthood" in Haugeland's (1998) sense. Thus, Campbell's attention does not suffice to solve the reification problem. The object-centered segmentation processes solve it, by singling out objects as persisting entities.[4]

Campbell (2002, 90-94) takes the mode of presentation, or sense, of a demonstrative to include information that could individuate (identify?) the demonstratum on the basis of its observable features. Spatial location, along with Gestalt information and information on motion depending on the kind of the object, play the role of the binding parameter that binds the features observed at one location to a single object and which constitute the sense of the demonstrative. Thus, conscious attention allows knowledge of the referent of a demonstrative and fixes the reference of demonstratives. Occasionally Campbell insists that one should not associate the sense of the demonstrative with a description of the object's features and location. The role of location consists in providing the binding parameter for singling out objects and not for providing some sort of descriptive identification of the object. Location organizes the information processing procedures that process information concerning that object. In this sense "the description completes the character of the associated occurrences of 'dthat' but makes no contribution to content. It determines and directs attention to what is being said…. The semantic role of the description is pre-propositional; it induces no complex, descriptive

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[4] The object-centered segmentation processes provide the additional binding mechanism, over the initial binding of features into a bundle of features, that Bermudez (2003, 73) deems necessary for the perception of objects qua objects. "One way of describing the distinction between a body and a bundle of properties would be to say that this featural binding problem is not the only binding problem. A solution to the featural binding problem will still give us a bundle of features. It would not be enough to underwrite our experience of a world of objects. Something more needs to be added. A further binding problem needs to be solved."

elements to content" (Campbell 2002, 107). Taking this together with Campbell's (2002, 62; 69; 71; 73) repeated claims that demonstrative reference is a more primitive phenomenon than the application of sortal concepts to the object that is being referred, one draws the conclusion that the content of the sense, that is, whatever information constitutes the binding parameter that allows singling out an object, is nonconceptual.

However, at some junctures Campbell seems to be ambivalent. He notes for instance that "for there to be a demonstrative referring to the object, there must be involvement of high-level semantic identification of the object involved . . ." (Campbell 2002, 53). Campbell seems to be confused as to what gets involved in singling out an object as the referent of a demonstrative. Sometimes he writes that it suffices to individuate the object (in the sense defended in this chapter) and sometimes he thinks that singling out the object presupposes semantic identification of the object as being such and such. Our thesis on that matter is clear. Object individuation requires no descriptions; it takes place at a nonconceptual level.

Campbell (2002, 68-74) rightly argues against what he calls "the Delineation Thesis", which holds that for one to be able to single out an object in experience one must apply in a top-down manner the relevant sortal concepts, that the ability to refer to objects is more primitive than the application of sortals to these objects. The sortals allow one to cut the world in the appropriate pieces and avoid problems of ambiguity of reference. His example, however, is ambiguous. He discusses the case of an unknown archaeological artifact that is found by archaeologists who, unable to recognize and identify it, they cannot apply a sortal concept to it. Yet, Campbell claims, they can refer to it. Thus, reference is more primitive than the application of sortals. But although the archaeologists cannot identify the object by assigning it a sortal, they may still apply several sortals identifying its shape, color, texture and so forth. One might even claim that it is the ability to apply these sortals that enables reference to the object in the first place.

Recall that for Campbell attention bundles together all information concerning an object at the focused location allowing reference to the object. Does this binding involve the concepts articulating the content of the salient experience of the object? It is not clear whether Campbell would allow for the possibility of reference to objects by creatures that possess or exercise no concepts whatsoever. Campbell (2002, 69) claims that though one cannot intentionally attend to F's without having the concept for F, one can attend to an F without having that concept. But F is an object and one does not know what Campbell would say were F a feature of the object. In his account of the classical view of attending to objects Campbell (2002, 29) discusses the features of objects. He distinguishes between using an object's possession of a property to single it out visually and verifying propositions concerning

that property. The latter involves conceptual skills, where as the former does not. In that sense "singling out" is a more primitive phenomenon that can be carried out nonconceptually. Now, although what can be singled out nonconceptually is the object, Campbell may be construed to hold that one could attend to features without possessing the relevant concepts since he says that the singling out does not involve conceptual skills. However, as we have seen, Campbell (2002, 53) also claims that the possibility of demonstratively referring to an object depends on the involvement of high-level semantic identification of the object. This requires that the viewer possess the concepts of the features that allow identification of the object. We suspect that this oscillation on Campbell's part is due to the fact that he considers, justifiably, demonstratives to require awareness but he construes awareness as access awareness, which involves concepts.

