

Indexicals and Perception

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1. Some introductory remarks

Indexical terms, at least the ones on which we shall concentrate here, belong to the category of singular terms. Such linguistic expressions *refer singularly*, that is, they normally refer to a unique and specific object, in contrast to expressions used to refer to categories of objects or to their properties.

The current debate on singular reference is characterized by two rival approaches, namely the descriptivism and the referentialism. According to the descriptivist approach, singular reference is always indirect because mediated by a descriptive content of some sort that fixes the referent. In contrast to this view, referentialism claims that singular terms (at least some of them, such as indexicals and proper names) refer directly by having the object to which they refer as a constituent of the expressed proposition¹. Within the debate on singular reference in analytic philosophy of language it is a tradition to conceive of the theories of indexical reference as related to one of the two views on the market. My proposal does not intend to contribute in favor to one of the two rival approaches, but it should be better understood as a transversal theory whose main concern is that of explaining the data about the usage of indexicals in communication. In this sense, the salience-based model here proposed cuts across the dispute between descriptivists and referentialists without being committed to neither. Moreover, whereas the philosophical discussions on indexical

¹ Descriptivism has been the dominant view until the 70's. In the last decades, referentialism - defended by Donnellan, Kripke, Strawson, Wettstein, Kaplan among others - is commonly regarded of as the correct approach to singular reference (DEVITT & STERELNY 1999; AKMAJIAN *et al.* 1995). Despite its popularity, referentialism is not free from troubles (in particular that of co-referentiality and no-referentiality), and rival descriptivist approaches (e.g., ORILIA 2009) are still very alive.

reference are normally deeply rooted within truth-conditional semantics, I shall offer a perspective on indexicals' referential mechanism more pragmatically oriented.

2. The semantic heterogeneity of indexicals: Kaplan and Perry

Indexical terms are singular terms, yet they differ from other singular terms, such as proper names or definite descriptions. In particular, indexicals are context-sensitive elements of language; their reference invariably depends on the context in which they are uttered. Consequently, the process of determining the referent of an indexical term can be ruled only by considering the indexical as a *token* occurring in a context that provides extra-linguistic information about the agent, the place, the time of production, and other relevant elements. Let X be a certain indexical-type (for example, "I", "here", "this", etc.), and x be a token of X , then the rule expressed by X for determining its referent, as far as it always depends on a particular context, should involve somehow x itself. This explains how different occurrences of the same indexical-type X , can nevertheless refer to different objects. Thus, we find in the literature *token-reflexive* rules along these lines: the referent of a token h of "here" is the place where h is uttered, the referent of a token i of the first person pronoun "I" is the person that utters i , the referent of a token n of "now" is the moment when n is uttered, and so on.

Token-reflexive rules provide an effective representation of the fact that the referent of an indexical term can vary with the particular utterance, since each involves a different token of the indexical term. These rules trace back to Reichenbach's descriptivist account of indexicals (REICHENBACH 1947) according to which, for example, the meaning of a token i of the indexical "I" is a descriptive content expressible as "the speaker of this token" (where "this token" designates i itself)².

² The token-reflexive rules may be associated to a referentialist account, according to which the meaning of an indexical token t is the referent of the token itself (see, for example, KAPLAN 1977).

Token-reflexive rules alone are not sufficient for determining the referent, for which one must also appeal to the context: given the context and the referent determining token-reflexive rule, we seem to eliminate the ambiguity of words such as ‘*I*’, ‘*here*’, and ‘*now*’. The problem arises when we try to apply the same procedure to the so-called ‘demonstratives’ (words such as ‘*this*’, ‘*she*’, ‘*you*’, ‘*that*’, etc.). In fact, the context always provides us with some completing information about the time, the place, and the utterer of an indexical sentence (for each utterance there is uniquely one and only one time\place\utterer), but it is not always sufficient for the disambiguation of demonstratives because in a given context there might be multiple objects that are candidates for the demonstrative’s referent. The impossibility of easily applying referent determining rules of a token-reflexive form to demonstratives, I would argue, has convinced many authors that the category of indexical terms is not semantically homogeneous.

