

Free Indirect Discourse and ‘De Re’ Pronouns

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1. Background and Goal

In English, *John said that I feel sick today* cannot mean that John uttered “I feel sick today.” Recently, it has been observed (see Anand and Nevins 2004 and references cited there) that in some languages the corresponding sentence can mean precisely that. This suggests that at least in those languages attitude verbs such as *say* may quantify over contexts (and their embedded clause may be interpreted relative to a context, or contexts, different from the one relative to which the matrix clause is interpreted), in violation of Kaplan’s (1979) famous prohibition. Schlenker (1999, 2003) has argued that attitude verbs in all languages quantify over contexts, but the lexical properties of *I* and *today*, in languages such as English, prevent them from “shifting” their reference (this is why *I* and *today* in the above example refer to the speaker and the day surrounding the utterance time respectively). I argue that the notion ‘context’, as usually used in the relevant literature, is not fine-grained enough to capture subtle contrasts between Standard Indirect Discourse (embedding of a clause under an attitude verb; henceforth, SID) and Free Indirect Discourse (henceforth, FID). FID involves quantification over contexts, where ‘context’ should be understood in its “broad” sense, namely, as including a variable assignment.

FID is a literary style that narrators use to convey the point of view of a character in a story (usually, but not always, a written story). (1) illustrates this.

- (1) John bid me goodbye, and walked home. He would ask me to marry him today(, he thought).

John to himself: “I will ask Yael to marry me today.”

The material that appears in parentheses is optional; we can usually infer from the preceding text whose point of view is reported, and where or when the event of thinking or saying takes place. The paraphrase of the thought in (1) shows that *he* may be used to refer to whoever the attitude holder – in this case John – takes himself to be (the “embedded” author), the past tense (on *would*) – to the time where the attitude holder locates himself, *me/I* refers to the speaker (the “matrix” author)¹ and *today* is used to refer to the day surrounding the time where the attitude holder locates himself.

In many ways FID resembles SID. In SID, too, *he* can be used to refer to the embedded author, the past tense – to the time where the attitude holder locates himself, and *me/I* is used to refer to the matrix author. However, in SID, unlike FID, *today* must refer to the day surrounding the time where the speaker locates herself, not the day surrounding the time where the attitude holder locates himself. Thus, (2a) is a good paraphrase of (1), but (2b) is not.

- (2) a. John thought that he would ask me to marry him that day.
b. John thought that he would ask me to marry him today.

In short, *today* and *I* are interpreted relative to the speaker in SID; but in FID *I* is interpreted relative to the speaker, *today* is not (see Banfield 1982, Doron 1991).²

In this paper I observe additional contrasts between FID and SID, mainly regarding the behavior of pronouns. I argue that: (a) the English FID operator quantifies over “broad” contexts (and consequently over variable assignments); (b) as a result, pronouns in English FID usually do not receive their values from the assignment supplied by the utterance context; and (c) by contrast, attitude verbs in English do not quantify over “broad” contexts, and pronouns in complement clauses of such verbs may receive their values from the assignment supplied by the utterance context.

2. An Analysis of FID Along the Lines of Doron (1991)

Building on an idea in Banfield (1982), Doron (1991) proposes a theory of FID which roughly says the following. The embedded clause in FID is interpreted relative to two contexts: the utterance context (tied to the speaker), and an embedded context (tied to the attitude holder). In SID, by contrast, the embedded clause is interpreted relative to the utterance context. I think Doron’s proposal is essentially correct. However, there are certain issues (e.g., the interpretation of free 3rd person pronouns) about which Doron’s paper is not explicit (or not explicit enough). In what follows I try to make explicit what I think should be part of any theory of FID, the part that explains the behavior of free pronouns.

Doron’s proposal is couched within the framework of Situation Semantics. My own rendition of her proposal doesn’t make any essential use of that particular theory. At the risk of doing an injustice to Doron’s proposal, here is my rendition of it. All expressions are interpreted relative to two contexts (*c* and *C*; *C* being the utterance context), and a (possibly partial) variable assignment. In the default case, *c=C*. A context is understood in the “broad” sense, namely, as $\langle \text{author, (addressee,) world, time, location, \dots, assignment function} \rangle$, where the range of the assignment function is a set of entities salient for the author of the context in the world/time/location of the context. The literature on attitude reports usually uses the notion ‘context’ in its “narrow” sense. (By “narrow context” I mean: something that is like a broad context but lacks a variable assignment.)

The FID operator (which, I assume, is the “embedder” in FID constructions) is a universal quantifier over broad context-assignment pairs, and its complement clause denotes a function from such pairs to truth values. An attitude verb is a universal quantifier over narrow contexts (or perhaps over things that are even “smaller”), and its complement clause denotes a function from narrow contexts (or “smaller” things) to truth values. In addition to the usual rules we have the rules in (3) (of which (3c,d) are fairly standard), where *c* and *C* are any broad contexts, and *g* is any assignment:

