Singular Propositions, Abstract Constituents, and Propositional Attitudes*

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Consider one apparent conflict between Frege's ideas in [1892] and Kaplan's ideas in [1977] (published in this volume). From Frege, we have learned that the cognitive significance of coreferential names may be distinct. But Kaplan identifies the cognitive significance of a word or phrase with its character ([1977], p. 62). The character of an expression is a function from context to content, and the content of a proper name is its denotation. Consequently, unambiguous, coreferential names, which have the same denotation from context to context, must have the same "constant" character. Hence, they must have the same cognitive significance, contrary to Frege. The difference in cognitive value between "$a = a$" and "$a = b$", where "a" and "b" are names, is still puzzling for Kaplan, something which he acknowledges in [1977] (p. 98).

This paper offers a resolution of the conflict between Frege and Kaplan. The resolution substantiates Frege's suggestion that the cognitive significance of unambiguous, coreferential names may be distinct, yet it preserves the following views of Kaplan: (a) that names are directly referential, in the sense that no intermediate entities, such as senses, are required to secure or determine their denotation, (b) that the content (or

denotation) of a simple sentence in a given context is a Russellian, singular proposition, and (c) that there is a distinction to be drawn between the character and content of indexicals. In addition, the resolution will validate two of Kaplan's predictions, the first recent and the second not so recent: (1) that there is a way to view belief as a three-place relation which relates a person to a proposition under a mode of presentation, and (2) that there must be some intermediate entities which play a role in belief and which account for the deviant logical behavior of propositional attitude contexts ([1971], p. 119).

In order to resolve the conflict between Frege and Kaplan, we'll build upon ideas found in our [1983]. The logical system described there already exhibits features which make the resolution possible, but it does not treat indexicals. Since we'd like to show that a resolution can be achieved while preserving the distinction between character and content for indexicals, we'll modify the system to incorporate these expressions. It turns out that the original and modified systems exhibit other desirable features that have been articulated recently by Soames [1987] (this volume) and Salmon [1986]. We begin by reviewing the salient features of the basic system, and afterwards, turn to the resolution of the conflict between Frege's views and Kaplan's. Then we describe how to assimilate indexicals without affecting the resolution. Finally, we use the resulting system to analyze some of the outstanding puzzles to which indexicals give rise.

The system is based upon a conception of Russellian, singular propositions – complexes in which objects are "plugged" into the all of the gaps of properties and relations. In addition, a metaphysical counterpart to the syntactic operation of quantification can also occupy the gaps in relations, and in the special case when this operation occupies the single gap of a property, the result is a "quantified" proposition. There are molecular and modal complexes of both singular and quantified propositions. We will construe all names and descriptions as rigid designators. Descriptions do not get Russellian eliminations, they contribute only their denotation to the proposition denoted (in effect, they operate as if they were prefaced by Kaplan's "dthat" operator).

To be more precise, a simple, atomic sentence of the form "Rab" denotes a proposition which is described semantically as:

$$\mathbf{PLUG}_1(\mathbf{PLUG}_2(\mathbf{d}(R), \mathbf{d}(b)), \mathbf{d}(a)),$$

where $\mathbf{d}(\tau)$ is the denotation of term τ and where the relativization

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of the denotation function to an interpretation and assignment to the variables has been ignored (many philosophers have employed the triple $< \mathbf{d}(R), \mathbf{d}(a), \mathbf{d}(b) >$ as the denotation of "Rab", but since propositions are not sets, we prefer to use **PLUG** – it is metaphysically neutral). The extension of this proposition at a world **w** is the truth value T iff $< \mathbf{d}(a), \mathbf{d}(b) >$ is an element of the extension of the relation $\mathbf{d}(R)$ at **w**. If the description "$(\iota x)\varphi$" replaces "b" in "Rab," the resulting formula "$Ra(\iota x)\varphi$" denotes the singular proposition:

$$\mathbf{PLUG}_1(\mathbf{PLUG}_2(\mathbf{d}(R), \mathbf{d}((\iota x)\varphi)), \mathbf{d}(a)).$$

The two singular propositions described so far will be identical whenever "b" and "$(\iota x)\varphi$" denote the same object. The compound and modal sentences $\sim \varphi, \varphi \rightarrow \psi$, and $\Box\varphi$, denote the complex propositions $\mathbf{NEG}(\mathbf{d}(\varphi))$, $\mathbf{COND}(\mathbf{d}(\varphi), \mathbf{d}(\psi))$, and $\mathbf{NEC}(\mathbf{d}(\varphi))$, respectively. And the quantified sentence $(\forall x)\varphi$ denotes the complex proposition $\mathbf{UNIV}_1(\mathbf{d}([\lambda x\varphi]))$.[1] The truth value (extension) of these complex propositions at a world will depend on the truth value of the propositions they have as parts at that world (and other worlds as well, in modal cases). It should be clear that this kind of system, when modified to include indexicals and contexts in such a way that every sentence denotes a proposition relative to a context (where the proposition is constructed out of the entities denoted by the terms of the sentence in that context), embodies what Salmon calls the "naive theory of information content" ([1986], p. 17). It also has many of the features found desirable by Soames in [1987] (pp. 34-35).

The question immediately faced by such a naive theory is whether it can represent the difference in semantic information between sentences such as "Socrates is wise" and "the son of Phaenarete is wise." For the former is represented as "Ws" and the latter is represented as "$W(\iota x)Sxp$." Given that "Socrates" and "the son of Phaenarete" denote the same individual, it follows that these two representations denote the same singular proposition. But if the semantic information of a sentence is identified with the proposition it denotes, the two sentences embody the same semantic information. Although this appears to be a dubious result, in what follows, we are going to defend the view that, outside of intensional

contexts, these two sentences denote the same proposition, since this preserves a simple understanding of the way language works.

One thing that might be questioned here is the identification of the semantic information of a sentence with the proposition it denotes. An alternative would be to identify it with the truth conditions of the sentence, structurally conceived. The fact that these two sentences "say" or "express" different things might be reflected by the fact that the sentences have different truth conditions, when considered solely in terms of a general, Tarskian truth definition independent of any special facts about the (intended) interpretation of the formal language. The truth condition for "Ws" is: the entity denoted by "s" (ie. Socrates) is in the extension of the property denoted by "W" (ie. being wise). The truth condition for "$W(\iota x)Sxp$" is: there is a unique thing which bears the relation denoted by "S" (ie., the *son of* relation) to the entity denoted by "p" (ie., Phaenarete) and it is in the extension of the property denoted by "W" (ie., being wise). Given a certain understanding of what truth conditions are, one might claim that, in the interpretation being considered, the fact that Socrates is the son of Phaenarete forces the two conditions to be identical (on this understanding, one focuses on the bare set-theoretic facts embedded in the two conditions). But it should be stressed that we need not understand truth conditions in this way. There is an alternative conception on which these two truth conditions are regarded as distinct (here one focuses on the structure of the expressions which state the two conditions). On this conception, the special fact that Socrates is the son of Phaenarete implies nothing more than that the first condition obtains iff the second does.