Kaplan (1977) suggests the distinction between pure indexicals and demonstratives. We can associate the former with a rule that allows us to fix a referent in a context; we cannot, however, do the same for the latter. In order to solve the problem of the semantic incompleteness of demonstratives, Kaplan enriches the semantic rule for demonstratives with a further (extra-linguistic) element. He claims (KAPLAN 1977) that the occurrences of the demonstratives are disambiguated by means of a “pointing gesture” accompanying the utterance; later, he modifies his view (KAPLAN 1989) and gives the speaker’s directing intentions the role previously assigned to pointing gestures.

The theory of indexical reference proposed by Perry (2001) is also based on token reflexive rules, and assumes some kaplanian ideas, e.g., the distinction between pure indexicals and demonstratives³, the distinction between “content-meaning” and

³ The distinction between pure indexicals and demonstratives is reviewed by Perry (1977) on the basis of the notions of “automaticity” and “intentionality”. Pure indexicals are called “automatic indexicals”, while demonstratives are called “intentional indexicals”: the occurrence of an automatic indexical, such as ‘*I*’, ‘*here*’, or ‘*now*’ is semantically complete in the sense that it does not need to refer to the speaker’s intention in order to determine the referent as this is done by means of the linguistic rule alone. In contrast to the automatic indexicals, the speaker’s intentions are instead relevant to determining the reference of an occurrence of an intentional indexical (demonstrative), since the linguistic rule alone cannot completely determine its reference (PERRY 1997: 11).

“character-meaning”, respectively called by Perry “reference” and “role”⁴, and the semantic function of the speaker’s intentions.

The main reasons for making the distinction between pure indexicals and demonstratives can be summarized as follows: (i) the character of pure indexicals is sufficient, given a context, to fix the referent without any ambiguity (and any accompanying demonstration would be redundant); on the contrary, the character of demonstratives *cum* context is insufficient to fix the referent without ambiguity, and it must be accompanied by an indication in order for one to identify the referent; (ii) for pure indexicals the character alone fixes the referent, whereas for demonstratives it is the indication (or the speaker’s directing intention) accompanying the utterance that fixes the referent. If this is right, then, in order to understand indexical reference we have to consider semantic as well as pragmatic components.

I’ll later show how token reflexive rules, when combined with a pragmatic element, namely the “perceptual salience”, can explain the way we communicate without ambiguity by using both pure indexicals and demonstratives. Moreover, by appealing to the notion of perceptual salience, no recourse to speakers’ intentions⁵ or demonstrative gestures is needed.

3. Overcoming of the distinction between pure indexicals and demonstratives

⁴ In their referentialist approach, both Kaplan and Perry split the meaning of an indexical term into *linguistic meaning* (Kaplan’s “character”, and Perry’s “role”), and *content* (Kaplan’s “content”, and Perry’s “reference”). Note that such distinction is also present in the theories of indexical reference of Fregean inspiration, with respect to which the splitting of the meaning reflects the distinction between sense (*Sinn*) and reference (*Bedeutung*).

⁵ Speaker’s intentions are appealed to by both Kaplan and Perry. Unfortunately, such features are ‘psychological’ entities, and this may constitute a disadvantage: sometimes the intentions can be made visible by a pointing, but the relationship between intentions and pointing gestures is not identity. How can we grasp then our interlocutor’s intention in a case in which she does not accompany her intention with a gesture or in a case in which she intends to refer to object *x* but by mistake points to object *y*? Marga Reimer expresses a similar concern: see, Reimer (1991). Reimer analyses Kaplan’s two theories (KAPLAN 1977) and (KAPLAN 1989), comparing them and defending the semantic role of pointing.

The semantic heterogeneity assigned by much literature to indexical terms is, arguably, an artifact of the attempt to extend the rules characterized by token-reflexivity to demonstrative uses and does not stem from the real nature of such terms. There are several cases in which the distinction between pure indexicals and demonstratives is problematic.

The example below, due to Michael Bennett, is given by Kaplan in *Demonstratives* in order to show the role of pointing gestures in the use of the demonstratives:

Michael Bennett has noted that some indexicals have both a pure *and* a demonstrative use. ‘Here’ is a pure indexical in “I am in here”, and is a demonstrative in “In two weeks, I will be here” [pointing at a city on a map]. (KAPLAN 1977: 491)

As a matter of fact, speakers often use gestures when employing pure indexicals, especially when there is a gap between the time or the place of the utterance and the time or the place to which the speakers are referring. There are cases in which a demonstrative is used with a pure indexical function. In the following example, two friends are visiting Rome and one of them says:

(1) I am going to come back soon to *this* place.