Be that as it may, our account makes clear that objects and their transducable properties are singled out in a scene in nonconceptual bottom-up ways that individuate objects and their features. To eschew the delineation thesis, one needs an account of how some of the object features could be perceived without the exercise of sortals. The segmentation processes, by individuating and indexing objects in nonconceptual ways, render the individuation process more primitive than the exercise of sortals that would describe the object.

Although Campbell is right that intentionally attending to an object requires concepts, this does not mean that there is a nonconceptual attending which is not intentional, and this cannot be taken to mean that reference requires, through attention, concepts either. Conscious attention brings with it concepts; there is not a nonconceptual attending to objects. Moreover, the nonconceptual singling out of objects fixes the reference of the demonstrative; it is intentional, since it refers to an object. Here again, Campbell is victimized by *FIT*, which requires that spatial attention bind the features at some location to a single object, *constructing* the object. Campbell's conscious attention involves concepts but at the same time he wants to maintain that the reference of a perceptual demonstrative can be fixed independent of the application of sortal concepts. But, he cannot have it both ways. Only a nonconceptual preattentional object individuation could show us a way out.

So, Campbell seems to hold that reference fixing of perceptual demonstratives could be carried out in a nondescriptive way and at the same time he holds that to be able to attend to the object and demonstrate it requires the application of at least some sortals applying to its features. We think that the problem Campbell faces is this. One the one hand, he has argued that perceptual demonstratives rely on spatial and motion information that does not constitute a descriptive mode of presentation. One the other hand, demonstration requires that one should be aware of the demonstratum, and furthermore, demonstratives usually are accompanied with knowledge of the demonstra-

tum. But awareness, and knowledge, for Campbell involves the high level attention, which in its turn opens the way for concepts permeating acts of perceptual demonstration and making thus the modes of presentation of the demonstratum conceptual structures.

Another factor that may have contributed to Campbell's predicament is his missing the fact that even when one attends to an object, the effects of attention are delayed in time. During that delay there is a host of information that is retrieved preattentively in a bottom-up way from the scene that allows parsing the scene into individuated objects *even when one attends to it*. Thus, even when attentional effects eventually occur, bringing in with them the exercise of concepts, the exercise of concepts has been preceded by object individuation. Moreover, the preattentional contents of perception are subject to phenomenal awareness. Campbell could have extricated himself had he construed "consciousness or awareness" as "phenomenal consciousness or awareness." The latter does not require attention, and hence, any concepts. This way, Campbell could have maintained both that some form of awareness is necessary for demonstration and that this awareness does not introduce conceptual structure in acts of perceptual demonstration.

If object individuation can fix reference and can be carried out without conceptual involvement, then reference can be fixed in a nonconceptual manner by means of a nondescriptive mode of presentation of the demonstrative. This goes against the descriptive theories of reference, according to which a sign is associated with a concept that constitutes its meaning. This concept determines what the sign refers to, since it allows one to pick out the objects in the environment that are "described" by the concept.[5] The descriptive fixing of reference is the analysis of demonstratives that assumes that their tokens have a reference by virtue of their sense, their mode of presentation. Wiggins (1993) argues that Frege's construal of the "sense" of singular terms amounts to a twofold claim; that there exists an object that the term presents, and a way in which the term presents that object. Wiggins (1993, 200) calls the "way of presentation" a "conception" and identifies it with a body of information in which the body x itself plays a distinct role. This information may generate different descriptions of x that may serve in suitable contexts to identify x. A conception of x is a way of thinking about x that fixes the referent of the singular term.[6] Similarly Dummett (1973) argues that Frege's senses

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5   "The meaning of a term is a concept, which determines reference, in the sense that it provides a criterion of belonging to the extension" (Putnam 1993, 150).