There is a reason why this conception of truth conditions is not typically employed to locate the difference in semantic information between our two sentences. And that is that propositional attitude constructions in which our sentences may be embedded seem to require that this information be located somewhere at the level of the propositions denoted. Such constructions appear to relate persons to the propositions denoted by the embedded sentence. By representing the difference in semantic content between "Socrates is wise" and "the son of Phaenarete is wise" at the level of propositions, one can account for the apparent consistency of "K believes that Socrates is wise" and "K doesn't believe that the son of Phaenarete is wise." So let us, for the moment, build the difference in information content between the name and the description into

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[1]For further details concerning these logical operations, one may consult Parsons [1980], my [1983], McMichael and Zalta [1980], Bealer [1982], and Menzel [1986]. These operations are the metaphysical counterparts to the syntactic operations Quine describes in [1960].

the propositions denoted by the two sentences. Thus, "Socrates is wise" would denote what it denoted before, namely the singular proposition having Socrates plugged into the property of being wise, whereas "the son of Phaerete is wise" would denote some complex involving the property of being wise and the property of being the son of Phaenarete (where the latter is itself a complex resulting from the application of a uniqueness operation to the result of plugging Phaenarete into the second place of the *son of* relation).

This modification has several undesirable results, however. It forces us to give up a simple picture of language, in which the denotation of a whole sentence has as constituents the denotations of the parts of the sentence. It forces us to complicate the theory of the truth of propositions (the proposition denoted by "Socrates is wise" is true just in case Socrates is in the extension of the property of being wise, whereas the one denoted by "the son of Phaenarete is wise" would be true just in case two properties are coexemplified). But worst of all, the move still fails to account for the apparent consistency of propositional attitude constructions similar to the above but in which the embedded sentences differ only by the appearance of coreferential proper names, such as "K believes that M. Twain is an author" and "K doesn't believe that S. Clemens is an author." Examples such as this suggest that it is not so much the semantic information (as we're now understanding it) of the embedded sentences that is relevant to the analysis of attitude contexts, since that seems to be the same for "M. Twain is an author" and "S. Clemens is an author." Rather, the *cognitive* content of the embedded sentences seems to be relevant to the analysis. The cognitive content of "Twain is an author" and "Clemens is an author" may be distinct since the cognitive content of the two names may be distinct. And the cognitive content of "Socrates is wise" and "the son of Phaenarete is wise" may be distinct, since the cognitive content of "Socrates" and "the son of Phaenarete" may be distinct. What seems to be required now is that we build the cognitive content of the name (or description, as the case may be) into what is semantically signified by the sentence when it is embedded in attitude constructions. By regarding the semantic content as constructed somehow out of the cognitive content, we could explain the apparent consistency of both pairs of attitude reports considered above, as well as the associated inference failures involving identity.

Let us then reconsider the simple picture of language with which we

began, in which "Socrates is wise" and "the son of Phaenarete is wise" denote the same proposition. The question before us is, how, in the context of this simple picture, can we build the difference in the cognitive content of these two sentences into a difference of semantic content? Can we then do the same for "M. Twain is an author" and "S. Clemens is an author"? What, then, will be the explanation of why someone can believe that Socrates is wise without believing that the son of Phaenarete is wise, or believe that Mark Twain is an author without believing that Samuel Clemens is an author?

We'll be in a position to answer these questions if we both postulate that there are Russellian singular propositions with abstract constituents and suppose that these entities serve as the secondary significance of sentences embedded in propositional attitude contexts. In our [1983], we axiomatized a domain of abstract individuals, abstract properties and abstract relations. Abstract individuals are of the same logical type as ordinary individuals and their distinguishing feature is that they encode properties that ordinary individuals typically exemplify. Abstract properties (relations) are of the same logical type as ordinary properties (relations) and their distinguishing feature is that they encode properties that ordinary properties (relations) exemplify. This is all one really needs to know about abstract individuals, properties, and relations in order to understand our solution to the puzzles of propositional attitudes reports (though, we hope our readers will examine the axioms in [1983] to understand better what encoding amounts to and to see how it can be employed usefully). In virtue of the fact that abstract individuals, properties and relations encode properties of ordinary individuals, properties and relations (respectively), they can *represent* ordinary individuals, properties, and relations. In virtue of the fact that abstract individuals, properties, and relations are of the same logical type as ordinary individuals, properties, and relations (respectively), new singular (complex) propositions are obtained by replacing the ordinary constituents of singular (or complex) propositions with abstract constituents. The entities so obtained are entitled to be called "propositions" because they are structured complexes involving relations and properties which have all of their gaps filled. But it will be important that one not confuse this notion of "proposition" with other notions (such as: that which is the meaning of a sentence).

Singular propositions with abstract constituents may be what is signified by sentences embedded in attitude reports. If the abstract con-

stituents embody the cognitive content of the terms of the embedded sentence, then there will be a way of building the cognitive content of a sentence into the semantic significance it has in an attitude report. To see this clearly, let us suppose that attitude reports are ambiguous. They have *de re* readings, on which the truth of the report is unaffected by the inter-substitution of coreferential terms in the embedded sentence. They also have *de dicto* readings, on which the truth of the report *is* affected by such substitutions. The *de re* reading of an attitude report can be analyzed in a simple manner – the embedded sentence denotes the ordinary proposition with ordinary constituents that it usually denotes. The *de re* reading of the report, "K believes that Socrates is wise," can be represented as: $B(k, Ws)$, where "B" denotes a two-place relation between the person K (denoted by "k") and the proposition $\mathbf{PLUG}_1(\mathbf{being\ wise, Socrates})$ (denoted by "Ws"). This representations regards the English proper names as directly referential. The *de re* reading of "K believes that the son of Phaenarete is wise" is represented as: $B(k, W(\iota x)Sxp)$. Given that the denotations of "Socrates" and "the son of Phaenarete" are identical, this representation relates K to the same proposition as before. This explains why substitutivity preserves truth in *de re* readings of these reports. So let us turn to the *de dicto* readings, which by definition, are the ones for which substitutivity fails.