- (3) (a) For any root node S , $\llbracket S \rrbracket^{c,C,g}$ is defined only if $c=C$, C is the utterance context, $g=\text{assignment}(c)$, and $\text{Dom}(g)$ is the set of indices that are syntactically free in S .³
- (b) $\llbracket I \rrbracket^{c,C,g}$ is $\text{author}(C)$; $\llbracket \text{today} \rrbracket^{c,C,g}$ is the day surrounding $\text{time}(c)$.
- (c) For any index j and variable (trace or pronoun) α , $\llbracket \alpha \rrbracket^{c,C,g}$ is defined only if $j \in \text{Dom}(g)$. When defined, $\llbracket \alpha \rrbracket^{c,C,g} = g(j)$.
- (d) For any branching node α , if the daughters of α are β and γ , and β dominates only an index j , $\llbracket \alpha \rrbracket^{c,C,g} = [\lambda x: \gamma \text{ is in the domain of } \llbracket \quad \rrbracket^{c,C,g[j \rightarrow x]} \cdot \llbracket \gamma \rrbracket^{c,C,g[j \rightarrow x]}]$ (where $g[j \rightarrow x]$ is just like g but for the possible exception that $g[j \rightarrow x](j)=x$).
- (e) For any index j , $\llbracket w_j \rrbracket^{c,C,g}$ is defined only if: (i) $g(j) \in D_s$; and (ii) whenever g and $\text{assignment}(c)$ agree on j , $g(j)=\text{world}(c)$.

Here is how the observed contrast between *I* and *today* is accounted for. Consider the SID in (4a) and the FID in (4b).

- (4) a. (John stared at me.) He thought that I would resign today.
 b. (John stared at me.) I would resign today(, he thought).

Assuming that the LF of the embedded clause in (4a) is: $[\text{that}_1 \ 1 \ I \ \text{will} \ \text{resign-}w_1 \ \text{today}]$ (where w_1 is the pronominal world argument of *will resign* and 1 – its syntactic binder), (4a) is interpreted as in (5), relative to c , C , and g . For simplicity, we ignore some of the context parameters that *think* quantifies over. (In section 4 we discuss how the embedded *past* “disappears”.)

- (5) For all worlds w compatible with what John believes in $\text{world}(c)$ at some time before $\text{time}(c)$ ($c=C$), $\llbracket I \ \text{will} \ \text{resign-}w_1 \ \text{today} \rrbracket^{c,C,g[1 \rightarrow w]} = 1$ (i.e., $\text{author}(C)$ (=the speaker) will resign in w at the day surrounding $\text{time}(C)$).

The pronoun w_1 is syntactically bound, so by (3c,d) it denotes w for every relevant world w . By (3b), *I* denotes $\text{author}(C)$; *today* denotes the day surrounding $\text{time}(c)$. By (3a) $c=C$, so $\text{time}(c)=\text{time}(C)$. The LF of the embedded clause in (4b) is: $[I \ \text{will} \ \text{resign-}w_1 \ \text{today}]$, and (4b) is interpreted as in (6), relative to c , C , and g .

- (6) For all broad context-assignment pairs $\langle c', g' \rangle$ such that c' is compatible with what John believes in $\text{world}(c)$ at some time before $\text{time}(c)$ ($c=C$) and $g'=\text{assignment}(c')$, $\llbracket I \ \text{will} \ \text{resign-}w_1 \ \text{today} \rrbracket^{c',C,g'} = 1$ (i.e., $\text{author}(C)$ (=the speaker) will resign at the day surrounding $\text{time}(c')$ in $\text{world}(c')$).

This time, w_1 has no syntactic binder but it is semantically bound: by (3c,e) it denotes $\text{world}(c')$, for every relevant c' ($\text{assignment}(c')=g'$, so they agree on 1 ; this means that $g'(1)$ is a world compatible with what John believes in the actual world). By (3b), *I* denotes $\text{author}(C)$, and *today* denotes, for every relevant c' , the day surrounding $\text{time}(c')$ ($c' \neq C$, so it is the day surrounding the time where John, not the speaker, locates himself).

The proposal also makes a nice prediction regarding definite descriptions. It is well known that in SID definite descriptions may have a ‘wide scope’ reading or a ‘narrow scope’ reading. But this is not so in FID (Doron 1991, Banfield 1982, Schlenker 1999, 2004), where only a ‘narrow scope’ reading is available. For example, in the SID in (7), *the dean* may be the actual dean or the dean according to Mary, but in the FID in (8), *the dean* is the dean according to Mary.

- (7) Mary believed that the dean was shy in his childhood.
 (8) The dean was shy in his childhood(, thought Mary).

(9) spells out the two interpretations of (7). In the ‘narrow’ interpretation, the pronominal world argument of *dean* is syntactically bound. In the ‘wide’ interpretation, it is syntactically free, and by (3c,e), it denotes world(c) ($g[1 \rightarrow w]$) and assignment(c) agree on 2, because assignment(c) = g. Since $c=C$, the world argument of *dean* denotes world(C) (the actual world).

- (9) a. ‘Narrow scope’ LF of embedded clause: [1 *the dean*- w_1 was shy- w_1]
 For all w compatible with what Mary believed in world(C), \llbracket *the dean*- w_1 was shy- w_1 $\rrbracket^{c,C,g[1 \rightarrow w]} = 1$ (the dean in w was shy in w).
 b. ‘Wide scope’ LF of embedded clause: [1 *the dean*- w_2 was shy- w_1]
 For all w compatible with what Mary believed in world(C), \llbracket *the dean*- w_2 was shy- w_1 $\rrbracket^{c,C,g[1 \rightarrow w]} = 1$ (the dean in world(C) was shy in w).

(10) spells out the interpretation of (8). The world argument of *dean* is syntactically free (though semantically bound), so it doesn’t matter how we index it: by (3c,e) it denotes world(c’) no matter what its index is.

