Pronouns and Perspectives

1. Introduction

Popular accounts of Binding Theory (Chomsky 1981; Lasnik 1981; Higginbotham 1983; Reinhart 1983) analyze the distinction between the following two sentences as deriving from different restrictions on the binding of pronouns and of anaphors.

(1) a. John admires himself
    b. John admires him

It is argued that a bound interpretation of the anaphor himself in (1a) is possible, while that of the pronoun him in (1b) is not. In this paper, I argue that such an analysis of the facts is both incomplete and incorrect.

The incompleteness of such an analysis stems from the lack of a clear connection between treatment of a pronoun as a bound variable and construal of that pronoun. The anaphor in (1a) straightforwardly allows for what I will refer to as a self-oriented interpretation, allowing the sentence to directly represent an attitude of John’s toward himself, while the pronoun in (1b) does not. However, there is nothing inherent in the interpretation of an expression as a bound variable that leads one to predict this distinction, and one needn’t look far to find examples of sentences in which such a correlation fails to obtain. Four examples in particular come to mind: bound pronouns in Castañeda sentences (2a) (cf. Higginbotham 19??),
explicit use of variables in a mathematical register (2b), locally bound focused pronouns (2c) (cf. Higginbotham forthcoming), and unbound thought-oriented pronouns in Represented Speech and Thought (RST) (2d) (cf. Banfield 1978, 1982).

(2)  
  a. Every unfortunate war hero thinks he was brave.
  b. John is an $x$ such that $x$ admires $x$.
  c. [Every professor loves his mother. More importantly,] every professor admires HIM.
  d. (John frowned.) Now he would be all alone again.

(2a) allows for the pronoun he to be bound by the quantified expression *every unfortunate war hero* even if each war hero in question is an amnesiac whose sole attribution of bravery is to a character he has read about and who, unbeknownst to him, is that war hero himself. Similarly, (2b) can be true in a situation in which John fails to realize that it is himself that he admires. (2c) also allows the pronoun to be interpreted as a bound variable, but in distinction to (2a) disallows a self-oriented interpretation of the pronoun. Finally, in (2d) the pronoun can be given a self-oriented interpretation despite the fact that there is no potential binder for it. These facts illustrate two things: first, interpretation of a pronoun as a bound variable is not restricted by binding theory, and second binding is neither a necessary nor a sufficient condition for generating a self-oriented interpretation of a pronoun. The impossibility of generating a self-oriented interpretation for the bound variable pronoun in (2c) suggests that Binding Theory should be recast in part directly as a theory of self-orientation. The central
questions that such a theory has to answer are how self-oriented interpretations are generated and how they are restricted.¹

2. Self-orientation

The idea I will pursue here is a familiar one, that self-orientation for third person pronouns is a variation of self-orientation with first person pronouns (cf. Evans 1982; Kaplan 1977, 1979; Perry 1979; Richard 1983), an idea suggested recently by Abe (1992) and whose origins can be traced back at least to Castañeda (1966, 1967a, 1967b, 1968). I will proceed by examining Kaplan's (1977) analysis of first person reference. I will argue that this analysis, while potentially adequate for generating a self-oriented interpretation for first person pronouns, cannot be extended to generate a self-oriented interpretation for third person pronouns. I will then supplement Kaplan's analysis with an independent analysis of self-orientation, one which can be used to generate self-oriented interpretations for both first and third person pronouns.

¹ I have argued elsewhere (cf. Tancredi 1995) that part of the explanation of Binding Theory effects derives from restrictions on deaccenting. It is these restrictions that account for the necessity of focus on the pronoun in (2c). I do not address these aspects of binding-related phenomena here.

Kaplan (1977) analyzes first person pronouns as indexical expressions, and proposes that the interpretation of indexical expressions be determined by parameters of what he terms a Context. A first person pronoun’s reference is semantically determined to be the Agent of the Context in which it occurs. Assuming that no non-pronominal expression refers by its semantics to the Agent of a Context, this analysis can potentially form the basis for explaining the contrast in self-orientation of the subject expressions in the examples in (3) (modelled after similar examples in Perry 1979) by

2 The need to consider the hypothesis that Kaplan’s semantics delivers self-orientation without further complication was impressed upon me by Scott Soames (personal communication). For details of the analysis of first person pronouns and its motivation, the reader is referred to Kaplan (1977), especially section XVII.

3 Roughly, the Agent of a Context is the person who produces a sentence, typically by speaking or writing. Other parameters of a Context include Time and Place, neither of which is pertinent to our purposes. It is important to distinguish two senses in which the phrase “semantically determined to refer to the Agent of a Context” can be taken. On one way of taking it, any phrase that happens to refer on a given occasion to the individual who is the Agent of the present Context could be said to be so determined. This is not the interpretation intended here, however. What is intended here is for reference to the Agent to be determined by the semantics alone, independent of any particular occasion of use.
equating self-orientation with semantically determined reference to the Agent of a Context, an analysis Kaplan endorses.

(3) a. I am in pain  
b. He is in pain  
c. Chris Tancredi is in pain  
d. That person (pointing to myself in a mirror) is in pain  
e. The person writing *Pronouns and Perspectives* on August 26, 1995 is in pain

Amongst these five examples, only (3a) can directly represent a self-oriented thought. This is so even if all the subject expressions are taken to refer to the person denoted by the Agent of the Context (e.g. the speaker, if the sentences are spoken) (cf. Perry 1979). Equating self-orientation with semantically determined reference to the Agent of a Context would directly explain these facts, since among the five subject expressions only the first person pronoun refers to the Agent by its semantics.