The *de dicto* readings of attitude reports may be represented as involving the same two-place relation as the one involved in *de re* reports, except that in these cases, the propositions involved contain abstract rather than ordinary constituents. These propositions are the intermediate objects of belief, entities which can be grasped and which represent ordinary propositions with ordinary constituents. They are propositional modes of presentation which contain individual modes of presentation as constituents. Consider person K in the example above. Despite being directly referential, the name "Socrates" has a cognitive significance for this person, which we identify with an abstract individual which encodes properties. This abstract individual encodes the properties which K associates with the name "Socrates." Socrates need not exemplify all of these properties. In fact, he may exemplify none of them. Indeed, the properties might even be uniquely exemplified by some other individual. But that doesn't matter for our purposes, for it will still be accurate to identify the cognitive significance of the sentence "Socrates is wise" with respect to K with a proposition which has, as a constituent replacing Socrates himself,

the abstract individual which encodes the properties K associates with "Socrates." Note that if we were to require that the abstract individual associated with "Socrates" for K encoded not only properties Socrates exemplified, but ones which are uniquely exemplified by Socrates, such individuals would do what Fregean senses are supposed to do, namely, determine the the denotations of the names with which they're associated. But we shall not suppose that language works quite the way Frege says it does, and in particular, we do not think that the sense of a name for a given individual has to "determine" or "secure" the denotation of the name with which it is associated.

So now let us consider the *de dicto* reading of the report, "K believes that Socrates is wise." If we let "$\underline{s}_k$" denote the abstract individual that K associates with "Socrates," our representation of this report is: $B(k, W\underline{s}_k)$, which represents the report as being true just in case K stands in a certain relation to the following singular proposition with an abstract constituent: $\mathbf{PLUG}_1(\mathbf{being\ wise, \underline{Socrates}_k})$. On this analysis, it is important to distinguish the truth of this belief report from the truth of the belief reported. The belief report is made true by the fact that K bears an appropriate relation a singular proposition with an abstract constituent (if you want to know which relation this is, the answer will have to be in ambiguous English: it is the relation which holds between K and this singular proposition just in case K believes that Socrates is wise). The singular proposition with an abstract constituent serves to represent for K the ordinary singular proposition with Socrates himself as a constituent. But it is upon this latter, ordinary proposition which the truth of the K's belief depends. We can take advantage of the directly referential character of our representing language to define this notion of "truly believes" so that we are required to examine the truth of ordinary propositions to determine the truth of the belief reported: x truly believes that φ iff $B(x, \varphi)$ & $\varphi*$, where $\varphi*$ is the result of removing all of the underlines and subscripts from φ. If we're given "$B(k, W\underline{s}_k)$" as the *de dicto* reading of the English report, then the truth of the belief reported depends on the truth of "Ws" (ie., $\varphi*$). Since "Ws" is true, it follows that K believes truly.

Consider next the *de dicto* reading of "K believes that the son of Phaenarete is wise." On our analysis, the person denoted by "K" will be related to a singular proposition with an abstract constituent by the the relation denoted by "B." However, this time, we can say a little more

about which abstract object is a constituent of the intermediate proposition. It will be one which encodes the property of being a unique son of Phaenarete. In this way, the constituent of the intermediate proposition encodes the information embodied in the description. This is the reason why we need not wholly adopt the modification of the naive theory of information value described by Salmon ([1986], p. 21). The sentence "the son of Phaenarete is wise," strictly speaking, denotes the proposition which has Socrates plugged into the property of being wise. But in intensional contexts of the kind we're considering, this sentence may alternatively signify a proposition which serves as an intermediate representation, and this representation not only has the same logical structure of the proposition represented, but also (has a constituent which) encodes the information embodied in the definite description as well.

The cognitive significance of "Socrates" for person K depends on the K's particular history of associations with the name, and there is very little one can say about the properties it might encode without some description both of the situations in which K has encountered the name and of his cognitive abilities for association. But, as one can see, we can tell more of a story about the cognitive significance of "the son of Phaenarete" for K. So far, we've seen that the cognitive significance of this description, in the most basic case, is embodied by the abstract object which encodes the property of being the unique son of Phaenarete (ie., encodes $[\lambda y (\forall z)(Szp \rightarrow z = y)]$).[2] But there will be cases, which will not be discussed at any length here, for which we need to consider, not an abstract object which encodes this ordinary property, but rather one which encodes a property which, instead of having Phaenarete as a constituent, has the cognitive significance of "Phaenarete" with respect to K as a constituent. And in some really complex cases, we may even need to consider an abstract object which encodes, not the ordinary property of being the son of Phaenarete, which has the simple relation, *x is the son of y,* as a component, but rather a property which has as a component the abstract relation that represents the *son of* relation to K (this component is the cognitive significance for K of the name of this relation. A complete discussion of these cases will take us too far afield, however.[3]

A certain misplaced focus might make our analysis seem unusual on first encounter. So far, we have employed singular propositions that have abstract constituents because they have several important characteristics – they are of the same logical type as ordinary propositions, (and so seem to be the kind of thing which can be grasped), they may have constituents which can represent ordinary objects and relations (and so these propositions can represent ordinary propositions). But because they are the same logical type as ordinary propositions, they have one other feature which should simply be ignored, namely, their truth value. Otherwise, it may be thought odd that the truth value of the intermediate propositions involved in the *de dicto* readings of belief reports will typically be false (for instance, in the *de dicto* reading of the examples considered so far, the singular propositions with an abstract constituent which make the reports true have an abstract object plugged into the property of being wise; the extension of this proposition will be the value F, since, we may assume, no abstract objects are in the extension of the property of being wise). This fact, however, is of no importance, for there is no reason to think that the intermediate propositions have to *be* truths – they only have to *represent* truths. We are employing such propositions because they have the right logical form for representing ordinary propositions (and it is the truth values of the latter which we are really interested in). Given our definition of true belief, the judgment that K believes truly rests essentially on the truth value of the ordinary proposition represented by the intermediate proposition.[4]

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[2]In the λ-expression we just employed, the symbol "=" denotes the ordinary *relation* of identity with which we're all familiar, the one which obtains between two *existing* objects just in case necessarily, they exemplify the same properties (in [1983], this relation is denoted by the symbol "$=_E$").

[3]One complication we have not considered in this paper is that not only are there

singular propositions which result by plugging an abstract individual into ordinary properties, but there are also singular propositions which are obtained by replacing the ordinary properties with abstract properties (abstract properties encode properties of properties). Such singular propositions will play a role in explaining substitutivity failures with respect to property denoting expressions ([1983], pp. 140ff).

