(ii) The person who is uttering this utterance is exhausted.
both uttered by s on the same occasion (!): To find the truth value of the content of (ii) in w' we must first locate the same utterance in w' (if it exists there at all) and see who, if anyone, is uttering it. Since s could well be exhausted silently in w', the two contents are not the same.

[33] J. Hintikka, J. Moravcsik, and P. Suppes, eds., *Approaches to Natural Language* (Dordrecht, 1973).

[34] David Kaplan, *Demonstratives* (Draft #2) mimeographed, UCLA Philosophy Department, 1977.

[35] This volume, pp. 401–412.

[36] This work was supported by the National Science Foundation.

ON THE LOGIC OF DEMONSTRATIVES

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IN this paper I propose to outline briefly a few results of my investigations into the theory of demonstratives: words and phrases whose *in*tension is determined by the contexts of their use.[1] Familiar examples of demonstratives are the nouns 'I', 'you', 'here', 'now', 'that', and the adjectives 'actual' and 'present'. It is, of course, clear that the *ex*tension of 'I' is determined by the context — if you and I both say 'I' we refer to different persons. But I would now claim that the intension is also so determined. The intension of an 'eternal' term (like 'The Queen of England in 1973') has generally been taken to be represented by a function which assigns to each possible world the Queen of England in 1973 of that world. Such functions would have been called *individual concepts* by Carnap.[2] It has been thought by some — myself among others — that by analogy, the intension of 'I' could be represented by a function from speakers to individuals (in fact, the identity function). And similarly, that the intensions of 'here' and 'now' would be represented by (identity) functions on places and times. The role of contextual factors in determining the extension (with respect to such factors) of a demonstrative was thought of as analogous to that of a possible world in determining the extension of 'The Queen of England in 1973' (with respect to that possible world). Thus an enlarged view of an intension was derived. The intension of an expression was to be represented by a function from certain factors to the extension of the expression (with respect to those factors). Originally such factors were simply possible worlds, but as it was noticed that the so-called tense operators exhibited a structure highly analogous to that of the modal operators, the factors with respect to which an extension was to be determined were enlarged to include moments of time. When it was noticed that contextual factors were required to determine the extension of sentences containing demonstratives, a still more general notion was developed and called an "index." The extension of an expression was to be determined with respect to an index. The intension of an expression was that function which assigned to every index, the extension at that index. Here is a typical passage.

> The above example supplies us with a statement whose truth value is not constant but varies as a function of $i \in I$. This situation is easily appreciated in the context of time-dependent statements; that is, in the case where I represents the instants of time. Obviously the same statement can be true at one moment and false at another. For more general situations one must not think of the $i \in I$ as anything as simple as instants of time or even possible worlds. In general we will have
>
> $$i = (w, t, p, a, \ldots)$$
>
> where the index i has many *coordinates*: for example, w is a *world*, t is a *time*, $p = (x, y, z)$ is a (3-dimensional) *position* in the world, a is an *agent*, etc. All these coordinates can be varied, possibly independently, and thus affect the truth values of statements which have indirect reference to these coordinates. (From the Advice of a prominent logician.)

A sentence Φ was taken to be logically true if true at every index (in every 'structure'), and $\Box\Phi$ was taken to be true at a given index (in a given structure) just in case Φ was true at every index (in that structure).[3] Thus the familiar principle of modal generalization: if $\models \Phi$, then $\models \Box\Phi$, is validated.

This view, in its treatment of demonstratives, now seems to me to have been technically wrong (though perhaps correctable by minor modification) and, more important, conceptually misguided.

Consider the sentence

(1) I am here now.

It is obvious that for many choices of index — i.e., for many quadruples ⟨w, x, p, t⟩ where w is a possible world, x is a person, p is a place, and t is a time — (1) will be false. In fact, (1) is true only with respect to those indices ⟨w, x, p, t⟩ which are such that in the world w, x is located at p at the time t. Thus (1) fares about on a par with

(2) David Kaplan is in Los Angeles on April 21, 1973.