If one looks no further than first person pronouns, the above analysis cannot easily be faulted. However, third person pronouns exhibit a contrast with non-pronominal expressions and with first person pronouns that is parallel to the contrast illustrated in (3) and which cannot be readily explained by Kaplan’s analysis. This can be seen most clearly with pronouns occurring in Represented Speech and Thought (RST) environments. Employing this narrative style, we
can reconstruct a paradigm parallel to that given in (3) above with the roles of first and third person pronouns interchanged as follows.⁴

(4)  
   a. Now he would be all alone, (frowned Chris)  
   b. Now I would be all alone, (frowned Chris)  
   c. Now Chris would be all alone, (frowned Chris)  
   d. Now that guy would be all alone, (frowned Chris)  
   e. Now the person writing *Pronouns and Perspectives* on August 26, 1995 would be all alone, (frowned Chris)

We see in these examples a difference in self-orientation identical to that seen earlier in (3) -- only (4a) can directly represent a self-oriented thought of Chris’s. Thus in RST environments, third person pronouns contrast with first person pronouns, names, definite descriptions and demonstratives in just the way that first person pronouns contrast with third person pronouns and the others in discourse environments.

In order to maintain that self-oriented reference consists in semantically determined reference to the Agent of a Context, we would have to maintain first that RST occurs in a Context which has an Agent, and second that third person pronouns can be semantically determined to refer to this Agent. If we adopted these assumptions, however, then we would have no basis for determining when to employ a first person pronoun and when to use a third person pronoun. To see why, consider the pronouns in the following sentences.

⁴The demonstrative pronoun in (c) cannot be used deictically, setting this example apart from its counterpart in (3).
(5)  a. i. (A₁) I am in pain
     ii. (A₁) He is in pain

   b. i. (A₁) Now he was in pain, ((A₂) winced John₁)
     ii. (A₁) Now I was in pain, ((A₂) winced John₁)⁵

By hypothesis, both I in (5a-i) and he in (5b-i) refer by their semantics to the Agents of their respective Contexts, presumed in both cases to be A₁. Changing the pronouns changes the interpretations of the sentences. In (5a-ii), he cannot refer to the speaker (i.e. the controller of A₁), and nor can the pronoun I in (5b-ii) refer to John (the presumed controller of A₁ in that example). If we choose to extend Kaplan’s analysis to account for self-orientation of third person pronouns as well as first person pronouns, then some means will have to be devised for differentiating between the referents of first and third person pronouns in these examples.

   The obvious place to look for a solution to this problem is to the person features of the pronouns. Two possibilities can be considered for the role that these features play in determining the referent of a thought-oriented pronoun. First, they can be taken as restrictions on the Agent that they refer to, Agents coming in at least two flavors -- first person and third person. Alternatively, they can be taken to restrict the relation between the Agent referred to and some higher Agent. Neither analysis, however, is viable.

⁵ I will argue below that there is no Agent of an RST clause, making the representations in (5b) impossible. I employ these representations here since they are the only representations which could in principle make it possible to reduce self-orientation to reference to an Agent.
Consider the first possibility first. In (5a), $A_1$ is controlled by the speaker (if the sentence is uttered), while in (5b) it is controlled by the third person NP $John$. The choice of pronoun for these two examples could be made by assuming that the pronoun must be identical in person features to the Agent it refers to, with number features on Agents restricting their possible controllers. There are two problems with this explanation, however. The first is that it leads to the prediction that pronouns in direct speech environments such as (6) should pattern with those in RST environments, a prediction not borne out.

(6)  
   a. $(A_1)$ John$_2$ said $(A_2)$ "I am in pain"
   b. $(A_1)$ John$_2$ said $(A_2)$ "He is in pain"

In (6), the embedded Agent $A_2$ is controlled by the matrix subject $John$, and thus under the hypothesis being considered should bear third person features. Reference to this Agent by a pronoun yielding self-orientation should thus only be possible if the pronoun is a third person pronoun, not a first person pronoun, which is patently not the case. The second problem is that the analysis amounts to no more than a stipulation of the facts. Comparing the examples in (5a) with those in (5b) minus the clause in parentheses, the explanation under consideration amounts to the claim that the Agents in the former examples are obligatorily first person while those in the latter are obligatorily third person. This leaves open the question of what could impose these restrictions, and here there are no obvious answers.

The second possible analysis considered, that of taking number features on pronouns to impose a restriction on the relation between
the Agent referred to and a higher Agent, fares no better, and for the same two reasons. The examples in (5) could all be handled by taking third person thought-oriented pronouns to require the presence of a higher Agent distinct from the Agent that the pronoun refers to. First person pronouns under such an explanation would be the elsewhere case. Alternatively, these examples could be accounted for by taking first person pronouns to refer to the Agent of an unembedded Context, with non-first person pronouns being the elsewhere case. Either analysis of the facts in (5), however, leads once again to the prediction that self-oriented reference to John in (6) should have to be secured by a third person pronoun, contrary to fact, and furthermore fails to account for the requirement of employing a third person pronoun to obtain self-orientation in RST environments which are not embedded.