Not only will there be singular propositions with both abstract individuals and abstract properties and relations as constituents, but there will also be complex properties and relations with both abstract individuals and abstract properties and relations as constituents. These latter entities may play an important role in situations like the one just described in the body of the paper.

[4]It may also be objected that our analysis of *de dicto* reports does not distinguish *de dicto* beliefs about ordinary objects from *de re* beliefs about abstract objects. It may be asked, "How do you distinguish the *de dicto* reading of "K believes that Socrates is wise" from the *de re* reading of "K believes that that abstract object which serves as the sense of 'Socrates' for K is wise"? This question, we believe, is based on a confused understanding of what the data is, and the proper response to make here is that "K believes that the abstract object which serves as the sense of 'Socrates' for K

We may now straightforwardly answer the question of how someone can believe that Socrates is wise without believing that the son of Phaenarete is wise even though Socrates just is the son of Phaenarete. The answer is that the *de dicto* readings of "K believes that Socrates is wise" and "K doesn't believe that the son of Phaenarete is wise" are consistent. Unlike the *de re* readings, where the same ordinary proposition is signified by distinct embedded sentences, distinct intermediate propositions are signified by the distinct embedded sentences in the *de dicto* readings.[5] On these readings, the first sentence, "K believes that Socrates is wise" will be true just in case K bears a certain relation to the proposition which has the cognitive significance of "Socrates" for K plugged into the property of being wise, whereas the second sentence, "K doesn't believe that the son of Phaenarete is wise" will be true just in case K fails to bear this relation to a different proposition, one which

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is wise" is not a piece of data which requires an analysis. The data is expressed in *non-technical* English, yet the sentence in question has a mixture of ordinary words from the target English language as well as technical expressions from the purely formal object language. We've conscripted certain English words such as "abstract," "encodes," etc. for these technical expressions, but we need not have done so – the expressions of the object language and the axioms of the theory could have been described with just pure symbols or nonsense syllables. If one tries to reformulate the sentence in question with a mixture of English and symbols or nonsense syllables, the result is nonsense and clearly requires no analysis. If one still insists that we must produce an analysis for the original sentence, as well as for any other belief report containing expressions which just happen to serve as technical terms of our theory, we would not translate the English expressions such as "abstract," "encodes," etc. by using our technical terms, rather we would translate them using expressions which represent the ordinary meanings of these words in natural language.

[5]The minimal theory of abstract objects guarantees that there are a tremendous number of abstract objects; indeed, the theory attempts to correlate them one-to-one with the power set of the set of properties. (it succeeds in correlating them with the expressible sets of properties). Clearly, one cannot expect there to be a distinct property of being identical with **a**, for each abstract object **a**, since this would set up a 1-1 correspondence between the power set of the set of properties and a subset of the set of properties, in violation of Cantor's theorem. Cardinality considerations such as these also guarantee that for at least one pair of distinct abstract objects **a** and **b**, the singular propositions $\mathbf{PLUG}_1(\mathbf{R, a})$ and $\mathbf{PLUG}_1(\mathbf{R, b})$ are identical (see [1983], p. 180, note 8). Since the theory, therefore, doesn't guarantee that every pair of singular propositions with distinct abstract constituents will be distinct, we need to add it as a hypothesis that the particular pair of singular propositions with abstract constituents used to analyze the belief reports we're now considering are distinct. A similar hypothesis should be added for the other data we consider in this paper. Those readers familiar with the axioms of the theory should see that it is reasonable to think that there are models of the theory which make these hypotheses true.

has the cognitive significance of "the son of Phaenarete" (for K) plugged into the property of being wise. The significance of "Socrates" for K will be a distinct object from the significance of "the son of Phaenarete" for K, if this is really a case where K believes that Socrates is wise without believing that the son of Phaenarete is wise.

Symbolically, we get the following representations of the English reports, where "$\underline{s}_k$" denotes the abstract object which serves as the cognitive significance of "Socrates" for K, and "$(\iota x)Sxp$" denotes the abstract object which serves as the cognitive significance of "the son of Phaenarete" for K:

(1) K believes that Socrates is wise

    a) $B(k, Ws)$ (*re*)

    b) $B(k, W\underline{s}_k)$ (*dicto*)

(2) K doesn't believe that the son of Phaenarete is wise

    a) $\sim B(k, W(\iota x)Sxp)$ (*re*)

    b) $\sim B(k, W\underline{(\iota x)Sxp})$ (*dicto*)

(3) Socrates is the son of Phaenarete

    a) $s = (\iota x)Sxp$

Given (3a), (1a) and (2a) are inconsistent, by a simple application of the law of substitutivity of identicals. But no such inconsistency may be derived using (3a) from (1b) and (2b) (for further details of the logical system in which these representations are a part, the reader should consult Chapters V and VI of our [1983]).

A similar answer explains how someone can believe that Mark Twain is an author without believing that Samuel Clemens is. In this case, the cognitive significance of "Mark Twain" for the individual in question must be different from the significance of "Samuel Clemens." Distinct abstract objects represent the cognitive significance of the names, and *de dicto* readings of "K believes that Twain is an author" and "K doesn't believe that Clemens is an author" can be given along the same lines as those described for the previous case.

We're now about ready to describe the resolution of the conflict between Frege's views and Kaplan's views. Before we do so however, let's

note how the above system preserves some of Kaplan's philosophical ideas. One important feature of this system is the directly referential character of the names and descriptions. Although we do suppose that these terms may have a secondary significance when embedded in attitude reports, the entities which embody this significance do not secure or determine the denotations of the terms with which they are associated. In a world of perfect information, such abstract entities would encode only properties exemplified by the entities denoted. But in our world, misinformation frequently creeps in, and in some bizarre cases, we get perfect misinformation (these are the cases where the properties featured in a name-learning situation individuate a different entity from the one the name denotes). So though our abstract entities play many of the roles Fregean senses are supposed to play in the philosophy of language, such as serving as the cognitive significance of terms, and being denoted by terms in certain intensional contexts, they do not play all of these roles.[6]

Another important feature of the system is the use of singular propositions as the denotations for simple atomic sentences no matter whether they are outside or inside belief contexts. And even though we assume that a sentence inside a belief contexts has an alternative significance, we identify that significance with a proposition which is also a singular proposition (in atomic cases). Though the proposition so identified will have abstract constituents, it will be structurally isomorphic with the proposition ordinarily denoted by the sentence. The value of utilizing singular propositions with abstract constituents is that they can bind up all of the information needed to understand puzzling cases of belief without sacrificing any of the compositional rules for building up the structure