- (10) LF of embedded clause: [*the dean*- $w_{1/2}$ was shy- w_1]
 For all $\langle c', g' \rangle$ such that c' is compatible with what Mary believed in world(C) and $g' = \text{assignment}(c')$, \llbracket *the dean*- $w_{1/2}$ was shy- w_1 $\rrbracket^{c',C,g'} = 1$ (the dean in world(c') was shy in world(c')).

Why can’t the free pronominal world argument of *dean* be interpreted as world(C) in (10)? According to the theory sketched here, this is because it has no access to the assignment supplied by the “matrix” (i.e., utterance) context. I argue that this is characteristic of pronouns in FID: in the default case, their values are not fixed by the matrix assignment, and they cannot be interpreted ‘de re’.

3. More FID/SID Contrasts: ‘De Re’ Readings of Pronominal Expressions

I use the term ‘de re’ pronoun to talk about a syntactically free pronoun in an “attitude” environment that reflects the speaker’s point of view (e.g., w_2 in (9b)). A “null” pronoun is a pronoun that is interpreted as a world/time where the attitude holder locates himself (e.g., w_1 in (5) and (6); the past tense in (1)), or an individual he takes himself to be (e.g., *he* in (1)). “Null” pronouns can be

syntactically bound (e.g., w_1 in (5)) or free (e.g., w_1 in (6)). I use the term ‘de dicto’ pronoun to talk about a syntactically free pronoun that is not “null”, but still reflects the attitude holder’s point of view (examples are given below). In this section I show that pronouns in FID are usually not ‘de re’ pronouns. At a first glance, this claim seems false.

3.1. Apparent ‘de re’ readings of 3rd person pronouns in FID

If we construct an example of FID with a syntactically free 3rd person pronoun, we get the impression that it is possible to treat it as a ‘de re’ pronoun.

- (11) John looked at Bill. He wanted to tell him something now, he could feel it.
John: “This guy wants to tell me something now, I can feel it.”

The second sentence in (11) is FID. Since John is reported to have a thought about Bill, it makes sense to interpret *he* as referring to Bill. This seems to indicate that *he* is a ‘de re’ pronoun in (11). Furthermore, a free 3rd person pronoun in FID seems to behave in the same way as it does in SID in scenarios involving identification errors. To see this, let us first look at the SID in (12) (constructed after Quine’s 1956 famous example), which has a reading that doesn’t imply that John has contradictory beliefs. This reading comes about when John sees Mary on two different occasions and fails to recognize that he sees the same person. Based on the first encounter he attributes to Mary the property of being a spy, and based on the second encounter he attributes to her the property of not being a spy.

- (12) John believes that Mary is a spy, and at the same time, he believes that Mary is not a spy.

If we replace *Mary* with a pronoun that refers to Mary, we get the same effect.

- (13) John believes that she is a spy, and at the same time, that she is not a spy.

FID is different. A contradictory-beliefs reading arises with a name; but a reading that doesn’t imply contradictory beliefs is possible with a pronoun.

- (14) #Mary was a spy(, thought John listening to a recording of Mary’s voice).
Mary wasn’t a spy(, thought John, listening at the same time to a different recording of Mary’s voice).
(15) She was a spy(, thought John, listening to a recording of Mary’s voice).
She wasn’t a spy(, thought John, listening at the same time to a different recording of Mary’s voice).

The oddity of (14) suggests that it attributes to John contradictory beliefs. This in turn suggests that names in FID, like definite descriptions (see (8)), are interpreted as having ‘narrow’ scope. (15), however, does not imply that John entertains contradictory beliefs. Therefore, (15) seems to indicate that *she* may receive a ‘de re’ interpretation in FID. Nevertheless, I claim that this pronoun is not a ‘de re’

pronoun (but rather a ‘de dicto’ pronoun). I now introduce data that show that 3rd person pronouns and the present tense cannot be ‘de re’ pronouns in FID.

3.2. Gender identification errors

In scenarios where an individual forms a belief about someone regarding whose gender he is mistaken, we observe a contrast between FID and SID, when we report that. Suppose John sees Bill (a male individual) in a dress, and mistakes him for a female individual. John mutters: “Really, she looks great, and she is staring at me.” If we report this using FID, there is a preference for using *she*, and not *he*, to refer to Bill (even though for us, Bill is a male).⁴

- (16) John was convinced that Bill was a woman. Really, she/#he looked great(, he muttered), and she/#he was staring at him.

This is explained if 3rd person pronouns in FID are not ‘de re’ pronouns. If it were possible to treat *he* as a ‘de re’ pronoun here we would have no preference for using *she*, since we, unlike John, take Bill to be a male. *She* is a ‘de dicto’ pronoun here, reflecting John’s point of view rather than the speaker’s. Even if we don’t tell our audience about John’s mistake, they will still be able to reconstruct what he said (and infer his mistake). But if we report what happened using SID, we have to use *he* (which in this case is a ‘de re’ pronoun, reflecting the speaker’s point of view).

- (17) John didn’t realize that Bill was a man. He said that he/#she looked great and that he/#she was staring at him.

One way to rescue *she* in (17) is to treat it as an E-type pronoun, but this is possible only if there is an overt antecedent preceding *she*, as in (18), where the antecedent is *a woman* and *she* is shorthand for *the woman he thought he saw*.

- (18) John looked at Bill and thought he saw a woman. He said that he/she looked great, and that he/she was staring at him.

How do we know that *she* is not an E-type pronoun in (16)? Without an overt antecedent, *she* would still be acceptable, as shown in (19).