The problem of pronoun choice can of course easily be handled by distinguishing first and third person pronouns as Kaplan does, i.e. by only allowing first person pronouns to refer by their semantics to the Agent of a Context. If we adopt this analysis, however, we are forced to abandon the hypothesis that self-orientation reduces to semantically determined reference to the Agent of a Context, since both first and third person pronouns are equally capable of being given a self-oriented interpretation. This leaves us then in need of an explanation for how self-orientation comes about.

2.2. Modifying Kaplan's analysis

I analyze self-oriented reference as reference via a token thought to the bearer of that thought, where the thought itself is used in its
own characterization. To facilitate discussion, I assume that Agents are specified in exactly two circumstances: (i) when there is a change of Agent (e.g. when a speaker first opens a discourse or when there is a change in speaker), or (ii) at the beginning of a direct quote. Before turning to the technical details of the proposal, I illustrate the proposal with the examples in (3a) and (4a), repeated below with Agents (A) and thought tokens (t) explicitly represented.

(7) a. \((A_1t_1) \text{ I am in pain}\)  
b. \((A_1t_1) \text{ [(t}_2\text{) [Now he would be all alone] frowned Chris]}\)

In (7a), the Agent \(A_1\) denotes the person who produces the sentence, referred to here and throughout as the speaker. The pronoun \(I\) in (7a), being a first person pronoun, semantically denotes \(A_1\) and hence can be used to refer to the speaker via the semantics of indexicals developed by Kaplan (1977). \(t_1\) in this example is a thought of type “I am in pain”. A self-oriented interpretation of the pronoun \(I\) in (7a) will be generated if the pronoun not only refers by its semantics to the Agent of the Context \(A_1\) but also identifies the referent of the pronoun as the individual having \(t_1\).

By hypothesis, the pronoun \(he\) in (7b) contrasts with \(I\) in (7a) in that it cannot refer by its semantics to the Agent of the Context it occurs in. However, analyzing \(he\) as semantically referring to the individual having \(t_2\) and identifying the type of \(t_2\) as given by the bracketed clause that follows it will produce a self-oriented interpretation for that pronoun. Identifying this individual as Chris gives us an explanation for the fact that the pronoun can refer self-orientedly to Chris. The formal task that remains is to give
rules for introducing token thoughts and to formulate the semantics of pronouns in such a way that these analyses fall out without needing to be stipulated.

2.2.1. Introducing thoughts

I take thought tokens to be introduced in at least three ways. First, I analyze utterances as the direct expression of a token thought by an Agent, with the sentence uttered identifying the type of that thought. Second, I analyze certain predicates as introducing token thoughts as part of their lexical semantics, primary among these being propositional attitude embedding predicates. Third, I allow thought tokens to be introduced inferentially, as in cases of Free Indirect Speech and Represented Speech and Thought. I assume that every thought token that is introduced must have its type identified, and that this can be accomplished in at least three ways. The type of a token thought attributed to an Agent is the largest contiguous string of sentences produced by the Agent. The type of a

More particularly, only a certain subclass of utterances can be analyzed in this fashion. In particular, if examples of unembedded RST are uttered, their content should not be identified as giving the thought of the utterer but of the person whose thoughts are being represented. Banfield (1982) claims that such sentences cannot be uttered, though that does not appear to be correct: as part of an oral narrative they are fine. What does seem to be impossible is for their utterance to be taken as an assertion, questioning etc. on behalf of the utterer.
thought introduced by the lexical semantics of a predicate is
determined by a designated argument of that predicate. Thoughts
introduced inferentially have their type identified pragmatically as
that sentence which gave rise to the inference. According to this
characterization, the type of \( t_1 \) in (7a) is the content of the
sentence \( I \) am in pain, that of \( t_1 \) in (7b) is the entire sentence, and
the type of \( t_2 \) in (7b), pragmatically attributed to \( Chris \), is the
bracketed clause to its immediate right.\(^7\)

2.2.2. Self-oriented pronouns

I take a self-oriented interpretation to be available (though not
required) for pronouns, and to be unavailable for R-expressions of
any type. To formalize the semantics of thought-oriented pronouns, I
propose building a notion of Perspective into them, where Perspective
is the relation of an individual having a token thought. I analyze
thought-oriented pronouns as DPs whose head \( D \) contains an occurrence
of the element \( persp \), denoting this Perspective relation.

(8) \[ [DP \ D\text{-}persp] \]

\(^7\) This analysis does not yet require \( t_2 \) in (7b) to be attributed to
\( Chris \), but merely allows this as an option. Clearly this is not
strong enough, since regardless of the context in which this sentence
is embedded \( he \) cannot refer self-orientedly to anyone other than to
\( Chris \). I take the obligatory nature of this connection to stem from
the fact that without it the embedding clause and the RST clause
would fail to be related.
D in (8) represents the φ-features and phonological features of the pronoun. The semantics for this expression I model after that of -er nominals and of definite descriptions, the D playing both the -er like role of binding the external (individual denoting) argument of persp and the determiner role of converting the predicate into an expression that can be used for referring. This will make the DP in (8) an expression that refers by its semantics to an individual having some thought. Self-orientation I derive from identifying the thought introduced by persp with another thought token whose type is given by an expression containing the pronoun. Ignoring the role of person features, I illustrate the general schema for self-orientation below using the example in (7a).

\[
\begin{align*}
\text{(9)} & \quad (A_1, t) \\
\text{IP} & \quad \text{am in pain} \\
\text{DP} & \quad \text{I'} \\
\text{D} & \quad \text{persp}(x_2, t_2) \\
\text{I} & \quad \text{I'}
\end{align*}
\]

As an assertion by (the individual denoted by) A_1, IP^8 identifies the type of a token thought t_1 attributed to A_1. D predicates the token thought t_2 of individual x_2 via persp. By identifying t_2 with t_1, the pronoun will refer by its semantics to the individual having t_1, i.e. to A_1.\(^9\) The interpretation of the sentence in (9) can then be

\(^8\) Or rather the highest node in the tree, whatever its category is taken to be.

