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INDEXICALS

1 THE TWO PROBLEMS: SEMANTICS AND LOGIC

The central examples of indexical expressions (in English) are the pronouns 'I' and 'we', and temporal and spatial words like 'now', 'yesterday', 'here' and 'there'. These indexicals are syntactically simple, and can be used to form complex indexical descriptions such as 'my father' and 'all our yesterdays' (but since plural expressions raise special problems, we shall focus in this essay on singular indexicals). The characteristic feature of an indexical expression is, roughly, that its associated object is not given once for all, as it is for a proper name. Rather, the associated object changes in some systematic way from context of use to context of use, and one task of any semantics of indexicals is to explain or articulate the system which governs such changes. The literature also usually includes with indexicals other kinds of expression which have a salient semantic feature that changes as the context of use changes; for instance, demonstratives, such as 'that man', and tense operators, such as 'it will be the case that'; so we will count these as indexicals too.[1]

What are the problems in philosophical logic to which indexicals give rise? Considering the examples just mentioned, it appears that the function of such expressions is to pick out objects. This remark, at least for the case of 'I', 'here', and 'now', would be regarded as superficial by those who doubt that there are such objects as selves, places, and times, but for the sake of making some initial progress, we will indulge in a little metaphysical naiveté. So indexicals are among the *singular terms* of natural language, along with proper names and pure definite descriptions (a pure definite description is an expression of the form 'the F', where 'F' does not itself contain a name or an indexical—'the inventor of the wheel' as opposed to 'your friend next door'). Hence they need to be accommodated by any general theory of singular reference, such as the theories described by Salmon in his chapter (this volume). For instance, Russell at one point held that ordinary names abbreviate definite descriptions (which themselves describe, rather than refer) and that the phenomenon of genuine reference is rare [Russell, 1918, Lecture II]; where do indexicals fit in his scheme? Within this area, we should also investigate the question of how indexicals are related one to another. For example, we said that 'I', 'here' and 'now' are syntactically simple, but it does not follow that they are conceptually simple. Perhaps 'here' means 'where I am now located', or maybe it is 'I' which is

[1] See section 4 for a treatment of the tense operator as an indexical.

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complex, meaning something like 'the self now here'. A third possibility is that the three central indexicals reduce to demonstratives picking out experiences: 'I' would have the content of 'the subject of this experience' [Peacocke, 1983]. A more radical, eliminative, proposal, is that the content of indexicals can be spelled out without ultimately relying on any indexical resources. We shall begin with these semantic matters in the next section.

Another kind of question indexicals raise concerns the proper way of extending the set-theoretic notion of interpretation for a formal language when indexicals are added to it, so that we can characterize and investigate the notion of logical validity for languages with indexicals. What new apparatus is required to deal with 'I', 'here', 'now' and 'that F' over and above what we already have for languages with names, descriptions, tenses and modal adverbs such as 'possibly' and 'necessarily'? In this matter, we have some pretheoretic intuitions to which any adequate proposals should do justice. For instance, it appears to be a contingent truth that I am here now (New Orleans, May 1996), for I could have travelled elsewhere for the month, rather than remaining here. So the interpretative apparatus must admit a way things could have gone in which I am not here now, but am rather somewhere else. On the other hand, in its standard use, the sentence 'I am here now' cannot be falsely uttered (by 'standard' I mean to rule out, e.g., using 'here' while pointing at a map); so although we want to allow worlds where I am not here now, we do not want models in which 'I am here now' is falsified. An elegant formal apparatus has been devised by David Kaplan which satisfies these desiderata [Kaplan, 1989a], and we shall explain his 'logic of demonstratives', probably the single most influential contribution to our topic, in some detail. The problem of analysis and the problem of logic are interconnected in ways which will emerge as we pursue our discussion.

2 INDEXICALITY IN A FREGEAN SEMANTICS

Descartes was perhaps the first philosopher to interest himself in, or at least to exploit, the phenomenon of indexicality, and we might expect a semantic analysis of indexicals to throw some light on the peculiarities of his famous premise 'I think'. However, it is not unreasonable, here as elsewhere in philosophy of language, to regard the modern phase of the subject as beginning with Frege. Frege held that each expression of an interpreted language has both a *reference* and a *sense*, the sense, in general, being a *mode of presentation of*, or *a way of thinking of*, the reference (see pp. 79–85 for details). He subscribed to two compositionality principles, that the reference of a complex is wholly determined by the references of its constituents, *mutatis mutandis* for senses, and two dependence principles, that a complex lacks a reference if it has a constituent which lacks a reference, *mutatis mutandis*

for senses. Examples of types of expression which have reference and sense are names and sentences. The reference of a name is the object it stands for, while its sense is some associated way of thinking of that object; the reference of a sentence is its truth-value, while the sense of a sentence is the *proposition* or *thought* it expresses, which is said to be a way of thinking of the truth-value.

The specific details of the nature of the sense of different types of expression are still a matter of controversy among present-day Fregeans, but it would be widely agreed that the following criterion of identity of sense is correct for the categories of expression to which it is applicable: expressions s and t have distinct senses if an object-language sentence using these expressions to effect the claim that they have the same reference is potentially informative. Suppose σ is 'Marilyn Monroe' and τ is 'Norma Jean Baker'. Then these names have different senses since

(1) Marilyn Monroe = Norma Jean Baker

is potentially informative. Suppose σ is 'Given any family F of pairwise disjoint non-empty sets, there is a set Z which contains exactly one member of each set Y in F' while τ is 'Given any set X there is a total ordering R on X such that each subset Y of X has an R-least member'. σ, the Axiom of Choice, and τ, the Well-Ordering Principle, are equivalent as a matter of mathematical necessity, but the object-language sentence relevant to the test for sameness of sense, the biconditional $\sigma \leftrightarrow \tau$, is clearly informative, so σ and τ are (express) different propositions. Indeed, by this criterion, σ and τ may differ in sense even if they are tokens of the same linguistic type:

(2) that telephone = that telephone

is informative in circumstances where one is faced with an array of telephones, each of which both rings and flashes. The sense of the first 'that telephone' involves an auditory mode of presentation, of the second, a visual one, and the judgement is again clearly informative.[2]

This example indicates how Frege's two-tiered semantic theory appears to accommodate demonstratives rather well. What of the central indexicals 'I', 'here' and 'now'? Frege made the following observation about 'I' [Frege, 1977, pp. 11–13]:

> Dr. Gustav Lauben says, 'I was wounded'... Now everyone is presented to himself in a special and primitive way, in which he is presented to no-one else. So, when Dr. Lauben has the thought that he was wounded, he will probably be basing it on this primitive way in which he is presented to himself. And only

[2]The example is from [Peacocke, 1981, p. 188]. See also [Kaplan, 1989a; Austin, 1990].



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