The demonstrative phrase “*this* place” would need, according to Kaplan, an associated demonstration to disambiguate the meaning, but it is very likely that it is not at all ambiguous in that particular context, nor does its use seem to require an associated demonstration. In (1), “in *this* place” functions as the pure indexical “*here*” and, in a corresponding way, the phrase “in *this* moment” in some contexts functions exactly as a “*now*”. Thus, in everyday communicative practices the distinction between pure indexicals and demonstratives appears quite tenuous or problematic at best. I suggest we should not overestimating the disambiguating role of pointing gestures.

If a sharp distinction between pure indexicals and demonstratives should be rejected, it is still true that one can use any indexical term in different ways. Bühler, in his

Sprachtheorie (BÜHLER 1934), distinguishes between *anaphoric deixis*⁶, *perceptual deixis*, and *deixis am phantasma*. In particular, the distinction between perceptual deixis or *demonstratio ad oculos*, and the imagination-oriented deixis or *deixis am phantasma* is quite original and useful for our purposes: “perceivability” is considered a criterion for the classification in *demonstratio ad oculos*, whereas “to be imaginary” is taken as a criterion for classification in *deixis am phantasma*. In order to classify an indexical use as a *deixis am phantasma*, the indexical’s referent should be present just in the subjects’ mind (it must be “imagined” by the subjects), but not really present in the context of the utterance. In this paper we will focus on the perceptual deixis (*demonstratio ad oculos*) alone: the use of an indexical is perceptual when its referent is physically present in the context of the utterance and should be perceived (or should be perceivable, in principle) by the subjects involved in the communicative event. I will refer to Bühler’s *perceptual deixis* by the expression “perceptual indexical”.

4. The role of salience in the use of perceptual indexicals

In order to explain the way in which each perceptual indexical can carry out its referential function, I integrate my model’s proposal with some form of sensory knowledge. In the perceptual indexicals, in fact, the connection between thought and sensory knowledge is paradigmatically in evidence⁷. On this view the notion of salience becomes central and characterizes the mode of indexical reference. My proposal is not the first one in this field appealing to the notion of salience, on the contrary, as Orilia (2009: 48) points out, salience has often been used in relation to the

⁶ The “anaphoric deixis” consists in the anaphoric usage of an indexical term. For example, in “Romeo is happy. *He* is in love with Juliet”, the pronoun “*he*” is an anaphora: it *picks up* its reference from another term which appears previously in the sentence or in the text (“Romeo”, in this case). In the anaphoric deixis the relevant context is the linguistic (or “textual”) one.

⁷ The indexicals could be seen as those signs expressing a relation of immediacy with particulars on analogy with Russell’s notion of *acquaintance*. See, Russell (1905).

indexicals' semantics (NEALE 1990; RECANATI 2004; LEPORE & CAPPELEN 2005; ORILIA 2009). Moreover, salience and related notions like relevance have been discussed at various places in linguistic literature on anaphora resolution and reference in general. Notwithstanding the several frameworks within salience plays a crucial role, this very notion has not been used univocally. In particular I appeal to a notion of salience based on the psychological mechanism of selective attention solely, whereas the other above mentioned approaches do not. For example, Sperber and Wilson (1986) relate the notion of relevance to some general concept of productivity involving some form of cost-benefit analysis that is not needed in my model; moreover relevance is defined as a relation between an assumption and a context, where such a context differs from the perceptual context as I define it.

Some approaches within linguistics and computational linguistics also directly refer to the notion of salience (ARIEL 1990; GIVÓN 1983; GUNDEL *et al.* 1993), but they conceive of salience more as a *linguistic* salience in a discourse. For example, as applied to personal and to demonstrative pronouns with anaphoric function, the salience approach predicts that the addressees should interpret the indexical term as referring to the most salient entity *in a discourse*⁸.