\(^9\) As a consequence of the relation we know to hold between thoughts and their bearers, identification of t_2 with t_1 will result in the
paraphrased roughly as follows: “x (the speaker) has a thought t of the following type: the person who has thought t is in pain.” It is important to note that what makes a representation such as that in (9) give rise to self-orientation is not the syntactic structure of the sentence alone but also (and conceptually more importantly) the nature of the relation that holds between a person and his thoughts: when a thought occurs to an individual, there can be no doubt in the mind of that individual whose thought it is.\textsuperscript{10}

The analysis just sketched isolates self-orientation as an independent property of some pronouns. Self-orientation is not restricted by the person, number or gender features of the pronoun, making it possible to apply the analysis to first and third person pronouns alike. The different referential properties of first and third person pronouns I attribute to the interpretation of their $\varphi$-features, located in D. I take these features to relate the referent of the pronoun to the Agent of the Context\textsuperscript{11} that the pronoun occurs in, as specified below.\textsuperscript{12,13}

bearers of these thoughts $x_1$ and $x_2$ having to be identical, though this identity plays no role in self-orientation.

\textsuperscript{10} In the terminology of Evans (1982) (borrowed from Shoemaker), identifying a thought token as one's own is a type of identification that is immune to error through misidentification. See Evans (1982) for detailed discussion.

\textsuperscript{11} If either Addressee or Other is taken to be a primitive Context parameter having the same status as Agent, then pronouns could differ with respect to which parameter they relate their referent to. For present purposes, the choice is irrelevant. A more substantive alternative would be to analyze third person pronouns as simply not
1st person D: referent = Agent
2nd person D: referent = Addressee (of Agent)
3rd person D: referent = Other (than Agent or Addressee)

(10) is essentially a formalization of Kaplan’s analysis of first person pronouns as semantically determined to refer to the Agent of a Context supplemented with a compatible analysis of second and third person pronouns.

relating their referent to the Agent of a Context at all. This latter alternative is inconsistent with the explanation given below for blocking third person pronouns from referring self-orientedly to the Agent of a Context. For that explanation to go through, a third person pronoun cannot be allowed to be determined to refer to an Agent by some indirect means, for example by semantically referring to the bearer of a Perspective controlled by the Agent. Other should thus be interpreted strongly as not Agent and not Addressee.

I am only considering singular pronouns here. For plural pronouns, the relation between the function of the determiner and the Agent of the Context will potentially differ, depending on whether it is possible for such an Agent to consist of more than one individual. I take no stand on this issue. Also, though I include second person pronouns, I do so only to complete the paradigm. They will play no role in the discussion that follows.

The interpretation of person features given in (10) is intended for both self-oriented pronouns (those containing persp) and non-self-oriented pronouns (all others).
There is at least one case in which the analysis as developed so far allows for a self-oriented interpretation of a pronoun where intuitively no such interpretation is available. This case is illustrated in (11a).

(11) a. (A₁t₁) John thinks (t₂) Sue said (A₃t₃) “I hate him”
    b. (A₁t₁) John thinks (t₂) Sue said (t₃) she hates him

In this example, the pronoun him characterizes a thought attributed to John (t₂) and so is predicted to be able to refer self-orientedly to John, counter to fact. (11a) contrasts with (11b) in that the latter allows the predicted self-oriented interpretation. I take the relevant distinction between these two examples to be the presence versus absence of a new Agent as a Context parameter accessible to the most deeply embedded clause. To block the undesirable self-oriented interpretation of the pronoun in (11a), I propose to treat thought tokens as instantiations of an independent Context parameter. I assume that the only Context parameters that can be accessed in interpretation are those that are currently active, and that a change in Agent signals a change of all active Context parameter values. Such a change will render inaccessible all thoughts introduced in previous Contexts, and will hence make these unavailable for grounding a self-oriented interpretation for a pronoun such as him in (11a).

We are now ready to see how the present analysis can lead to a prediction of the self-oriented interpretations available for a given occurrence of a pronoun. Consider first the sentence in (7a), repeated below.
Analyzing the pronoun I as a thought-oriented pronoun places two restrictions on its interpretation. First, the thought contained in the pronoun must have its type identified, which in the present case can only be accomplished by identifying that thought with \( t_1 \). Second, the pronoun is required by its \( \phi \)-features to refer to \( A_1 \). Since these two restrictions can both be satisfied, and since their satisfaction results in the pronoun characterizing the type of the thought that the pronoun contains, a self-oriented interpretation for the pronoun is correctly predicted to be possible.

Changing the pronoun in (7a) from I to He was noted earlier to make a self-oriented interpretation impossible. The analysis predicts this fact as well. As with the first person pronoun, a self-oriented interpretation for he is only possible if the pronoun is a thought-oriented pronoun with the thought contained in the pronoun identified with \( t_1 \), attributed to \( A_1 \). As a third person pronoun, however, it must refer to someone other than \( A_1 \). These constraints cannot be simultaneously satisfied, and since no other analysis will result in a self-oriented interpretation, such an interpretation of the pronoun is correctly predicted to be unavailable.