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[6]See Burge [1977], pp. 358-361, and Salmon [1981], pp. 12ff, for good discussions of the various roles Fregean senses may play in the philosophy of language. However, one of Burge's conclusions, that no entity simultaneously can be the cognitive significance of a term and be its denotation in belief contexts, can be undermined by our distinction between the truth of the belief report and the truth of the belief reported. Burge bases his argument on cases where we want to say that different individuals A and B have the "same belief," even though the cognitive significance of the names involved in the report differ for these individuals. On our understanding of *de dicto* reports however, "having the same belief" does not mean that the intermediate proposition with abstract constituents has to be the same for both individuals. It just means that the proposition represented by these intermediate propositions has to be the same. Since that is the proposition in virtue of which both may be said to believe truly, we would argue, this is the proposition in virtue of which both may be said to "have the same belief."

of the proposition signified from the structural components of the embedded sentences. We appeal to nothing more complicated than the potential ambiguity of names and decriptions in belief contexts.

Moreover, we have validated two of Kaplan's predictions. The first is that there is a belief relation which relates an individual to a proposition by way of some third thing (though we differ with Kaplan somewhat on what this third thing is). Although we employ a two-place belief relation as basic, a full account of true belief for *de dicto* reports requires that we refer to a person, an intermediate representation which is propositional in structure, and an ordinary proposition towards which the belief is directed and upon which the truth of the belief rests. Though Kaplan identifies this intermediate representation both as the cognitive significance and character of the sentences embedded in belief reports, we identify it only as the cognitive significance of the embedded sentence. The second prediction of Kaplan's we've validated appears in his seminal article [1971]. And that is that there are intermediate entities which can play a role in explaining the deviant logical behavior of terms in belief contexts. Although Kaplan has changed his views somewhat since the publication of this article, and is no longer convinced that Fregean-like entities are required, it should be clear that the quasi-Fregean solutions we've employed are consistent with some of the new views Kaplan has recently adopted. Since we deny both that terms are associated with entities which determine their denotations, and that the denotation of a sentence is a truth value, we've given up the Fregean principles which are incompatible with Kaplan's present position.

The major difference between our philosophy of language and his is that we do not identify the cognitive significance of an embedded sentence in a belief report with its character, as this latter notion is defined, for we do not identify the cognitive significance of a name with its character. The reason for this brings us back to our original point of departure, namely, the conflict between Frege's views and Kaplan's views. The cognitive significance of coreferential names "a" and "b" may differ, and this can account for the difference in cognitive significance between "$a = a$" and "$a = b$." We've seen that it also accounts for the difference in cognitive significance between "Twain is an author" and "Clemens is an author," and other similar pairs of sentences which differ only by coreferential proper names. For Kaplan, however, the characters of these sentences are the same, and if cognitive significance is identified with character, a three-place relation of belief of the kind Kaplan posits will not explain

how someone can believe that Twain is an author without believing that Clemens is.

So our resolution of the incompatibility between the ideas of Frege and Kaplan comes at the cost of giving up two Fregean principles (that sense determines reference, and that sentences denote truth values) and giving up Kaplan's idea that cognitive significance is to be identified with character. In our system, the cognitive significance of names with the same character will differ, as in the case of "Twain" and "Clemens" (assuming that they fail to be intersubstitutable in some attitude contexts). "Twain is Twain" will differ in cognitive significance from "Twain is Clemens," even though they denote, in ordinary contexts, the same ordinary proposition. Distinct singular propositions with abstract constituents may serve as the significance of these sentences when they appear in *de dicto* reports.

Our analysis has elements which flesh out a recent proposal in Salmon ([1986], p. 111). Salmon suggests that the problematic nature of belief reports can be explained by using a primitive *three*-place relation of belief, BEL, an existential generalization of which may be used to define the more familiar two-place relation. Salmon defines: K believes that p iff $(\exists x)(K$ grasps p by means of x & $BEL(K, p, x))$. The idea is that the third relatum of the BEL relation is something like a mode of presentation for propositions, though, at the end of his book, he notes that a more complete account of these things is still required ([1986], p. 126). Such an account may be inherent in the present theory, for it may be that the third relatum of Salmon's BEL relation is nothing other than a singular proposition with abstract constituents. These propositions seem to have the features Salmon's proposal requires (they can be grasped, they can represent ordinary propositions, etc.). We suggest that the axiomatization of abstract objects and singular propositions found in our [1983] supplies the account Salmon needs to spell out his proposal in detail. If this is right, it becomes interesting to think about the differences between our analysis and his.

The most obvious difference is that our analysis employs a two-place relation of belief as primitive. Abstraction principles then guarantee that there is a relation which works like the three-place relation BEL ([1983], pp. 71, 122-123). In contrast, Salmon's analysis takes BEL as primitive and regards the two-place belief relation as constructed. Our theory, therefore, provides only a slightly more direct explanation of why it appears, in the logic of belief reports, that the belief predicate is a two-place

predicate. From our point of view, the BEL relation is not needed for the analysis of the truth of the belief report, though it is needed for the analysis of the truth of the belief reported. In the analysis of "true belief," one must refer to the believer, to the intermediate proposition with abstract constituents (in *de dicto* cases), and the represented proposition with ordinary constituents.[7]

Another difference between the two analyses is this: although Salmon's analysis requires that there be certain intermediate entities which play a role in belief, these entities are not directly utilized in the semantics of belief reports. His proposal, which involves existential generalization, requires that such entities be part of his ontology. Consequently, they must be available as denotations or as the significance of pieces of language. But unlike our analysis, they are never used as such. Our semantic theory exploits the fact that such entities are in our ontology, for this leaves us with a good opportunity of explaining the mysterious ambiguity which it is generally acknowledged that attitude reports have.