(2) is contingent, and so is (1).

But here we have missed something essential to our understanding of demonstratives. Intuitively, (1) is deeply, and in some sense universally, true. One need only understand the meaning of (1) to know that it cannot be uttered falsely. No such guarantees apply to (2). A *Logic of Demonstratives* that does not reflect this intuitive difference between (1) and (2) has bypassed something essential to the logic of demonstratives.

Here is a proposed correction. Let the class of indices be narrowed to include only the *proper* ones — namely, those ⟨w, x, p, t⟩ such that in the world w, x *is* located at p at the time t. Such a move may have been intended originally since improper indices are like impossible worlds; no such contexts *could* exist and thus there is no interest in evaluating the extensions of expressions with respect to them. Our reform has the consequence that (1) comes out, correctly, to be logically true. Now consider

(3) □I am here now.

Since the contained sentence (namely (1)) is true at every proper index, (3) also is true at every proper index and thus also is logically true. (As would be expected by the aforementioned principle of modal generalization.)

But (3) should not be *logically* true, since it is false. It is certainly *not* necessary that I be here now. But for several contingencies, I would be working in my garden now, or even writing this in a location outside Los Angeles.

Perhaps enough has now been said to indicate that there are difficulties in attempting to assimilate the role of a *context* in a logic of demonstratives to that of a *possible world* in the familiar modal logics or a *moment of time* in the familiar tense logics.

I believe that the source of the difficulty lies in a conceptual confusion between two kinds of meaning. Ramifying Frege's distinction between sense and denotation, I would add two varieties of sense: content and character. The content of an expression is always taken *with respect to* a given context of use. Thus when I say

(4) I was insulted yesterday,

a specific content — *what I said* — is expressed. Your utterance of the same sentence, or mine on another day, would not express the same content. It is important to note that not just the truth value may change; what is said is itself different. Speaking today, my utterance of (4) will have a content roughly equivalent to that which

(5) David Kaplan is insulted on April 20, 1973

would have when spoken by you or anyone at anytime. Since (5) contains no demonstratives, its content is the same with respect to all contexts. This content is what Carnap called an 'intension' and what, I believe, has been often referred to as a 'proposition'. So my theory is that different contexts for (4) produce not just different truth values, but also different propositions.

Turning now to character, I call that component of the sense of an expression which determines how the content is determined by the context, the 'character' of an expression. Just as contents (or intensions) can be represented by functions from possible worlds to extensions, so characters can be represented by functions from contexts to contents. The character of 'I' would then be represented by *the function (or rule, if you prefer) that assigns to each context that content which is represented by the constant function from possible worlds to the agent of the context*. The latter function has been called an 'individual concept'. Note that the character of 'I' is represented by a function from contexts to individual *concepts*, not from contexts to individuals. It was the idea that a function from contexts to individuals could represent the intension of 'I' which led to the difficulties discussed earlier.

Now what is it that a competent speaker of English knows about the word 'I'? Is it the content with respect to some particular occasion of use? No. It is the character of 'I': the rule italicized above. Competent speakers recognize that the proper use of 'I' is — loosely speaking — to refer to the speaker. Thus that component of sense which I call 'character' is best identified with what might naturally be called 'meaning'.

To return, for a moment, to (1). The character (meaning) of (1) determines each of the following:

(a) In different contexts, an utterance of (1) expresses different contents (propositions).

(b) In most (if not all) contexts, an utterance of (1) expresses a contingent proposition.

(c) In all contexts, an utterance of (1) expresses a true proposition (i.e., a proposition which is true at the world of the context).

On the basis of (c), we might claim that (1) is analytic (i.e., it is true solely by virtue of its meaning). Although as we see from (b), (1) rarely or never expresses a necessary proposition. This separation of analyticity and necessity is made possible — even, I