In (7b), repeated below, there are two thoughts, one (\( t_2 \)) attributed to Chris and the other (\( t_1 \)) attributed to the Agent (\( A_1 \)).

(7b) \( (A_1 t_1) [(t_2) [\text{Now he would be all alone}] frowned Chris] \)

A self-oriented interpretation for he referring to the bearer of \( t_1 \) will be impossible since such an interpretation would require that he
both refer and not refer to the Agent of its Context. However, interpreting \textit{he} as referring to the bearer of \(t_2\) satisfies the semantic requirement of the pronoun's \(\varphi\)-features, since \(t_2\) is not attributed to the Agent \(A_1\) of the Context. Nothing thus blocks interpreting \textit{he} in (7b) as a thought-oriented pronoun in this way, and so we derive the fact that a self-oriented interpretation of \textit{he} referring to \textit{Chris} in (7b) is possible.

Consider finally the sentence that results from replacing the third person pronoun \textit{he} with \textit{I} in (7b), giving (12).

(12) \( (A_1t_1) [(t_2) \{\text{Now I would be all alone} \} \text{ frowned Chris}] \)

The analysis derives, correctly I believe, a self-oriented interpretation of \textit{I} referring to the narrator by identifying the thought contained in the pronoun with \(t_1\). \textit{I} cannot be given a self-oriented interpretation referring to \textit{Chris}, and this fact as well is predicted by the analysis. The only way that such an interpretation could be obtained would be by identifying the thought contained in

\(^{14}\) Banfield (1978, 1982) claims that neither first nor second person pronouns can occur in RST contexts. The claim that the sentence in (12) is acceptable does not necessarily contradict Banfield’s claim, however. Banfield restricts her attention to RST as a narrative style in which the identity of the narrator never comes into play. If this is taken to be a defining property of RST, then the conclusion we are drawn to is that there is another style of narration which has many of the formal properties of RST but in which the narrator is taken to play an active role both in the narration and in what is being narrated.
the pronoun with $t_2$, and taking $t_2$ to be attributed to Chris. However, the semantics of the pronoun would then identify Chris with $A_1$, since as a first person pronoun I must refer to $A_1$. This will be unacceptable on the plausible assumption that names, like non-first person pronouns, cannot be semantically determined to refer to the Agent of a Context.

2.2.3. Locality effects and Condition B

The analysis arrived at in the preceding two sections makes it possible for a pronoun to be interpreted as self-oriented with respect to an individual if and only if the thought contained in the pronoun is identified with another thought which is attributed to that individual. We can define self-orientation with respect to a particular occurrence $o$ of an expression as reference to the denotation of $o$ via a thought directly related to $o$. The absence of a self-oriented interpretation for pronouns with respect to antecedents that are structurally too close to their presumed antecedent can then be explained as the absence of a suitable relation between the pronoun, its antecedent, and a thought related to the antecedent. To illustrate, consider the following sentences.

(13) a. John thinks I hit him
    b. John hit his mother
    c. John hit him
    d. John believes him to be intelligent
A self-oriented interpretation of the pronoun *him* with respect to *John* is clearly possible in (13a) and clearly impossible in (13c,d). Whether such an interpretation is possible for *his* in (13b) is perhaps less clear than with (13a), though I will assume here that it is not.\(^{15}\) Explaining the possibility of self-orientation in the first example is straightforward. Analyze the verb *think* as attributing a thought \(t\) to its subject (*John*) with the type of that thought being given by the embedded CP, and analyze *him* as a thought-oriented pronoun referring to the bearer of that thought. No similar analysis can be given for (13b) or (13c) since in neither case is it plausible to analyze any expression as attributing (or otherwise relating) a thought token to the subject *John*. The absence of a self-oriented interpretation for (13d) is less straightforward, though equally explainable. The verb *believe* presumably attributes a thought to its subject, and identifies the type of that thought with the content of the embedded clause. The absence of a self-oriented interpretation for *him* can be explained on the assumption that an ECM subject obligatorily raises out of its embedded clause at LF for Case checking (cf. Lasnik and Saito 1991; Lasnik this volume). Taking the trace left behind to be interpreted as a purely referential variable (i.e. one not containing a thought), the pronoun will not itself characterize the thought attributed to the subject of *believe*. In

\(^{15}\) The relative acceptability of (13b) compared to (13c,d) I attribute to the possibility of deaccenting the pronoun in the former example and the impossibility of doing so in the latter. Restrictions on deaccenting I have argued elsewhere (cf. Tancredi 1992, 1995) to apply at a discourse level, and are assumed to be distinct in kind from restrictions on self-orientation.
this circumstance, identifying the thought contained in the pronoun with that attributed by the verb believe to its subject, while still possible, will not produce a self-oriented interpretation.

2.3. Refinements

The analysis developed above was based primarily upon examples in which only a single pronoun is given a self-oriented interpretation. However, with verbs of communication, it is generally possible to simultaneously generate a self-oriented interpretation with respect to the person whose speech is represented and the person being addressed.

(14) John told Mary that he liked her.

This possibility can be accounted for by incorporating into the verb two distinct ways of relating to a thought, one thematically relating the thought to the subject of tell and the other relating it to the object. I analyze this new manner of relating a thought to an individual as source(x,t), and partially analyze tell semantically as in (15).