There may also be a connection between our analysis and J. Perry's triadic view of belief. Perry's major conclusion in [1979] is that one has to distinguish between belief states and the objects of belief – the former are not to be individuated by the latter. The objects of belief, for Perry, are essentially our ordinary propositions, and an individual may believe one of these propositions in virtue of being in a certain belief state. Different belief states may all be belief states having the same propositional object. A given belief state may, as the circumstances vary, have different propositional objects (these are typically cases of "indexical belief"). A connection between this view and ours could be the following: our singular propositions with abstract constituents might be used for individuating belief states. To see this, consider again the *de dicto* readings of (1) and (2). We might say, using Perry's terminology, that (1a) reports that K is in a certain belief state while (2a) reports that K fails to be in another belief state. But both belief states in question are states with the same object, namely, the ordinary proposition which has Socrates plugged into

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[7]It seems to me that singular propositions with abstract constituents could still be involved in the beliefs reported by *de re* reports as well. But, given the way such reports behave, we are not justified in making any inferences about the nature of the intermediary propositions involved. That's another reason why I am hesitant to utilize the three-place BEL relation as basic. For the semantics of *de re* reports, it may be gratuitous and by postulating that it is involved in the analysis of those reports, we are going beyond the evidence presented by the data.

the property of being wise. For it is this latter proposition which determines whether the state in question is felicitous (ie., is a case of true belief). This seems to fit nicely with Perry's analysis, and demonstrates how our singular propositions with abstract constituents may be useful for individuating belief states.

Let us suppose that we have a stock of simple English names and definite descriptions, each of which has a representation in our formal language. Among the names, we include not only proper names but also names of relations and properties. Then, in addition to Kaplan's notions of character and content, we need add only one new semantic function to our semantic apparatus – the *cognitive character* function. This function, for reasons we will see shortly, needs to be defined only on the simple English names and descriptions (actually, it's defined by proxy on the representations of these expressions in our formal language). It maps a proper name, relative to an individual and a context, to the abstract individual which serves as the cognitive significance of the name for that individual in that context. It maps a property (relation) name, relative to an individual and context, to the abstract property (abstract relation) which serves as the cognitive significance of the name for that individual 1n that context. Finally, it maps a description of the form $(\iota x)\varphi$, relative to an individual and a context, to the abstract entity which encodes the property of being the unique φ. Coreferential names will have the same character, but their cognitive character may differ.

In our formal language, we have denoted the value of the cognitive character function for name n with respect to individual K by underlining the name and subscripting K's name to it (we're ignoring context here, temporarily). To denote the value of this function for descriptions, we have just underlined the description. This operation is not to be iterated, for it is not necessary to consider the cognitive significance of the special terms we've just formed in our formal language. These are not part of the data, which is expressed solely in non-technical English. The analysis of iterated belief reports will not require us to iterate the cognitive character function, though a complete discussion of this will be reserved for another occasion.

This new semantic function of cognitive character is all that is required to form names of the various singular propositions with abstract constituents which English sentences may signify when embedded in attitude reports. By defining the cognitive character function only on the names and descriptions of the language, we can form a wide variety of sentences in our intensional logic, some of which denote singular propositions which are composed entirely of abstract constituents, and some of which denote propositions of mixed character (singular propositions which have both ordinary and abstract constituents). This is extremely useful for analyzing the semantics of certain belief reports, where we we may want to construe some terms as being in *de re* position and others as being in *de dicto* position. This flexibility in our logic is nevertheless consistent with the idea that, relative to a given context and individual, a sentence may have a unique cognitive significance which has the property of being composed out of what is cognitively signified, relative to the individual and context, by each of the parts of the sentence.

To see why we want to be able to produce readings in which some terms in a sentence are construed as being in *de re* position while others in the same sentence are construed as being in *de dicto* position, consider (4):

(4) Irwin hopes that the strongest man in the world beats up the man who just insulted him.

(4) has readings on which it says something true in each of the following situations:

(A) Dmitri is the strongest man in the world and is a friend of Irwin, though Irwin doesn't know of his distinction. While Dmitri is standing next to Irwin at a party, Dashiell, someone Irwin and Dmitri have been talking to at this party, insults Irwin. As Irwin looks first at Dmitri and then at Dashiell, he fervently imagines the first man beating up the second.

(B) Dmitri, the strongest man in the world, is not an acquaintance of Irwin, nor does the latter know who the strongest man in the world is. Dmitri is not at the party in question, and so is not around when Dashiell insults Irwin face to face. Irwin immediately relieves his "cognitive dissonance" by fantasizing this particular guy being beaten up by the strongest man in the world, whoever he may be.

(C) Dmitri, the strongest man in the world, is an acquaintance of of Irwin (again, Irwin is unaware of Dmitri's distinction), and while together at a party, the two are told that the man standing next

to Irwin has uttered an insulting remark about Irwin. Irwin, who hadn't even realized that someone was standing next to him, and who didn't want to be rude by turning around and staring, nevertheless notes Dmitri's size and fantasizes this big guy beating up the man standing next to him, whoever he may be.

(D) Dmitri, the strongest man, is not an acquaintance of Irwin's, nor does Irwin know who the strongest man is. Dmitri is not at the party in question, and is nowhere near when Irwin is told that the man standing next to him (Irwin) whispered an insulting remark about him (Irwin). Irwin, who hadn't even realized that someone was standing next to him, and who didn't want to be rude by turning around and staring, nevertheless, fantasizes the strongest man in the world, whoever he is, beating up the man who just insulted him, whoever he is.

Now the point of this example is to suggest that, for each context (A) - (D), there is a *different preferred* reading of (4). The preferred reading of (4) in context (A) takes both descriptions as *de re*, for this seems to be a case where substitutions of coreferential terms for either description will preserve truth (the way Irwin is cognizing these men is not important for the truth of (4) in this situation). The preferred reading of (4) in context (B) takes the first description as *de dicto* and the second as *de re*, for it seems that substitution only on the second description preserves truth (the way Irwin is cognizing Dmitri is important to the truth of (4) in this situation, whereas the way he is cognizing Dashiell is not). The preferred reading of (4) in context (C) takes the first description as *de re* and the second as *de dicto*, for it seems that substitutions only on the first description preserves truth (the way Irwin is cognizing Dashiell is important to the truth of (4) in this situation, whereas the way he is cognizing Dmitri is not). And the preferred reading of (4) in context (D) takes both descriptions as *de dicto*, since it seems that no substitutions for the descriptions would preserve truth (the way Irwin is cognizing both Dmitri and Dashiell is all important to the truth of (4) in this situation).[8]

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[8] It might be argued here that even in case (A), with the *re/re* interpretation of the descriptions, Irwin doesn't grasp the Russellian singular proposition with ordinary constituents, but rather something else, which, instead of having the real individuals or representations of these individuals as constituents, has *presentations* of these individuals as constituents (Irwin is, after all, looking right at the individuals in question,

Formally speaking, the four different representations of (4) we're now considering are as follows, where "i" denotes Irwin, "B" denotes the *beat up* relation, "S" denotes the property of being the strongest man in the world, "I" denotes the *insults* relation, and "$(\iota\nu)\varphi$" denotes the abstract object which encodes the property of being a thing which exemplifies φ uniquely:

(4a) $H(\mathrm{i}, B((\iota x)Sx, (\iota y)Iyi))$ *re/re*

(4b) $H(\mathrm{i}, B(\underline{(\iota x)Sx}, (\iota y)Iyi))$ *dicto/re*

(4c) $H(\mathrm{i}, B((\iota x)Sx, \underline{(\iota y)Iyi}))$ *re/dicto*

(4d) $H(\mathrm{i}, B(\underline{(\iota x)Sx}, \underline{(\iota y)Iyi}))$ *dicto/dicto*

(4a) is the preferred reading of (4) in (A), and so forth.