6   Wiggins tries to extend the Fregean framework to include in the account of "sense" of a term the referent of the term itself, and thus, to make Fregean sense "reality invoking." Wiggins (1993, 198) aims to render compatible Putnam's theory of reference and its rejection of purely descriptive accounts of reference fixing with this extended Fregean framework, by including in the latter the flow of the world into the word. According to this extended account, names without bearers would have had no sense for Frege. Evans

of singular terms are criteria identifying objects as the referents of these terms.

Thus, roughly speaking, Frege takes the reference of signs to be fixed via meaning (sense). Signs have a meaning, which determines their referents by determining a set of sufficient conditions for membership in the extension. Even if, as Wiggins argues, the Fregean sense is object-involving, and thus the meaning of a term is the combination of its sense and of its referent, the point remains that the sense involved contains descriptions of the referent. Thus, reference fixing invariably requires that concepts be involved. It is this claim that we are denying by arguing that the referent of a perceptual demonstrative can, and must, be fixed outside the conceptual realm. We stress that reference fixing does not mean identifying the referent as being such and such, but something weaker, namely individuating the object to which the demonstrative refers.

Kripke (1980) and Putnam (1983; 1991) have already shown that the standard conception of reference fixing through the sole intermediary of conceptual content is bound to fail. At least for certain kinds of terms, their reference cannot be determined by their meaning but by what the world is really like. As Devitt (1996, 159) argues descriptive theories of reference are incomplete. By explaining references by descriptive means, they appeal to the application of descriptions of other words; thus, they explain reference by appealing to the reference of other words. This cannot go on forever. To escape the lurking infinite regress, there must be some words whose reference does not depend on that of other words, that is, words that are founded directly in the world. Natural kind words, names and indexicals seem to be the places at which descriptive theories fail and where the referent must be fixed by other means. Our discussion thus far shows that these other means consist in causal grounding chains that are provided by object-centered and spatial attention.

Pylyshyn (2003, ch. 5) raises another problem, namely that the descriptive theories fail to explain how an object that is described into two different ways could nevertheless be deemed to be the same object. If all that the cognitive system has access to is the description of the referent of an object, then it is stuck with two distinct representations and there is no way to establish that the referents of the two representations are identical. This mean that the cognitive system can only represent facts about objects, that is, that an object has certain properties, but it cannot represent a particular object *qua* individual. This is, of course, the reification problem that we discussed before in another disguise. This being the case, how could action on this object be explained? Actions are performed on object tokens not on object descriptions.

(1993) shares the same interpretation of Frege's and argues that it would be wrong to attribute to Frege the thesis that the sense of a singular term is existence-independent.

Pylyshyn concludes (2003, 253) "a purely descriptive representation does not connect with the world in the right way: there remains a gap between representing the fact that there is something having certain properties and representing the fact that this very thing has those properties…. You must at some stage have a representation that connects, in this epistemically direct way, with the token objects on which actions must be based."

Although we agree that demonstratives do not provide identifying descriptions of their referent, we have argued that they allow the individuation of the referent as a singular persisting object, by means of the object-centered segmentation processes of perception that provide the causal chains that ground the demonstrative. Thus, there is a mode of presentation of a demonstrative, though it is causal and not descriptive.

It is interesting, thus, to see how the notion of reference discussed in this paper relates with Putnam and Kripke's direct-reference theory. According to Putnam (1983, 71) "the extension of certain kinds of terms is not fixed by a set of 'criteria' laid out in advance, but is, in part, fixed by the world." In other words, descriptions ascribing properties to some terms do not suffice to fix the referents of the signs. The world has a saying on the fixing, what Putnam (1991) will later call the "contribution of environment," in reference fixing.