(15) \[\text{[tell}(x,y,z)\text{]} \text{ includes} \]
    \[\text{[source}(x,t) \land \text{intend}(x,\text{cause(persp}(y,t'))) \land \text{type}(t,z) \land \text{type}(t',z)]\]
Self-orientation with respect to an individual related via source to a thought can be secured by allowing pronouns to be based either on persp or on source.

3. Lexically controlled PRO

In this section, I show how the proposal can be extended to give a natural account of restrictions on the interpretation of PRO. I furthermore show that the analysis of self-orientation proposed can be used to generate covariant interpretations of pronouns in VP deletion environments. Finally, I briefly consider how to overcome some prima facie problems posed by reflexive pronouns within the analysis developed.

The analysis of section 2 makes a clear formal distinction between thought-oriented expressions and non-thought-oriented expressions. The former are uniformly based upon thoughts, while the latter never are. R-expressions fall exclusively within the latter class of expressions, while pronouns are ambiguous. Noting that controlled PRO in the complement of psychological embedding verbs is obligatorily self-oriented, it is tempting to analyze PRO in these instances as a pure thought-oriented pronoun. Though tempting, however, I will argue here that it would be a mistake to do so. I then develop an alternative analysis of such occurrences of PRO as expressions based upon thought-oriented pronouns.

3.1. A simple extension and some problems
An analysis of PRO as a thought-oriented pronouns could be partially motivated by an extension of an example from Higginbotham (1992), based upon an example originally due to Castañeda (1966). The example centers around an unfortunate war hero who has lost all memory of his wartime exploits, and who as part of his therapy to regain his memory is made to read about his war-time activities. Considering this unfortunate at a time when he has not yet read about any heroic deeds but expects that the person he is reading about will turn out to be a hero, (16a) is clearly true and (16c) clearly false.

(16)  

a. The unfortunate expects that the protagonist will turn out to be a hero

b. The unfortunate expects that he will turn out to be a hero

c. The unfortunate expects PRO to turn out to be a hero

(16b) can be understood to mean either roughly what (16a) means or what (16c) means, and will be judged true or false accordingly. The distinction between (16a) and (16b) follows directly from the analysis developed -- pronouns can, and R-expressions cannot, be analyzed either as thought-oriented expressions or as non-thought-oriented expressions. If PRO were analyzed as a simple thought-oriented pronoun, then the obligatory self-orientation in (16c) could be explained as well.

While such an analysis is initially plausible, it faces at least three problems. In section 2.3 it was argued that verbs of communication relate two distinct thoughts to the clause that they embed, and that each of these thoughts could be used independently to ground a self-oriented interpretation for a pronoun contained within that clause. The problem this leads to here is that simply
identifying PRO as a thought-oriented pronoun would fail to restrict the choice of antecedent.

(17)  
   a. John told Mary that he liked her  
   b. John told Mary that she liked him  
   c. John told Mary PRO to kiss him/her

As seen in (17a,b), thought-oriented pronouns in the embedded clause can take either argument of the matrix verb tell as their antecedent. With PRO in (17c), however, only Mary is a possible antecedent. The second problem lies in the locality of control. Whereas a self-oriented interpretation for a pronoun with respect to an expression is possible regardless of how deeply embedded the pronoun is with respect to that expression, as suggested by (18a), in the case of lexically controlled PRO self-orientation is only possible with respect to a designated controller in the immediately higher clause, as illustrated in (18b).

(18)  
   a. John₁ thinks the unfortunate₂ expects that he₁/₂ will turn out to be a hero.  
   b. John₁ thinks the unfortunate₂ expects PRO₁/₂ to turn out to be a hero

Simply taking PRO to be a thought-oriented pronoun fails to account for this fact. Finally, since thought-oriented pronouns can give rise to either covariant (sloppy) or invariant (strict) interpretations under VP deletion as seen in (19a), treating PRO as a thought-oriented pronoun would lead one to expect PRO to give rise to
a similar ambiguity in (19b), contrary to fact (cf. Higginbotham 1992).

(19)  a. Sam expects that he will become a doctor, but his father doesn't. (covariant or invariant)
     b. Sam expects PRO to become a doctor, but his father doesn't. (covariant only)

3.2. Self-orientation and control

Accepting that PRO in the above examples is obligatorily self-oriented, solving these three problems within the present analysis minimally requires that PRO be analyzed as a thought-oriented expression. To account for the more restrictive nature of PRO, I propose that PRO in these examples converts the minimal IP it is contained in into a thought denoting expression. More specifically, I analyze the occurrences of PRO in (17) through (19) as in (20).

\[\text{16} \] The analysis of PRO as a self-oriented expression cannot be taken as an exhaustive analysis of PRO since there are a wide range of occurrences of PRO which take non-animate antecedents (cf. Minkoff, this volume) to which we do not attribute thoughts. Whether a parallel, non-thought based analysis of these occurrences of PRO can be developed I leave for future research.
This analysis of PRO makes it possible to overcome all of the three problems noted above. By analyzing PRO as based exclusively on persp (as opposed to pronouns which can also be based on source), the only potential referential antecedent will be one which stands in a persp relation to the thought contained in PRO. This makes it possible to distinguish possible antecedents of PRO from impossible antecedents via lexical semantic properties of the embedding predicate. In (17c) this will require identifying the object of tell as related via persp to the thought denoted by the complement clause and the subject as the source of a thought lexically identified as of the same type as that thought. The semantics for tell as a control verb would thus have to be slightly modified from that of tell as a simple proposition embedding verb given in section 2.3 to be compatible with the complement clause denoting a token thought. The following modification will suffice.