This example shows that the alternative significance of an embedded sentence (relative to a context) may be of mixed character, composed partly from the cognitive character of some of its constituent terms (relative to the subject of the attitude and to the context) and partly from the denotation of some of its constituent terms (relative to that context). (4a) – (4d) give us the means to discriminate among four different types of hope states in which Irwin could cognize a hope of the kind which will be satisfied iff the singular proposition which has Dmitri and Dashiell themselves appropriately plugged into the relevant relation is true. This example also shows why it is neither necessary nor useful to extend the definition of the cognitive character function to cover sentences as well as names and descriptions.

With the addition of the cognitive character semantic function to Kaplan's distinction between character and content, the way is open for a discussion of indexicals, and this discussion will form the final part of the present paper. Unlike names, indexicals do not have constant character. But the present picture suggests that in addition to their character (which yields a content for them for each context), they have a cognitive character as well. However, the notion of cognitive character for indexicals is

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and is experiencing perceptual presentations). This might in fact be the case, and in our theory, we could identify such presentations with abstract objects which have a great number of vivid properties. But for purposes of representing the logical behavior of the propositional attitude report, it is simpler to just suppose that the Russellian proposition with ordinary constituents makes the report true, for this explains why we can substitute, preserving truth.

not quite the same as that for proper names. The cognitive significance of a proper name in a given attitude report is closely tied to the historical encounters between the subject of the report and the name itself. This is not the case with indexicals. The cognitive character of an indexical does not reflect such encounters, but rather reflects that, relative to context c, the subject of the report cognizes the entity denoted by the indexical in c in a certain way.[9] An indexical not only denotes relative to c (*de re*), but also may signify something intimately related to the mind of the subject of the report (*de dicto*). This secondary significance will play the crucial role in the explanation of substitutivity failures.

To capture this secondary significance formally, we extend the cognitive character function: it is now to be defined on indexicals as well as names and descriptions, indexed to individuals and contexts. The value of the function for a given indexical, relative to an individual and a context, is the abstract entity which objectifies the way the individual cognizes that which is denoted by the indexical in that context. The abstract entities we've postulated can serve as the objectifications of these ways of cognizing, since they can encode the properties involved in the content of the cognition. Again, the properties involved in the cognizings need not be exemplified by the object of the cognition.

Now the semantics of attitude reports containing indexicals will work essentially the same way as those discussed above. Relative to a context, the report will have a *de re* reading in which all the indexicals signify their content in that context (as given by their character). Then, depending on the complexity of the report, there will be various *de dicto* readings in which the indexicals may alternatively signify the abstract entity which objectifies the way in which the subject cognizes the content of the indexical (this is given by the cognitive character of the indexical).

Consider the following case, adapted from Soames [1987] (this volume). Professor K, looking through a class yearbook, points to a picture of a student and says "I believe he is a scholar," and then points to a picture of a football player in full uniform and says, "I don't believe he

is a scholar." Unknown to the professor, he has pointed to two different pictures of the class valedictorian, Alex Jones. Now consider K's two reports:

(5) I believe he is a scholar (pointing to the first picture)

(6) I don't believe he is a scholar (pointing to the second picture)

The *de re* readings of (5) and (6), relative to the contexts in question, are inconsistent. To get the *de re* reading of (5), we take the individual denoted by "he" relative to the context in which (5) is uttered, and then consider the proposition which results by plugging this individual into the property denoted by "is a scholar." (5) is then read as asserting that the denotation of "I" in the context in question (ie., Professor K) is related in a certain way to this proposition. (6) asserts that Professor K is not so related to the proposition which results by plugging the individual denoted by "he" (relative to the context in which (6) is uttered) into the property denoted by "is a scholar." Since the propositions are identical, clearly, (5) and (6), relative to c and c' respectively, are inconsistent.

Formally speaking, we get the following representations of the *de re* readings of (5) and (6):

(5a) $[B(I, S(he))]_c$ (*re*)

(6a) $[\sim B(I, S(he))]_{c'}$ (*dicto*)

In these representations, we have surrounded the each formula with brackets and then relativized the whole to a context. We have assumed that (6) is uttered in a new context c', since the professor is pointing to a new picture. However, no term in (5a) changes its denotation from context c to context c'. Since none of the terms are underlined, we process this representation semantically by taking only the denotation of each term relative to the context in question. Clearly, then, (5a) and (6a) are inconsistent.

But the *de dicto* readings of (5) and (6) are consistent. The *de dicto* reading of (5) asserts a relation between K and the proposition which results by plugging the abstract object which objectifies the way K is cognizing Alex (relative to the context in which (5) is uttered) into the property of being a scholar. The abstract object involved here is what is signified by the indexical in this context, and this object will be the value of the cognitive character function for the indexical "he," relative to K and the context of (5). Formally speaking, we may represent the *de dicto* reading of (5) as follows:

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[9]One possibility we have not been considering in all of the cases is that it what is involved in the *de dicto* readings is not the cognitive significance of the names and indexicals for the subject of the report (ie., the person who bears the attitude), but rather the cognitive significance of the names and indexicals for the author of the report. Typically, this will not be a factor when considering the truth of such reports, though they may play a role in iterated reports. This is a topic for some other occasion, however.

(5b) $[B(I, S(\underline{he}_I))]_c$ (*dicto*)

In this formula, "$\underline{he}_I$" denotes, relative to context c, the abstract individual which objectifies the way Professor K is cognizing Alex when looking at the first picture. Processing this representation compositionally is simply a matter of employing all of the denotations of the (special) terms relative to context c. Thus, (5b) represents (5) as being true just in case K is related in a certain way to a proposition with an abstract constituent, or using Perry's terminology, this proposition is what is needed to individuate K's belief state.