Kripke dismisses the descriptive theories of reference that assign reference by means of a conjunction of properties of the relevant term and tries to explain reference fixing by "touching" and "pointing". These pointers assign primarily spatio-temporal information, and tag objects through object-based attention, providing thus "deictic reference". In this sense, despite Kripke's (1980, 135) claim that singular terms do not have modes of presentation, we think that Kripke's position and the thesis developed in this paper are compatible.

Though Kripke and Putnam speak of proper names and natural kind terms, their analysis easily transfers to all singular terms, and thus, to perceptual demonstratives (Garcia-Carpintero, 2000). Singular terms such as indexicals are associated with something extralinguistic, their referents. Some existentially given thing, Putnam claims, is essential for fixing these referents. This thing is the object individuated in the "object-file", which establishes the causal continuity with the object originally "pointed to" by the demonstrative, satisfying Putnam's criterion for reference fixing. The fact that the content of the object-file is retrieved in a bottom-up manner from the scene warrants the central claim that its content is the contribution of the environment and not the contribution of conceptual content.

Thus, the theory expounded in this paper, shares many features with the causal theory of reference. However, it has a less ambitious scope, since it is restricted to the reference of perceptual demonstratives and needs extension to

cover natural kind terms *qua* natural kind terms. Furthermore, it fixes reference by invoking a restricted range of information, namely only what can be retrieved in conceptually unmediated ways from a scene. We explore next some problems of the causal theories of demonstrative reference. We apply the theory of reference developed here and argue that it contributes positively in addressing these issues.

II.2. Object-Files and the Role of Senses in Reference Fixing

Let us start examining some problems pertaining to the role of senses in fixing reference with Peacock's (1992) problem that led him to deny that the contents of experience picked out by demonstratives should be individuated in terms of the differences of their mode of presentation. Peacocke uses the example of two distinct lengths, the length of a column and the length of a window that are perceived as the same. This means that their mode of presentation is the same. Yet the perceiver may reasonably wonder whether they are the same. Thus, should this perceiver be informed that they are indeed the same, this would be informative. According to the Fregean criterion of the identity of senses, if the two senses were identical, then the information that the two lengths are equal should not be informative. It is, however, in the above example, which means that senses do not individuate the contents of the perceptions of the two lengths.

Peacocke's conclusion is warranted only if one restricts the individuative information regarding the two lengths to their perceived length. If one includes in the perceived location of the two lengths, it is clear that the mode of presentation of the two lengths is not the same, simply because they are perceived in different locations. Thus, Peacocke's problem is solved without rejecting the thesis that the contents of experience picked out by demonstratives can be individuated in terms of the differences of their "mode of presentation".

Another problem surrounding the role of "senses" in fixing the reference of singular terms is Evans' (1990) and Dummett's (1973) controversy regarding the relation between sense and reference. According to Dummett, the sense is a way of determining reference, whereas for Evans it is a way of thinking of reference. Evans (1990, 73) argues that if Dummett's thesis is correct, then the sense of a singular term is a way of recognizing or identifying its referent. This leads, according to Evans, to the unacceptable consequence that the sense is existence-independent, that is, that a singular term without a referent can still have a sense. To block that conclusion, Evans construes the sense as a way of *thinking* of reference, not as a way of determining reference. This way, however, Evans falls back to the descriptive theories of reference. For, if the sense is a way of *thinking* the reference, then reference involves the usage of concepts (it becomes like Wiggins' (1993)

conception of the referent). Thus, the sense provides ways of describing the referent, and this leads back to the vicious circle of representationalism. This, in addition, contradicts Evan's (1993) claim to the effect that descriptive identification is not necessary for a term's denotation.

We can avoid the undesirable consequence of Dummett's analysis without falling back to "descriptivism", by admitting that the sense determines reference not by identifying the referent but by individuating the referent, or as Evans himself states, by providing the appropriate (spatiotemporal we add) context that disambiguates reference. This construal of senses, which is none other than the thesis argued for in this paper, blocks on the one hand "descriptivism", and on the other irrevocably connects senses with the existence of the demonstratum, because there can be no object individuation on the basis of spatiotemporal information without the existence of an object that provides this information.