- (19) John didn’t realize that Bill was a man. Really, she/#he looked great(, he muttered), and she/#he was staring at him.

3.3. The unavailability of ‘double access’ readings in FID

It is well known that in English SID, a present tense embedded under a past tense refers to a time that overlaps the utterance time. This is illustrated in (20). Such readings are called ‘double access’ readings, because of the inference in (20b), which requires at least two times to be included in the time of the pregnancy.

- (20) Three days ago, John found out that Mary is pregnant.
 ==> a. John to himself: “Mary is pregnant (now)”
 ==> b. Mary’s pregnancy stretches (at least) from three days ago to the utterance time.

In this respect, the present tense differs dramatically from the past tense in English. This is illustrated by the contrast between (21) and (22).

- (21) Two years ago, John found out that Mary was pregnant.
 ==> John to himself: “Mary is pregnant (now)”

- (22) #Two years ago, John found out that Mary is pregnant.

(21) is fine because English, being a Sequence-of-Tense (SOT) language, allows a tense embedded under an agreeing tense to be a “null” time-denoting pronoun (i.e., a relative “now”) rather than an “anteriority” time-denoting pronoun. Since *find out* is factive and the finding out is in the past, the actual pregnancy takes place in the past. (22) is odd because the time denoted by the present tense (the pregnancy time) is required to stretch from two years ago into the utterance time. This contradicts common knowledge regarding normal (human) pregnancies.

This explanation of the facts is possible under the assumption (Abusch 1997, Heim 1994 among others) that the English present tense in SID is a ‘de re’ pronoun whose presuppositions require it to denote a time overlapping the utterance time.⁵ Now, if we look at tenses in English FID, we notice that: (a) present-under-past is marginal at best;⁶ (b) past-under-past and present-under-present (where the embedding present may be a “historical” present) are acceptable; and (c) in any event, an embedded present need not denote a time that overlaps the time in which the story is told (the utterance time).

- (23) a. #She is pale today, said Mary as she stared into the horizon.
 b. She was pale today(, said Mary as she stared into the horizon).
 c. She is pale today(, says Mary, staring into the horizon).
 Mary: “I am pale today.”

(23b) is good because the embedded past is “null” (a SOT effect, cf. (21)). Neither (23c) nor the marginal (23a) (provided we accept it) imply that the time of Mary’s paleness (or whatever it is that leads her to say she is pale) extends into the time where the story is told. This is explained if the present in FID cannot be interpreted ‘de re’. The marginality of (23a) suggests that there is a preference for a “null” present in FID, and that (23c) is good because of that: morphologically, the matrix tense (silent or not) is present, and it agrees with the embedded tense.

3.4. Condition B/C effects

Condition B of the Binding Theory usually prevents co-arguments of a verb from having the same reference (unless one of them is a reflexive pronoun). This is

why usually, *She/Mary likes her* cannot mean that Mary likes Mary. This effect is preserved in complement clauses of attitude verbs, as shown below. Consider the following scenario. John is looking at Mary. He doesn't recognize her; in fact he has no idea who he is looking at. He mutters: "Mary doesn't know her. I'm sure of this." If we report what happened to someone else, there is a contrast between the resulting FID and SID reports.

- (24) John looked at Mary. He didn't recognize her. #He muttered to himself that Mary/she didn't know her and that he was sure of that.
 (25) John looked at Mary. He didn't recognize her. Mary/she didn't know her; he was sure of this(, he muttered to himself).

(24) is not a good way to report what John said, because the embedded *she* and *her* are 'de re' pronouns, and reflect our point of view (as does *Mary*). Since we know that John is looking at Mary, a Condition B violation arises. (25) is good because neither *she* nor *her* are 'de re' pronouns. Rather, they are 'de dicto' pronouns, and reflect John's point of view (as does *Mary*). As such they may refer to different individuals. Even if the audience of (25) is not aware of John's mistake, they will still be able to reconstruct what he said (and infer his mistake). This doesn't seem to be possible in (24). Notice that (24) can be rescued using the E-type strategy, but this requires an overt antecedent for *she/her* (cf. (18)).

(26)-(27) make a similar point regarding Condition C (which often prevents a pronoun from being coreferential with a name it c-commands).

- (26) John looked at Mary. He didn't recognize her. #He thought that she didn't know Mary.
 (27) John looked at Mary. He didn't recognize her. She didn't know Mary(, he thought).

3.5. The antecedent options of *it/that*

It is well known that *it* and *that* may refer back to a proposition, as shown in (28).

- (28) John believes that Mary is a spy. But *it/that* isn't true. Mary is not a spy.

The proposition that serves as the antecedent of *it/that* is 'that Mary is a spy'. For convenience, let us represent this proposition as the ordered pair <Mary, SPY>.

For many (though admittedly not all) speakers, there is a contrast between FID and SID in terms of the kind of propositions that may serve as antecedents for *it/that* (cf. Sharvit 2003). This is best illustrated in a scenario where an individual sees a reflection of himself but thinks that he is looking at someone else, as reported in (29) and (30). The second sentence in (29) is SID.