Differently from the frameworks presented above, salience is here defined in terms of typical phenomena of perception and relates to sensory knowledge in the sense that what is salient can be known and perceived as salient in a context. A theory of indexical reference based on the notion of salience offers the following advantages: it sheds light on the relation between thought and sensory knowledge; it allows a homogeneous rule for determining the referent of all indexicals, thus overcoming the distinction between the pure indexicals and the demonstratives; consequently, it treats demonstratives as unambiguous and complete in the same way as pure indexicals. In the process of assigning a referent to an indexical token, salience becomes the

⁸ The salience-based approaches in psycholinguistics should not be confused with the one I present here: first, they investigate anaphoric uses of indexicals whereas I focus on perceptual indexicals; second, they conceive of salience as related to a linguistic context, whereas I relate it to a purely perceptual context. That said, my salience-based model is not troubled by some psycholinguistic experiments' results on anaphoric uses of indexicals in languages like German or English suggesting that *personal pronouns* have a tendency to refer to the *salient* objects whereas *demonstratives* in the same position have a tendency to refer to an object that is *not salient* or less salient. See: Bosch (1988); Brown-Schmidt *et al.* (2005); Gundel *et al.* (1993).

connecting link between the perceptual context and the rule expressed by an indexical.

Saliency is classifiable as one of the “perceptual” phenomena strictly connected to attention, and, in particular, to that type of attention technically called “selective attention”. It is a sort of higher mental function, studied and analyzed in neuroscience and cognitive psychology, that is characterized, roughly, as the activity of focusing attention on a particular point of the perceptual field (MCCARTHY & WARRINGTON 1990). Distributing attention appropriately implies also making salient, for each given moment, now one object or portion of the perceptual field, now another, along with the efficient ordering of the very many new perceptual stimuli coming from the environment each time we shift our attention to a particular object or a portion of the perceptual field. The notion of saliency requires a definition of *perceptual context* (C_p) that we can formulate as follows:

Df. PERCEPTUAL CONTEXT (C_p):

Suppose a given communicative situation, that CP is a subjective perceptual field, and that we can have as many subjective perceptual fields (CP_1, \dots, CP_n) as the number of the interlocutors (I_1, \dots, I_n). The locus of intersection of each subjective perceptual field will then constitute the perceptual context C_p .

$$[CP_1 \cap CP_2 \cap \dots \cap CP_n = C_p]^9$$

By ‘perceptual field’ (CP) we mean the material and perceptible “place” each interlocutor has access to by means of the senses and that corresponds to the “sum” of all the areas currently made accessible by different sensory modes (visual, auditory, tactile, etc.). The notion of a “field of perception”¹⁰ is a starting point for individuating the context that allows us to deal with the use of indexical terms, but it

⁹ The expression “locus of intersection” and the set-theoretical intersection symbol are here used metaphorically, so as to give the main idea of what is at issue in a perceptual context.

¹⁰ The idea of perceptual field is derived from the idea of “field of indication” proposed by Bühler (1934).

is not yet the context they depend on, since this notion of context is still very “subjective”. The perceptual context does indeed derive from the field of perception of each single interlocutor but is given by the *intersection* of the fields of the actors engaged in the communicative event. In ordinary situations, communication mediated by indexical utterances is based on objects that find themselves in the locus of intersection of the fields of perception of the subjects engaged in communication (perceptual context). We can consider such uses the “typical uses” of indexical utterances.

Within a perceptual context selective attention organizes and coordinates the sensory inputs constituting each individual field of perception. And each field of perception provides the subjects with the conditions for focusing attention on one (or on one group) of these stimuli each time. Without this selection and hierarchical structuring of sensory stimuli by selective attention, each field of perception would be a disordered sum of sensory stimuli and so, thereby, would the perceptual context itself. On the one hand, selective attention allows one to highlight (with respect to the field of perception) a portion of or an object in the context, and on the other, it keeps all the rest in the background, or, better, it contains many other sensory stimuli that could push attention away from what is currently salient.

In some cases selective attention is guided by the intentions or the goals of the subject and this is of a “voluntary type”; in others it is attracted in an involuntary way by some particular sensory stimulus that becomes “automatically” salient in a context. A case of automatic selective attention is, for instance, one in which a driver hears the siren of an ambulance. Whatever the object of her attention before the ambulance appeared, the siren sound provokes in the driver a sort of conditioned response that causes her attention to be shifted to the new auditory stimulus: the subject will turn her attention towards a portion of context up to then in the background.