II.3. Object-Files and Problems of Causal Theories of Reference

Let us move now to discussing some problems concerning the causal theories of reference in particular. First, the theory proposed here clarifies the role of context in disambiguating reference. Brandom (1996, 416-417) bases the intelligibility of judgements directed toward objects on the availability of a context of practices of identifying objects as entities persisting in time. He argues that the use of singular terms is associated with an implicit identity criterion that provides the authority to pick out particulars as persisting, subsistent objects that can be recognized as the same again, that is, to identify objects as being the same objects, even when their properties change.

These recognition judgements, whose form is assumed by identity claims, express recognition of an object when given in two different ways. These two different ways are, of course, two different modes of presentation of a singular term. "To associate an object with an expression as its referent requires settling of what would count as another way of picking out the same object" (Brandom 1996, 424). Only then, one would be entitled to apply two different concepts to the same object. Our main point is that this identification need not assume the form of a judgement but it can take place at a nonconceptual level, in which the identity (as the same object) and individuation are guaranteed by the indices that tag and track objects through their time histories.

Indexing theories provide that context of identifying objects as one and the same, by individuating them. According to Brandom "recognizing an object as the same again is making a certain kind of judgement," whereas our object individuation does not require judgements but takes place instead at a nonconceptual level. For Brandom, a singular term can pick out an object only if the issue has been settled when it is correct to recognize the object as the same again by making an identity judgement. According to our account, at the

appropriate level, one does not have to *judge that an object is the same* despite featural changes; one *perceives the same object* changing.

For causal theories of initial baptisms the important causal relation is between the item's being dubbed with a name and the speaker's contemporary use of it. For Evans, however, the essential causal relation is between the item's states and doings and the speaker's body of information. If one substitutes the "object-file" that contains information about "objecthood" and other transducable information for "the speaker's body of information", our account of a bottom-up reference fixing emerges, since the important causal relation is that between the item's spatiotemporal states and doings and the object file opened on the basis of these doings and states.

Second, the way object files individuate objects sheds light on the problem of indeterminacy of reference raised by Quine (1960) with his famous "Gavagai" example. The point of that argument is that an observational singular term like "gavagai" that gets uttered by the members of a tribe whose language the linguist is trying to translate, in the presence of a rabbit, need not be translated as the sortal "rabbit", but instead, it can be rendered as, say, the sortal "undetached rabbit part". Since linguistic practice constrains only the interpretation of sentences there is, as Brandom (1996, 409) says, "considerable slack in how responsibility for the use of those sentences is indirectly apportioned between the subsentential linguistic units the theorist chooses to discern."

Brandom claims that the difficulty with the general strategy of re-individuation (that is, the adoption of translations that individuate the world at a finer level, instead of individuating "rabbits", for instance, they individuate "rabbit parts") consists in the fact that re-individuation does not ensure that the language contains the apparatus to individuate the terms it sorts. In other words, if terms invoking parts of wholes are to function in the language as genuine singular terms, there must some ways of predicating them that do not construe them through the wholes in which they appear, but as independent entities.

We agree with this assessment and we think that the theory of reference through object individuation offered here supports Brandom. The way demonstrative thought works through deixis precludes the possibility of referring to parts of wholes at the nonconceptual level. The reason is that early vision picks up objects according to several general operational constraints hardwired in the visual system. Among them are those that determine that adjacent elements are combined, that two edge-segments could be joined even though their contrasts differ because of illumination effects, that the shapes of natural objects tend to vary smoothly and usually do not have abrupt discontinuities, and that a pair of image elements are matched together if they are physically

similar. Finally the rigidity and no action at a distance principles specify that bodies move rigidly.