- (29) John looked in the mirror, and failed to realize that what he was looking at was his own reflection. He thought that he was sick. *It/that* wasn't true. John was perfectly fine. ([*it/that*] = <[[*he*]] (=John), SICK>)

This text is unproblematic. *It/that* refers to the proposition <John, SICK> which is formed by taking the referent of *he* and the SICK property. Since *he* is a ‘de re’ pronoun, the referent of *he* is John. *It/that wasn’t true* denies the truth of <John, SICK>. When we switch to FID, we get a different result:

- (30) John looked in the mirror, and failed to realize that what he was looking at was his own reflection. He was sick(, thought John). *It/that wasn’t true.*
 #John was perfectly fine. ($\llbracket it/that \rrbracket = \langle \llbracket he \rrbracket (\neq \text{John}), \text{SICK} \rangle$)

The result is odd because we are negating the proposition formed of the referent of *he* and SICK. But the referent of *he* is not John now. This is because *he* is not interpreted ‘de re’ (but rather ‘de dicto’, from John’s point of view).

To sum up, pronouns can be interpreted ‘de re’ in SID, but not in FID. This is explained by our rendition of Doron’s proposal. ‘De re’ pronouns are free pronouns that receive their values from the matrix assignment. Quantifying over broad contexts in FID means that syntactically free pronouns “trapped” in FID do not receive their values from the matrix assignment. Some of them are “null”, and those that are not are ‘de dicto’ pronouns.

4. The proposal

4.1. General assumptions

In addition to the rules in (3), we need a system that accounts for “null” pronouns. For example (see (1)), we need to account for the fact that a past embedded under another past in English may refer to a time where the attitude holder locates himself (simultaneous ‘de nunc’ interpretation, to borrow von Stechow’s (2003) term), and that a 3rd person pronoun may refer to whoever the attitude holder takes himself to be (‘de se’ interpretation). To this end, I assume a feature deletion mechanism (in the style of Schlenker 1999, Heim 2001, and von Stechow 2003; cf. Kratzer 1998). More concretely, I assume that in unembedded environments *past* and *he* carry two indices (the subscripts in (31)-(32)), and features (the superscripts in (31)-(32)) that provide presuppositions applicable to the indices (‘<’ stands for the +PAST feature, and ‘3M’ stands for 3rd person masculine).

- (31) For any indices k, j , $\llbracket past_{k,j}^{<} \rrbracket^{c,C,g}$ is defined only if:
- $g(k)$ and $g(j) \in D_i$,
 - $g(j)$ precedes $g(k)$, and
 - whenever g and assignment(c) agree on k , $g(k) = \text{time}(c)$.
- When defined, $\llbracket past_{k,j}^{<} \rrbracket^{c,C,g} = g(j)$.
- (32) For any indices k, j , $\llbracket he_{k,j}^{3M} \rrbracket^{c,C,g}$ is defined only if:
- $g(k)$ and $g(j) \in D_e$,
 - $g(j)$ is a male in c , and
 - whenever g and assignment(c) agree on k , $g(k) = \text{author}(c)$.

When defined, $\llbracket he_{kj}^{3M} \rrbracket^{c,C,g} = g(j)$.

In SOT languages such as English, when *past* is c-commanded by an agreeing tense, and in Sequence-of-Person languages such as English, when *he* is c-commanded by an agreeing phrase, they may “lose” the second index (and with it, the relevant superscripts/presuppositions), as long as the first index is bound (syntactically or semantically).^{7,8} Then, they are interpreted as follows:

- (33) For any k , $\llbracket past_k^{\leftarrow} \rrbracket^{c,C,g}$ is defined only if: $g(k) \in D_i$ and whenever g and assignment(c) agree on k , $g(k) = \text{time}(c)$. When defined, $\llbracket past_k^{\leftarrow} \rrbracket^{c,C,g} = g(k)$.
- (34) For any k , $\llbracket he_k^{3M} \rrbracket^{c,C,g}$ is defined only if: $g(k) \in D_e$ and whenever g and assignment(c) agree on k , $g(k) = \text{author}(c)$. When defined, $\llbracket he_k^{3M} \rrbracket^{c,C,g} = g(k)$.

Our assumptions about SID are not very different from von Stechow’s (among others). Still, we go over some examples in detail so that the reader can appreciate the predictions concerning FID. We predict SID to support ‘de re’ pronouns, FID to support ‘de dicto’ pronouns, and both FID and SID to support “null” pronouns.

4.2. SID

(35) is a well-known example, which illustrates a ‘de re’/‘de se’ ambiguity exhibited by 3rd person pronouns embedded under attitude verbs.

- (35) Kaplan believed that his pants were on fire.
 a. Kaplan to himself: “this guy’s pants are on fire” (‘de re’)
 b. Kaplan to himself: “my pants are on fire” (‘de se’/‘null’)

(36) and (37) provide the LFs of (35a) and (35b) respectively (where the verbs take time arguments in addition to world arguments). We assume that *believe* is a universal quantifier over world-time-individual triples, and its clausal complement denotes a function from such triples to truth values. We also assume that the abstraction indices needed for that are freely supplied by the syntax (4 is an individual-abtractor, 2 – a time-abtractor, and 1 – a world-abtractor):

- (36) de re: $Kaplan^{3M} past_{6,7}^{\leftarrow} believe-w_8 \ 4 \ 2 \ 1[his_{9,3}^{3M} pants past_2^{\leftarrow} be-w_1 \ on \ fire]$
 (37) de se: $Kaplan^{3M} past_{6,7}^{\leftarrow} believe-w_8 \ 4 \ 2 \ 1[his_4^{3M} pants past_2^{\leftarrow} be-w_1 \ on \ fire]$

In (37) *he* is syntactically bound, and the past tense is syntactically bound in (36) and (37). The relevant features are deleted. This is allowed by our deletion mechanism, as *past* agrees with *past* and *he/his* agrees with *Kaplan* (both being 3M). In (36) *he/his* is free and retains its features. We thus obtain (38) and (39).