The object, or the portion of the field of perception, that is at the center of the subject’s attention is then the salient object in that particular moment for that subject having that field of perception and in that particular context: in a given field of perception the salient object is the one at the center of the subject’s attention. To be

salient, an object must necessarily “be situated” within the subject’s field of perception. At the same time, in a communicative situation, the salient object must find itself within a perceptual context (C_P); for this reason, in a communicative situation salience does not relate only to one subject, but to all the interlocutors participating in the communicative event. I move thus to a general definition of salience: in a communicative situation involving a number of subjects, an object x is salient when it is within the perceptual context (C_P) and at the center of the subjects’ attention.

For an object to become “intersubjectively” salient within a context two conditions must be met: (a) there must be cooperation (the interlocutors must cooperate and “negotiate” salience); (b) the perceptual context must be accessible (the interlocutors must be able to have perceptual access to the salient object, that is, they must have it in their fields of perception). The salience-based model is not then valid for all those cases in which in the communicative situation there are casual or hidden receivers¹¹ (i.e., speakers one is not aware of), since the cooperation requisite, and that of the access to the perceptual context, cannot be satisfied in such a case.

When a speaker uses an indexical term, she must be ready “in a selective way” to consider the interlocutor, that is, she should get out of the perspective offered simply by her own perceptual field in order to grasp the receiver’s point of view and decide if the receiver has enough (perceptual) information to understand the indexical utterance.

5. Principles of salience

The perceptual context is not only imposed by the state of affairs existing in the world, but also “built” by the interlocutors’ cooperation efforts. Accordingly the salience of an element in the perceptual context can emerge in various ways. We

¹¹ On the distinction relating to the various types of receiver (direct, hidden, etc.) see Clark (1992).

observe mainly three types of salience: pragmatical, natural, and intentional. I will relate the principles characterizing each of these ways in which an object can emerge as salient in a particular context.

“Pragmatic salience” is the type of salience of an object or portion of the perceptual context generated by the characteristics of the context as interpreted by the interlocutors according to their knowledge (social, cultural, etc.) and communicative habits. When the salience of a portion of the context or of an object emerges from characteristics of the context itself, we will speak of “natural or perceptual salience”; in these cases the emergence of salience does not depend on the interlocutors and their intentions but on the perceptual context itself and its characteristics. When, instead, the salience of a portion of the context or of an object emerges from the interlocutors’ intentions we have an “intentional salience” which does not depend on the characteristics of the perceptual context but on the intentions of the actors. In the latter case, the subjects intentionally provoke the emergence of salience by means of linguistic and/or non-linguistic actions.

5.1. Pragmatic salience

The “pragmatic principles” of salience are based on knowledge of a general, social, and cultural character, shared by a community of speakers. Within a given linguistic community there is an automatic and tacit agreement (often unattended) of some pragmatic principles of salience. For instance, when we are in a theater, our attention is focused on the stage: this becomes (given our social and cultural habits) the salient portion of our perceptual context¹². The pragmatic principle of “macro-salience” can

¹² The pragmatic principles of salience can be the object of study of different disciplines such as psycholinguistics or anthropology. In this group of rules, the cultural characteristics of the speakers’ community (rites, habits, social customs, etc.) are highly crucial. As a matter of fact, the same communicative context can engender different types of salience depending on the different cultures of the speakers’ communities.

be formulated in this way: in a communicative situation the interlocutors assign (in an intersubjective way) salience to a particular portion of the perceptual context on the basis of shared social and cultural knowledge.

The pragmatic principles may select, within the perceptual context, features of different perceptual nature. In attending to a classical music concert, although there are many sensory stimuli coming from the concert hall, the auditory stimuli of the musical performance typically prevail as salient in contrast to the others. If, in that context, an utterance such as “*this* is my favorite” is produced, given the pragmatic principles we can unambiguously individuate the reference of “*this*” as *the music*. More precisely, the demonstrative referent would be the music of the moment *t*, where *t* is the time of the utterance. Even if, strictly speaking, “*this*” could refer to any object or event in the perceptual context (the piano that is being played, the dress of the woman sitting in the row in front of me, etc.) its reference to the music is “pragmatically” unambiguous.