(21) \[
[tell_{control}(x,y,z)] \text{ includes:}
\]
\[
[\text{source}(x,t) \land \text{intend}(x,\text{cause}(\text{persp}(y,t'))) \land [\text{Type}(t) = \text{Type}(t')] \land t' = z]
\]

The second problem, that the controller of PRO must be in the immediately higher clause, is solved by the above analysis of PRO as follows. Taking \( p \) in (20) to be propositional, XP cannot semantically combine directly with DP. This will force XP to raise
and adjoin to an expression that it can take as its internal argument, presumably an IP.\textsuperscript{17} As a subject adjunct, syntactic movement of XP is highly restricted, plausibly allowing movement only to the most immediately dominating IP (references?). Identification of the thought denoted by the resulting IP with a thought contained in an embedding predicate is a $\theta$-relation (and necessarily so since otherwise the embedded clause would be thematically unrelated to the embedding predicate), and hence must be highly local. The occurrence of PRO I assume to be required by the embedding predicate's selecting a thought denoting complement rather than the proposition denoting complement typically selected by non-control predicates. The possibility of a long-distance antecedent for such a PRO in an example like (18b) thus does not arise.\textsuperscript{18}

\textsuperscript{17} I take no stand here on what the exact semantic type of $p$ is or on the identity of the syntactic categories with which it can combine. What is necessary is only that the semantic type of $p$ match the semantic type of the controlled clause, and that XP be allowed to adjoin to that clause (hence the choice of IP rather than CP for the clause's syntactic category).

\textsuperscript{18} There remains one potential way of allowing a long-distance antecedent for PRO which the current analysis does not exclude. As mentioned in footnote 16, not all occurrences of PRO are self-oriented. This makes it potentially semantically coherent to generate a non-self-oriented PRO under a non-control version of the predicate expects in (18b) and identify the antecedent of PRO as the matrix subject two clauses up. I assume that the impossibility of such an analysis derives from syntactic restrictions on PRO such as those argued for in Chomsky and Lasnik (1993).
The final problem, that of allowing only a covariant interpretation of PRO under VP deletion, also follows from the proposed analysis. Assuming that a VP can be deleted only under identity with a preceding VP, the only VP whose deletion can be licensed by a VP headed by a control predicate is another such VP. Assuming that deleted VPs are represented in full at LF, (19b) will have the following LF representation. (I represent thoughts as \( th \), traces as \( t \), and the XP base-generated in PRO as \( Op \).)

\[
\text{(22) } \begin{align*}
&\text{Sam expects} (x_1, th_1) [\text{IP } Op(th_2, p) [\text{IP } [D-persp(x_2, th_2)]] \text{ to become a doctor}] \text{ but his father doesn't expect} (x_1, th_1) [\text{IP } Op(th_2, p) [\text{IP } [D-persp(x_2, th_2)]] \text{ to become a doctor}] \\
&\end{align*}
\]

In the first clause, \( th_1 \) in expect is identified via \( \theta \)-marking with \( th_2 \) in \( Op \). This latter thought is \( \theta \)-identified with \( th_2 \) in persp as part of the lexical semantics of PRO. (\( th_1 \) is presumably bound separately in each clause by existential closure of the embedding VP.) Assuming that \( x_1 \) bears the persp relation to \( th_1 \) as part of the lexical semantics of expect, as a result of \( x_1 \) being related to the subject of expect by \( \theta \)-marking \( x_2 \) will refer to the subject of expect as well, i.e. to Sam. By hypothesis, these exact same relations will obtain in the deleted VP of the second clause, making the occurrence of \( x_2 \) in that clause refer to the subject of the occurrence of expect in that clause, i.e. to his father. Since all of the identity relations involved are \( \theta \)-relations, the possibility of identifying \( t_2 \) in the second clause with either \( t_2 \) or \( t_1 \) in the first clause doesn't arise.

An aside is in order regarding the semantics of control predicates. Traditionally, embedding verbs such as expect have been
taken to denote relations between individuals and states of the world, possible worlds, or perhaps propositions. Under the analysis given above, however, the complement of the control verb expect denotes a thought. Since expectations are about the world -- when one expects another to win, one's expectations are about a future state of affairs involving the other person, not simply about one's own future state of mind -- it follows that what is expected cannot on the present analysis be what is denoted by the complement clause.

To bridge the gap opened up by taking the complement to denote a mental state, I take the relation denoted by expect to be that of a subject expecting a hypothetical mental state\(^{19}\) of his to project onto the world,\(^{20}\) where a mental state projects onto the world just in case the situation in the world is one whose recognition would justify the existence of that mental state.\(^{21}\)

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19 Terminology probably needs to be changed here. By a hypothetical mental state I intend the relation of bearing some relation to a hypothetical thought, i.e. a thought entertained as a potential hypothesis.

20 Projection of a mental state onto the world cannot be required to entail that the mental state obtains in the situations projected from that state. I can easily expect to win the monthly best corpse contest at the local morgue upon my demise without thereby having to attribute mental states to my dead body.

21 The analysis given works straightforwardly for embedding under verbs denoting psychological states. The analysis can be extended in principle to verbs of communication by taking these to denote the projection of a thought onto another person's thoughts, and only indirectly onto the world.
3.3. That-anaphora

It has been observed (cf. Higginbotham 1992) that that-anaphora differs from VP deletion in allowing an invariant interpretation of PRO.