- (38) ‘De re’ interpretation (corresponding to (36)):
 When defined, $\llbracket Kaplan^{3M} past_{6,7}^{\leftarrow} believe-w_8 \ 4 \ 2 \ 1[his_{9,3}^{3M} pants past_2^{\leftarrow} be-w_1 \ on \ fire] \rrbracket^{c,C,g} = 1$ iff for all individual-time-world triples $\langle x,t,w \rangle$

compatible with what Kaplan believes in world(C) at $\llbracket \text{past}_{6,7} \rrbracket^{c,C,g}$, $\llbracket \text{his}_{9,3}^{3M} \text{ pants } \text{past}_2 \text{ be-}w_1 \text{ on fire} \rrbracket^{c,C,g[4 \rightarrow x, 2 \rightarrow t, 1 \rightarrow w]} = 1$.

Iff for all $\langle x,t,w \rangle$ compatible with what Kaplan believes in world(C) at $\llbracket \text{past}_{6,7} \rrbracket^{c,C,g}$, the pants of $g(3)$ are on fire in w at t .

(39) ‘De se’ interpretation (corresponding to (37)):

When defined, $\llbracket \text{Kaplan}^{3M} \text{ past}_{6,7} \text{ believe-}w_8 \text{ } 4 \text{ } 2 \text{ } 1[\text{his}_{4}^{3M} \text{ pants } \text{past}_2 \text{ be-}w_1 \text{ on fire}] \rrbracket^{c,C,g} = 1$ iff for all individual-time-world triples $\langle x,t,w \rangle$ compatible with what Kaplan believes in world(C) at $\llbracket \text{past}_{6,7} \rrbracket^{c,C,g}$, $\llbracket \text{his}_{4}^{3M} \text{ pants } \text{past}_2 \text{ be-}w_1 \text{ on fire} \rrbracket^{c,C,g[4 \rightarrow x, 2 \rightarrow t, 1 \rightarrow w]} = 1$.

Iff for all $\langle x,t,w \rangle$ compatible with what Kaplan believes in world(C) at $\llbracket \text{past}_{6,7} \rrbracket^{c,C,g}$, the pants of x are on fire in w at t .

The interpretation of *he/his* in (36) depends on $g[4 \rightarrow x, 2 \rightarrow t, 1 \rightarrow w]$ (by (32)), which agrees with assignment(c) on the value assigned to 3 (by (3a), $g = \text{assignment}(c)$). Since $c=C$ (by (3a)), we get a ‘de re’ pronoun. In (37), *he/his* is bound and it is interpreted as whoever Kaplan takes himself to be (by the semantics of *believe*). Since *past* is bound, it is interpreted as Kaplan’s “now”.

It is important to bear in mind that (38) is a mere simplification of the “correct” ‘de re’ analysis, according to which *he* is a semantic argument of *believe* (see Cresswell and von Stechow 1982, among others). Kaplan may fail to identify the referent of *he* properly (cf. (12), (13)). This requires that the description that Kaplan uses for the referent of *he* be the same as the description that actually fits that referent, though it may pick out different individuals in the actual world and in the worlds compatible with Kaplan’s beliefs.⁹

(40) “Correct” ‘de re’ interpretation:

There is a suitable individual-concept k (e.g., $[\lambda x \in D_e . \lambda t \in D_i . \lambda w \in D_s . \text{the unique } y \text{ such that } x \text{ sees } y \text{ in } w \text{ at } t]$) such that $k(\text{Kaplan})(\llbracket \text{past}_{6,7} \rrbracket^{c,C,g})(\text{world}(C)) = g(3)$, and for all $\langle x,t,w \rangle$ compatible with what Kaplan believes in world(C) at $\llbracket \text{past}_{6,7} \rrbracket^{c,C,g}$, the pants of $k(x)(t)(w)$ are on fire in w at t .

4.3. FID

Following a suggestion in Schlenker 1999, I assume that the (silent) FID operator (much like *believe*), takes an individual (the protagonist of the story – the attitude holder), a world (in which the story takes place), and a time (in which the story takes place) as arguments, and then a fourth argument, a “clausal” one. I assume that feature deletion under agreement works here too: a c-commanding past tense may trigger “deletion” of an embedded past,¹⁰ and a c-commanding 3rd person masculine noun phrase may trigger “deletion” of a 3rd person masculine pronoun. For example, the FID *he liked Mary(, thought John)* may be represented as in (41). We will see below that the undeleted indices are semantically bound as required by the deletion mechanism. (SW is the world in which the story takes place which, for convenience, we take to be the actual world.)

(41) $FID_{\langle John^{3M}, past_{ij}^{\leq}, SW \rangle} [he_k^{3M} past_i^{\leq} like-w_n Mary]$

As a first attempt, let us take (42) to be the semantics of the FID operator.

(42) For any individual x , time t , world w , and function f from broad context-assignment pairs to truth values, $\llbracket FID \rrbracket^{c,C,g}(x)(t)(w)(f) = 1$ iff for all context-assignment pairs $\langle c', g' \rangle$ such that c' is compatible with what x believes/says in w at t and $g' = \text{assignment}(c')$, $f(c')(g') = 1$.