5.2. Perceptual salience

The principles of perceptual salience explain why we can so effortlessly and comprehensibly refer unambiguously by using indexical expressions to a particular object in the perceptual context. I hereby list some of the principles and I’ll provide each of them with some examples.

Principle of conditioned salience: in C_p , a highly intense sensory stimulus (visual, auditory, sensory, etc.) automatically emerges as salient. Examples of conditioned salience include thunderclaps, sudden lightening, and loud thuds. When we perceive a loud and intense thud (a thunder clap, the sonic boom of a plane above us, etc.), our selective attention is immediately attracted by the stimulus that becomes automatically, and in a totally involuntary way, the salient object of the perceptual context. In these cases when the interlocutors use indexical utterances they refer by means of the indexical terms to the salient stimulus.

Principle of temporal proximity: in C_P the object more recently perceived is salient. For instance, while watching a movie, the most recent image of the framing (normally perceived as the “current” image) is more salient than the previous images.

Principle of spatial proximity: in C_P the object perceived as the one closest to the interlocutors’ space is salient. This principle is similar to the previous, but it refers to the spatial vicinity, whereas the other refers to the temporal vicinity. The principle of spatial proximity is involved, for example, when one says “*he* is my friend” referring to the person that is closer to the audience.

Principle of similarity: in C_P the group of similar objects, i.e., that share objectively the same property (or properties), is salient. This principle explains the salience of collections of objects. Let’s consider a football match between the Reds and the Whites: when a Red player says “*We* are the strongest!”, the indexical term refers to the team of the Reds. The properties shared by the objects within the context will make the team salient, as the players are included in the class of objects that share (objectively) the same property of “being red”.

Principle of difference: in C_P the object that for a particular evident property stands out from all the other members of a certain group is salient. Imagine that in the interlocutors’ perceptual context there is a litter of puppies. All the puppies are white, but for a black one: the black one stands out from the others and becomes salient. In uttering “*It* is male”, the pronoun “*it*” will refer to the only black puppy in the litter in so far as it is salient.

Principle of uniqueness: in C_P the object that is the only one of a certain type present in that particular C_P is salient. When there is a unique object that in the perceptual context satisfies the descriptive content of the linguistic meaning expressed by the indexical, the reference is not ambiguous and the object becomes automatically salient.

5.3. Intentional salience

Sometimes the perceptual context does not offer characteristics sufficient for making an object salient (pragmatic principles). It may also be that the objects made salient by the perceptual salience principles are not the ones the producer intends to refer to. In all these cases, in order to make an object salient we resort to pointing gestures. Let's consider again the case of a litter of puppies all of which are white with the exception of a black one: this puppy is salient *via* the difference principle, while the other puppies are not salient. If an interlocutor intends to refer to one of the white, non-salient, puppies with the utterance "*It is a male*", she will be obliged to make the white puppy salient by pointing in its direction.

The previous example shows that the pointing mechanism is based on the "principle of visual directionality": in a perceptual context the object that lies in the direction shown by the ostensive gesture is made salient. Examples of ostensive gestures are pointing fingers, head nods, stares, glances, etc.

A few more words on the relationships among the principles of perceptual salience and those of intentional one are needed: in normal conditions, the salience of the objects engendered by pointing gestures, normally prevails over the perceptual salience of the objects. For example, if on the basis of some principles of perceptual salience the object *x* is salient, it is always possible for an object *y* to become salient, thanks to the intentional intervention of one of the interlocutors. Perhaps the only exception to the supremacy of intentional salience over perceptual salience is the salience of an object generated by the principle of conditioned salience, given its characteristic automatism. It is, indeed, always possible in a perceptual context for the interlocutors to engender intentionally the salience of an object *x* and, then, because of the sudden appearance of an event (or object) *y*, on the basis of the principle of conditioned salience, for it to become automatically salient, the salience of *y* prevailing over the salience of *x*.

The salience modes analyzed so far through the discussion of the perceptual and pragmatic salience principles have not been considered much by those in the field of semantics who deal with indexical reference. On the contrary, these semanticists have given importance to the salience generated by pointing gestures that can be associated

with an indexical utterance for the selection of a referent. In the present study we consider pointing gestures as but *one* of the possible ways to make an object salient.