The *de dicto* reading of (6) is consistent with this reading of (5). It may be represented formally as follows:

(6b) $[\sim B(I, S(\underline{he}_I))]_{c'}$ (*dicto*)

In this representation, "$\underline{he}_I$" denotes something different than what it denoted in (5b). That's because in the context in which (6) is uttered, K is looking at a different photograph, and will be cognizing Alex in a different way. The cognitive character of the indexical "he" will assign it a different value in this context, and so the singular proposition signified by the embedded sentence in (6b) will have a different abstract constituent from the one had by the singular proposition signified by the by the embedded sentence in (5b). Since the facts of this case allow us to assume only that $he_c = he_{c'}$, and not that $\underline{he}_c = \underline{he}_{c'}$, we cannot deduce that the truth of (5b) is inconsistent with the truth of (6b).

These readings account not only for the truth of the belief reports, but also for their logical behavior as well. In particular, the *de dicto* readings show why names and/or descriptions which have the same denotation as the English indexical may not be substituted for the indexical preserving truth. The indexical is not contributing its denotation in those contexts for these readings, but rather its cognitive content (as given by its cognitive character). Moreover, now that the truth of the belief report has been analyzed, we must remember to distinit from the truth of the belief reported. This distinction, and the definition of "truly believes," carry over into the system enriched with indexicals (with everything being relativized to context). For the *de dicto* readings, the truth of the belief reported depends not on the intermediate proposition which makes the report true, but on the ordinary proposition represented by the intermediate one. Thus, the particular belief state (5b) describes is a felicitous (true) one, since Alex is indeed a scholar (in this case, $[\varphi*]_c$ is $[S(he)]_c$,

and this latter expression denotes the proposition which has Alex plugged into the property of being a scholar). And for this same reason, the particular belief state (6b) describes is not felicitous.

Consider also the interesting case in Perry [1979], of the shopper who, when questioned, utters (7) and (8), and who, in ignorance, denies (9) despite its being true:

(7) I believe that the shopper with a torn sack is making a mess

(8) I don't believe that I am making a mess

(9) I am the shopper making the mess

On our analysis, there are two readings for both (7) and (8) and a single reading for (9) (in (8b), "$\underline{I}_I$" denotes relative to context c, what the indexical "I" cognitively signifies for the person denoted by the indexical in c):

(7a) $[B(I, M(\iota x)\varphi)]_c$ (*re*)

(7b) $[B(I, M(\underline{\iota x \varphi}))]_c$ (*dicto*)

(8a) $[\sim B(I, M(I))]_c$ (*re*)

(8b) $[\sim B(I, M(\underline{I}_I))]_c$ (*dicto*)

(9a) $[I = (\iota x \varphi)]_c$

The belief states reported by (7a) and (8a) do not help us understand the facts of the case: they are inconsistent reports about the subject's mental state (since the denotation of "I" in context c is the same as that of the definite description) and they do not explain why the subject continues his search for the shopper with the torn sack (since (7a) directly relates the subject to a proposition in which he is a constituent). But (7b) tells us that the subject is in one belief state (one which will be felicitous just in case the subject is making a mess), while (8b) tells us that the subject fails to be in another belief state (with the same felicity conditions). Despite the fact that the two belief states in question have the same felicity conditions (ie., have the same ordinary proposition as object), they are distinct states, and we individuate them using our singular propositions with abstract constituents, just as the above representations indicate.

A reminder about this analysis is in order. We are supposing that relative to a context, the word "I" has a cognitive significance for the

person using it. But we do not suppose that the abstract object which serves as the cognitive significance of "I", relative to an individual and context, has to encode a property or properties which the subject uniquely exemplifies. The subject may be mistaken about who he is (he may be deluded or an amnesiac). The abstract object in question encodes only those properties which the subject associates with himself in the context in question. No puzzles arise should these properties be uniquely exemplified by some other person, since this representation plays a role only in identifying the subjects' mental state and *not* in identifying the ordinary proposition which is the object of that state and upon which the felicity conditions of the state depend. Note also that we are not appealing to Frege's doctrine of the incommunicable sense of the word "I". The properties encoded by the cognitive significance of "I", as we understand it, may be described for others. However, it is to be emphasized that these properties are not in any way incorporated into the ordinary propositions which are the objects of the states.[10]

This analysis of attitude reports containing indexicals will, we believe, handle the puzzling cases which have appeared in the recent literature (Castañeda [1966], [1967]; Perry [1977], [1979]; Lewis [1979], and Stalnaker [1981], and Richard [1983], among others). In each of these cases, it is important to remember: (a) that attitude reports receive both *de re* and *de dicto* readings, (b) that the *de dicto* readings involve abstract representations which do not intrinsically determine in any way the objects which they represent, and (c) that the truth of the belief reported by the *de dicto* report will depend on the ordinary propositions which have the objects represented as constituents.

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[10]Note that we are also following Perry in "breaking the connection between senses and thoughts" [1977], p. 493. Here, Perry conceives of "thoughts" as information, which we are identifying as ordinary proposisitions with ordinary constituents.

One place where we may differ from Perry is the following. As we understand him, two people can be in the *same* belief state when both of them are sitting and think to themselves "I am sitting." From our point of view, this *sameness* might amount to the following: they are both in the state which is individuated by the proposition that has the cognitive significance of "I" plugged into the property of sitting. Now this description applies to both individuals, relativized to the cognitive significance of "I" for each person, and this is one reason for thinking they are in the same state. But it may be the case that their conceptions of themselves differ, in which case we have distinct objects which serve as the cognitive significance of "I" for these individuals. So, if the propositions with these abstract constituents individuate belief states, we may also want to say that, strictly speaking, they are not in the exact same "individual" state, though they may be in the same "general" state.

For our present concerns, however, the conclusion to be drawn is that the system with indexicals just outlined not only preserves those ideas of Kaplan's preserved by our original system, but also preserves his distinction between character and content as it relates to indexicals. The resolution of the conflict between Frege's work and Kaplan's is maintained in this enriched system as well, since the cognitive significance of a name or indexical is not identified with its character. This theoretical identification is the only thesis of Kaplan's that needs to be refined. A new semantic function, which distinguishes the cognitive character of a name or indexical from its ordinary character, can be employed in the solution to outstanding puzzles about the attitudes. The abstract objects which serve as values for this new, cognitive character function have been axiomatized and proven to be useful for a wide variety of philosophical applications. By postulating such a realm of entities and revising some of Frege's ideas, we've been able to tap and assimilate many of the fundamental intuitions about metaphysics and the philosophy of language which have been the cornerstones of Kaplan's work.

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