(23)  
  a. Sam wants to become a doctor but his father doesn't. (covariant only)
  
  b. Sam wants to become a doctor but his father doesn't want that. (covariant or invariant)

If that in (23b) is interpreted identically to the complement clause of the first conjunct, then a covariant reading will result just as in the case of the interpretation of the VP deletion example in (23a). The availability of an invariant interpretation for PRO in (23b) indicates that some other possibility must exist for interpreting that as well. The analysis given above makes available a natural candidate for this interpretation -- the IP to which the XP of PRO is adjoined in the antecedent at LF. Taking that to be substituted by the clause that gives it its interpretation at LF, this will make possible the two representations of the second clause of (23b) given in (23).

(24)  
  a. his father doesn't expect($x_1$,th$_1$) [IP Op(th$_2$,p) [IP [D-persp($x_2$,th$_2$)] to become a doctor]]
  
  b. his father doesn't expect($x_1$,th$_1$) [IP [D-persp($x_2$,th$_2$)] to become a doctor]
(24a) is identical to the representation of the second clause of (23a) given earlier in (22), and derives a covariant interpretation just as (22) did. (24b), in contrast, allows for $th_2$ to be identified with a thought represented outside of the sentence since $th_2$ is not identified thematically with the only other thought contained in the same clause, $th_1$. A representation such as (24b) is possible in part because of an ambiguity in the verb expect -- only a non-control version of this verb can occur in (24b) since the embedded clause fails to denote a thought. In (24a), in contrast, only the control version of the verb can occur. Since the verb is not deleted in that-anaphora, non-identity with the embedding verb in the antecedent clause is non-problematic.\(^{22}\)

3.4. X-self anaphors

I have so far been considering only simple pronouns and PRO. However, complex pronouns also allow for a self-oriented

\(^{22}\) The analysis given here is incompatible with the hypothesis of Tancredi (1992) that deaccented expressions must be identical to some antecedent expression. The verb embedding an occurrence of anaphoric that is typically deaccented in that-anaphora sentences, but the analysis given here crucially depends on the verb differing from the antecedent expression that licenses its deaccenting. If we follow Rochemont (1986) and allow for the identity relation in question to be of any kind, including phonological, this incompatibility can be overcome.
interpretation, as in (25a), and in fact allow it in positions in
which a self-oriented interpretation for simple pronouns is
prohibited.

(25)  a. John admires himself

   b. John admires him

If nothing special is said about these cases, they stand as potential
counterexamples to the analysis. Simply attributing the possibility
of a self-oriented interpretation for himself in (25a) to the
possibility of analyzing this expression as a thought-oriented
expression would make it impossible to account for the distinction
between (25a) and (25b) without ad hoc stipulation. To overcome this
problem, it is necessary to analyze himself as contributing more than
simply a thought-oriented expression to the interpretation. I
propose to attribute the possibility of self-orientation in (25a) to
the occurrence of self in himself. I assume that self can raise
independently of him to the predicate that selects it converting it
into a thought-relating predicate with the following semantics.

(26) self(R(x,y)) = R(x,y) & persp(x,t) & type(t,y)\(^{23}\)

If the occurrence of him left behind is then analyzed as a thought-
oriented (persp-based) pronoun, then the semantics developed above
will generate a self-oriented interpretation. This makes himself

\(^{23}\) This analysis requires that t be allowed to denote thought chunks
as well as full propositional thoughts.
give rise to a self-oriented interpretation whenever him is a thought-oriented expression.

4. Summary and conclusion

I have argued for the following points in this paper.

I: Traditional conceptions of Binding Theory as restrictions on identity/dependency of syntactically determined reference are inadequate.

II: Part of the phenomena that Binding Theory was traditionally conceived to account for involves self-orientation.

III: Self-orientation is a property restricted to pronouns (including PRO), and is not possible for non-pronouns.

In arguing for these points, I have made the following proposal, intended to partially replace Binding Conditions B and C.

IV: Self-orientation derives from semantically determined reference to the bearer of a token thought. Thoughts are Context parameters, and can be controlled by Agents, by predicates, or inferentially. Thought-oriented pronouns refer to the bearer of a thought in virtue of being headed by the (phonologically null) D persp whose thought argument is identified with some other thought introduced independently. Self-orientation results when the pronoun is contained in a phrase which identifies the type
of that thought. Personal pronouns are argued to be ambiguous between a self-oriented interpretation and a non-self-oriented interpretation, while controlled PRO, it is suggested, is based on a thought-oriented pronoun.

The analysis presented in this paper extends the range of phenomena that can be accounted for beyond the data that have traditionally come under the purview of Binding Theory. In particular it explains the range of construal possibilities for R-expressions and pronouns which lack an overt antecedent, it accounts for the obligatory self-orientation of controlled PRO, and it explains the possibility of self-orientation for complex anaphors.

The analysis presented in this paper is of necessity in many respects incomplete. I have little doubt that making it more complete will ultimately require that it be revised, and may perhaps eventually lead to its being discarded altogether. I hope the considerations that have gone into the analysis, however, help to clarify some of the central questions of interpretation long left unaddressed by syntactic analyses of Binding Theory and to open up new paths for investigation into the nature of anaphoric relations, control, and related phenomena.
BIBLIOGRAPHY


—— (1967b?). "On the Logic of Self-Attribution" ??


Pica, P. (himself = his + self). ??