6. Salience-based rules

In the following, I propose a general formula of the rule for determining an indexical's referent. It has the form of a token-reflexive rule, and it assumes a (minimal) descriptive content. For example, the descriptive content of "here" is "being a place", of "this" is "being an object near the speaker", etc. The novelty of my proposal lies in the presence, within the rule, of the notion of salience in a perceptual context.

General rule for determining the referent of the indexicals

Any token *I* of an indexical term with a descriptive content *F* refers to that item *x* that satisfies *F* and that is salient in the perceptual context (C_p) in which *I* is uttered at t_i .

From this general formula, by appealing to the different descriptive contents¹³, we obtain the rules for the specific indexicals. Below, I list the rules for "I", "here", "now", "you", "he", "this" and "that"; for the indexical terms not considered above, it is enough to apply the same rules *mutatis mutandis*.

Rule for "I"¹⁴: every occurrence of "I" refers to the salient individual that is the utterer in C_p at t_i .

¹³ Here "descriptive content", contrary to what is done in the cited Perry (2001) and Orilia (2003), does not stand for something that fully identifies the referent. For example, "being a place" is true of all places and not one in particular.

¹⁴ The semantic rule for "I" represents an exception within the salience model since the semantic function of the first person pronoun is not based on a salience notion like that of the other indexical

Rule for “*here*”: every occurrence of “*here*” refers to the place that is salient in C_P at tI .

Rule for “*now*”: every occurrence of “*now*” refers to the moment that is salient in C_P at tI .

Rule for “*you*”: every occurrence of “*you*” refers to the salient individual that is the receiver in C_P at tI .

Rule for “*he*”: every occurrence of “*he*” refers to the male individual that is salient in C_P at tI .

Rule for “*this*”: every occurrence of “*this*” refers to the object near the speaker that is salient in C_P at tI .

Rule for “*that*”: every occurrence of “*that*” refers to the object far from the speaker that is salient in C_P at tI .

A rule for determining the referent based on the notion of salience has the advantage of being able to be applied without distinction to pure indexicals and to demonstratives: the formula in the case of a pure indexical (for example, “*here*”) and in the case of a demonstrative (for example, “*this*” or “*that*”) remains unchanged in form, given naturally the different descriptive content that directs one to a place, rather than to a speaker and so on.

Because of the presence of the time indexical “ t_I ” that refers to the moment of the utterance of I , it does not seem possible to apply the rule to the indexical terms

terms. For “ I ” salience is in some ways redundant: as a matter of fact an utterance of “ I ” generates by itself an automatic salience of the producer and receivers of that particular token of “ I ”, and it is never possible that the salience generated by the use of “ I ” is applied to an object or person different from the utterer. In other words, “ I ” always refers to the producer (the speaker) of that particular occurrence of “ I ” in an automatic way, and this utterance makes the speaker salient in any context. Differently from the “automatic” behavior of the first person pronoun, any other indexical can potentially refer to more than one object, although, at least in typical cases, the salient object it refers to is negotiated and individuated without ambiguity on the basis of the application of the semantic rules and thanks to the salience rules. The automaticity of the first person pronoun constitutes a peculiar characteristic that suggests its semantic heterogeneity *vis-à-vis* the entire indexical category. On the automaticity of the term “ I ”, see: Castañeda (1999). Some authors do not agree with the view that a token of “ I ” always refers to the utterer of the token. However, we are restricting attention to perceptual deixis, wherein there’s always a unique utterer of an “ I ” token, even if this is not the case with anaphoric deixis and deixis *am phantasma*.

“*yesterday*” and “*tomorrow*”, to expressions such as “*in two days’ time*”, “*two months ago*”, etc. The application of the salience-based model to the temporal indexicals is unsatisfying, but it does not follow that the model is not general enough. It simply is there is no possible temporal indexicals’ referent *in* the context.

I shall consider the rules for this type of temporal expressions as derivative from the rule for “*today*”; this in turn can be constructed as derived from the rule for “*now*”. Except from “*now*”, no other temporal indexical refers to an object present in the context; this is well described by their derivative rules presented below.