Notice that there is a type mismatch between what the clausal complement of FID denotes according to (41) (i.e., something of type 't') and what FID requires it to denote according to (42). The rule in (43) resolves this mismatch, and also enables feature "deletion" (as the undeleted indices become semantically bound).

(43) MFA ("Monstrous" Functional Application; cf. Heim and Kratzer 1998)
If α is a branching node whose daughters are β, γ and $[\lambda c' . \lambda g' . \llbracket \gamma \rrbracket^{c',C,g'}]$ is in the domain of $\llbracket \beta \rrbracket^{c,C,g}$, then $\llbracket \alpha \rrbracket^{c,C,g} = \llbracket \beta \rrbracket^{c,C,g}([\lambda c' . \lambda g' . \llbracket \gamma \rrbracket^{c',C,g'}])$.

Now let us look at (44), which is ambiguous in a way similar to (35).

(44) He looked tired today(, thought John).

a. John to himself: "I look tired today." ('de se')

b. John to himself: "this guy looks tired today." ('de dicto')

(45) 'de se' LF: $FID_{\langle John^{3M}, past_{5,6}^{\leq}, SW \rangle} [he_1^{3M} past_2^{\leq} look-w_3 tired today]$

(46) 'de dicto' LF: $FID_{\langle John^{3M}, past_{5,6}^{\leq}, SW \rangle} [he_{1,4}^{3M} past_2^{\leq} look-w_3 tired today]$

(47) 'De se' interpretation (corresponding to (45)):

When defined, $\llbracket FID_{\langle John^{3M}, past_{5,6}^{\leq}, SW \rangle} [he_1^{3M} past_2^{\leq} look-w_3 tired today] \rrbracket^{c,C,g} = 1$ iff for all context-assignment pairs $\langle c', g' \rangle$ such that c' is compatible with what John believes at $\llbracket past_{5,6}^{\leq} \rrbracket^{c,C,g}$ in world(C) and $g' = \text{assignment}(c')$, $\llbracket he_1^{3M} past_2^{\leq} look-w_3 tired today \rrbracket^{c',C,g'} = 1$.

Iff for all $\langle c', g' \rangle$ such that c' is compatible with what John believes at $\llbracket past_{5,6}^{\leq} \rrbracket^{c,C,g}$ in world(C) and $g' = \text{assignment}(c')$, $\text{author}(c')$ looks tired in world(c') at time(c') at the day surrounding time(c').

(48) 'De dicto' interpretation (corresponding to (46)):

When defined, $\llbracket FID_{\langle John^{3M}, past_{5,6}^{\leq}, SW \rangle} [he_{1,4}^{3M} past_2^{\leq} look-w_3 tired today] \rrbracket^{c,C,g} = 1$ iff for all context-assignment pairs $\langle c', g' \rangle$ such that c' is compatible with what John believes at $\llbracket past_{5,6}^{\leq} \rrbracket^{c,C,g}$ in world(C) and $g' = \text{assignment}(c')$, $\llbracket he_{1,4}^{3M} past_2^{\leq} look-w_3 tired today \rrbracket^{c',C,g'} = 1$.

Iff for all $\langle c', g' \rangle$ such that c' is compatible with what John believes at $\llbracket past_{5,6}^{\leq} \rrbracket^{c,C,g}$ in world(C) and $g' = \text{assignment}(c')$, $g'(4)$ looks tired in world(c') at time(c') at the day surrounding time(c').

In (45) he has a free index and a deleted feature; its value is fixed by $\text{assignment}(c')$ (see (34)) as $\text{author}(c')$. In (46) he has two free indices and no deleted features; its value is fixed by $\text{assignment}(c')$ (see (32)) as some male in c' .

But according to (48), there is no connection at all between the value assigned by assignment(c') to *he* and the value assigned to it by assignment(C). Technically, we should establish such a connection (since John is acquainted with the referent of *he*). We want the description that John uses for the referent of *he* to be the description that actually fits that referent (as we do in ‘de re’ belief reports, see (40)), though this description may pick out different individuals in the actual context and in the contexts compatible with John’s beliefs. Therefore, we have to enrich the semantics of *FID* with a presupposition that guarantees this (see (49)-(50)). We thus obtain (51) as the relevant presuppositions of (46).

- (49) Revised semantics for the FID operator:
 For any individual x , time t , world w and function f such that f is a function from broad context-assignment pairs to truth values, $\llbracket FID \rrbracket^{c,g}(x)(t)(w)(f)$ is defined only if all context-assignment pairs $\langle c', g' \rangle$ such that c' is compatible with what x believes/says in w at t and $g' = \text{assignment}(c')$, are compatible with C relative to $\langle x, t, w \rangle$.
 When defined, $\llbracket FID \rrbracket^{c,g}(x)(t)(w)(f) = 1$ iff for all context-assignment pairs $\langle c', g' \rangle$ such that c' is compatible with what x believes in w at t and $g' = \text{assignment}(c')$, $f(c')(g') = 1$.
- (50) c' is compatible with C relative to $\langle x, t, w \rangle$ iff: for every j in $\text{Dom}(\text{assignment}(c'))$ there is a suitable concept k_j , such that:
- (i) $\text{assignment}(C)(j) = k_j(\langle x, t, w \rangle)$;
 - (ii) $\text{assignment}(c')(j) = k_j(\langle \text{author}(c'), \text{time}(c'), \text{world}(c') \rangle)$; ¹¹ and
 - (iii) whenever $\text{assignment}(c')(j) = \text{author}(c')$, $\text{assignment}(C)(j) = x$.
- (51) For all $\langle c', g' \rangle$ such that c' is compatible with what John believes at $\llbracket \text{past}_{5,6} \rrbracket^{c,g}$ in $\text{world}(C)$ and $g' = \text{assignment}(c')$:
- (a) $g'(1) = k_1(\text{author}(c'))(\text{time}(c'))(\text{world}(c')) = \text{author}(c')$;
 - (b) $g'(1) = k_1(\text{John})(\llbracket \text{past}_{5,6} \rrbracket^{c,g})(\text{world}(C)) = \text{John}$;
 - (c) $g'(4) = k_4(\text{author}(c'))(\text{time}(c'))(\text{world}(c'))$; and
 - (d) $g'(4) = k_4(\text{John})(\llbracket \text{past}_{5,6} \rrbracket^{c,g})(\text{world}(C))$.