These operational constraints, which are at work in vision, are the constitutive standards of vision, that is, those "rules" that determine what the perception is of, and also that we perceive objects as integral bearers of properties (Haugeland 1998, 253 and 260-261). Thus, undetached rabbit parts that occur whenever rabbithood is instantiated and move together are perceived as a rabbit and not as parts that move together. The sortal associated with the singular term "gavagai" or with the perceptual demonstratives elicited in the presence of rabbits, is "rabbit" and not "undetached rabbit parts." It is because of the function of the operational constraints that there is no possibility of an apparatus individuating rabbit parts independently of the whole of which they are parts, as opposed to rabbits; object files are opened for rabbits not for undetached rabbit parts, because object centered attention parses the scene into rabbits and not into undetached rabbit parts.

The preceding discussion addresses a classical problem with causal theories of reference, to wit the problem of how to single out the "right" causal chain that determines reference (Putnam, 1981). When Quine's native pointed at the rabbit, saying "Gavagai", was he pointing at a rabbit, an ambient optical array, an animal, or a color? This is the problem of picking out what is perceived among the causal antecedents of the perceiving. Why do we say that we see objects and not the retinal projections (proximal stimuli) that causally mediate between the percept and the object in the environment?

The problem is that of choosing the distal strategy that should determine the distal cause of some stimulus. One approach is that of Dretske (1981). It consists in employing two or more intersecting causal chains of covarying event-types that elicit a response of the appropriate type. Brandom calls this method "causal triangulation". Dretske uses this strategy to identify the distal cause that allows a thermostat in a room to control room temperature. If the thermostat has only one way to measure temperature (by the bending of a bimetallic strip), then there is no way to say that the system responds to the change in room temperature rather than to curvature of the bimetallic strip. But suppose that the thermostat has another way to measure temperature (say, by means of a column of mercury, which supports a float with an electrical contact that completes a circuit that can turn the furnace on or off). Though the second route does not identify changes in room temperature as the distal cause, both routes together can do that. The distal cause is the point at which the two roots intersect.

Brandom (1996, 429) objects that one may take the distal cause to be the disjunction of the two proximal causes (the curvature of the bimetallic strip or the height of the mercury column). One cannot determine the distal cause of the reliable differential responsive disposition of the thermostat. To

achieve this, one must supplement "causal triangulation" with "inferential triangulation", and consider the inferential, and thus conceptual, role of the responses. In other words, one must consider how claims that contain the involved terms function in language, that is, how they are connected to other claims by inference, what claims can be derived from them, from which claims they are derivable and so forth.

Haugeland (1998) approaches the problem from a different angle. Haugeland's asks how and why is "the structure of objectivity [that is, the fact that we see objects *qua* objects] imposed on the physics and physiology of sensation?" He criticizes (1988, 250-51) Dretske's attempt to solve the problem by means of interconnecting causal chains though he agrees that such intersections in part do specify distal objects instead of proximal stimuli as the objects of perception. Haugeland claims that this strategy works only if supplemented by a "letting the standards govern perception" strategy. As we have seen, it is these standards that Haugeland charges to carry the load of imposing the structure of objectivity upon perception. Though Haugeland is right that much of the work in perception that makes us perceive objects *qua* objects is due to the operation of some standards, this work is carried out by some operational constraints, which supply Haugeland's standards. There is nothing conceptual or normative in its usual sense involved. At the level of the nonconceptual content at which object individuation takes place conceptual triangulation is not necessary for fixing reference. Object-centered segmentation processes index distal objects, and provide information about the cause of the flow of information; the eye does not have to triangulate anything to perceive that the same object has, say, undergone a shape change.

Conclusion

In using a demonstrative one opens a file for the demonstratum. The first thing that this file does is to establish "objecthood" and individuate the object. This ensures the existence of a distinct object that persists in space and time. Object files index objects in a visual scene. They also function as the loci that integrate feature maps.

Thus, the reference of perceptual demonstratives is fixed through object individuation, which opens object files. This is the level at which we touch the world directly, in that this information is directly retrieved in bottom-up. It is at this level that the causal chains grounding representations reside. They do this by providing the substratum on which demonstrative concepts refer to objects in the world. This way conceptual content of demonstratives is grounded in the world without the mediation of concepts.

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