Rule for “*today*”: every occurrence of “*today*” refers to the day¹⁵ that contains the moment (t_i) at which the token of “*today*” is produced. In this case the rule for “*today*” does not depend directly on the notion of salience, but it inherits from “*now*” (to be taken as a reference to the precise moment of utterance) the implicit appeal to salience.

The rule for “*yesterday*” and “*tomorrow*” can be derived from the rule for “*today*”.

Rule for “*yesterday*”: every occurrence of “*yesterday*” refers to the time length of 24 hours preceding today.

Rule for “*tomorrow*”: every occurrence of “*tomorrow*” refers to the time length of 24 hours following today.

The derived rules work irrespective of the notion of salience. They concern only the rules involving the semantics of “*now*”, from which they all derive. For this group of indexicals, then, the salience rule works indirectly since an object connected to the indexical referents is salient (the referent of “*now*”), not the referent itself (namely, the referent of “*yesterday*”, “*tomorrow*”, etc.). This result is not surprising, given the natural anchoring of the stream of consciousness to the present moment (Stern 2004). Thus, I suggest that temporal indexicals cannot have a perceptual function: they

¹⁵ By “day” I mean the conventional time length of 24 hours, and this corresponds to the period ranging from 00:00 to 24:00 (according to the conventional system of time measurement) in which the token of “*today*” happens to occur.

should not be understood as perceptual indexicals, yet they may have an anaphoric or phantasmatic (in Bühler's sense of *deixis am phantasma*) function.

7. Some applications of the salience-based model

Consider the utterance

(2) Stop *that* man¹⁶

uttered in a communicative situation in which there is a single man running. According to the rule for “*that*”, any occurrence of “*that*” refers to the object/individual (neither near the producer nor near the receiver/s) salient in the perceptual context at the moment of the utterance of that particular token of “*that*”. On the basis of the salience principles, exploiting, in particular, the principle of conditioned salience and the difference principle (or, in relation to the characteristics of the perceptual context, the principle of uniqueness), we have all the elements that can lead to the individuation of the person functioning as the referent of “*that* man”.

The following example shows how the salience model explains the cases in which demonstrative terms are used unambiguously, and with no pointing. The utterance

(3) *This* means it is going to rain

uttered at the time of a loud thunder, can be understood thanks to the salience-based rule for “*this*” together with the exploitation of the principle of conditioned salience.

The analysis of the cases based on the salience model considers pointing gestures as one of the different ways to generate the salience of an object. Hence, the salience model can also do without the speaker's intention, which is a very problematic entity.

¹⁶ The example is from Kaplan (1977: 490).

In my proposal, the speaker's pointing and directing intentions continue to have a role, but their applications are crucial only in the case of the intentional salience.

Conclusion

In contrast with Kaplan's and Perry's semantic models, the salience model does not need to resort to completing elements like pointing gestures or the speaker's directing intentions. The salience model proposes a vision of indexicals according to which their use in communication is not ambiguous, since the speakers fix as the referent the object salient within a perceptual context. Such a model presents some advantages: (i) it considers the context in which the fixing of the referent of the indexical utterance depends, and it characterizes it as "perceptual context"; (ii) it offers a rule for fixing the referent unambiguously; (iii) it is applicable indifferently to both pure indexicals and demonstratives, thus suggesting a homogeneity for the whole category of indexical terms. If compared to the rival semantic models, the salience-based model is preferable since it is less complex in at least two respects: it does not require the intervention of elements such as intentions or pointing gestures, and it places all indexicals under the same category of terms. The salience-based model is independent of how one sides in the dispute between descriptivism and referentialism, yet it points out some relevant issues of the traditional debate.

Finally, my proposal for indexical reference points out the way in which language is deeply rooted in perception. In my approach to indexical reference, the process of production and understanding of indexical utterances is not exhausted by pure mental activity only. Since the notion of salience - understood in terms of perceptual phenomenon - is pivotal to my proposal, our communicative activities turn out to be integrally involved in embodiment. Such an idea has much in common with the embodiment hypothesis suggested by Lakoff and Johnson (1999) according to which our linguistic and conceptual structures are shaped by our perceptual structures.

Differently from the other theories of indexical reference currently on the market, my approach to indexical reference conveys the idea that our linguistic capacities require more than the ability of manipulating symbols: the proper usage of indexicals necessarily depends on a knowledge about the world that must be obtained by perception.

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