Accordingly, under the ‘de dicto’ reading, John may “disagree” with the speaker regarding the identity of the individual with whom he is acquainted.

In sum, our system predicts that a ‘de dicto’ pronoun is possible in FID, but not in SID, where free pronouns in the embedded clause are ‘de re’ pronouns. Both SID and FID admit ‘de se’/‘de nunc’ pronouns (which are bound syntactically and/or semantically). The reader may wonder why we designed the system in such a way so as to have the reference of free pronouns in FID be fixed by an assignment different from the matrix assignment (in other words, Why have we “created” ‘de dicto’ pronouns?). And indeed, for cases such as (44b), a system that treats *he* as a ‘de re’ pronoun (whose value is fixed by the matrix assignment) would work just as well. The crucial job done by the embedded assignment becomes apparent when we look at those cases (discussed in section 3) where FID and SID contrast with each other with respect to the interpretation of free pronouns. We now look at these examples again.

4.4. Explaining FID/SID contrasts

In the scenario where John stares at Bill and thinks that he is a woman (3.2), we noted a contrast between FID and SID with respect to the pronoun used to refer to Bill. The predicted interpretations are these ('3F' stands for 3rd person feminine).

- (52) John said that he looked great. (cf. 17)
 For all $\langle x, t, w \rangle$ compatible with what John said in world(C), $\llbracket he_{3,4}^{3M} \text{ past}_2^{\leftarrow} \text{ look-}w_1 \text{ great} \rrbracket^{c,C,g[1 \rightarrow w, 2 \rightarrow t]} = 1$.
- (53) She looked great(, he said). (cf. 16)
 For all $\langle c', g' \rangle$ such that c' is compatible with what John said in world(C) and $g' = \text{assignment}(c')$, $\llbracket she_{3,4}^{3F} \text{ past}_2^{\leftarrow} \text{ look-}w_1 \text{ great} \rrbracket^{c',C,g'} = 1$.

In the SID case, *he* is interpreted 'de re' (and refers to Bill – a male in the actual world), but in the FID case, we have to use *she* in order to convey John's point of view (and John thinks he is looking at a female).

Similarly, when a present tense is embedded under an attitude verb (in English), it is interpreted 'de re'. Not so in FID (see discussion in 3.3).

- (54) a. John found out that Mary is pregnant.
 b. Mary is pregnant(, John is/#was thinking).

We assume that the present tense carries a -PAST feature, and that it may lose this feature under agreement. We get (56) and (57) for (54a) and (54b) respectively.

- (55) $\llbracket pres_{i,j}^0 \rrbracket^{c,C,g}$ is defined only if $g(j)$ overlaps $g(i)$ and $g(i) = \text{time}(c)$. When defined, $\llbracket pres_{i,j}^0 \rrbracket^{c,C,g} = g(j)$.
- (56) For all $\langle x, t, w \rangle$ compatible with what John believed in world(C), $\llbracket Mary \text{ pres}_{3,5}^0 \text{ be pregnant-}w_1 \rrbracket^{c,C,g[1 \rightarrow w]} = 1$ ($\llbracket pres_{3,5}^0 \rrbracket^{c,C,g[1 \rightarrow w]}$ overlaps $\text{time}(C)$)
- (57) For all $\langle c', g' \rangle$ s.t. c' is compatible with what John believes in C and $g' = \text{assignment}(c')$, $\llbracket \dots \text{ pres}_3^0 \dots \text{ pregnant-}w_1 \rrbracket^{c',C,g'} = 1$ ($\llbracket pres_3^0 \rrbracket^{c',C,g'} = \text{time}(c')$)

I do not know where the preference for a "null" present (rather than a 'de dicto' present, which would show itself in present-under-past FID; cf. (23a)) comes from, but the crucial point here is that the system correctly bans 'de re' present tense from FID (see Schlenker 2004 for a different view).

Regarding Condition B/C effects (3.4), the explanation for the contrast between (24) and (25) is based on the different points of view reflected by them.

- (58) #John muttered to himself that she didn't know her (cf. 24)
 For all $\langle x, t, w \rangle$ compatible with what John said in world(C), $\llbracket \text{not } she_{4,5}^{3F} \text{ past}_2^{\leftarrow} \text{ know-}w_1 \text{ her}_{4,7}^{3F} \rrbracket^{c,C,g[1 \rightarrow w, 2 \rightarrow t]} = 1$.
- (59) She didn't know her(, he muttered to himself). (cf. 25)
 For all $\langle c', g' \rangle$ such that c' is compatible with what John said in world(C) and $g' = \text{assignment}(c')$, $\llbracket \text{not } she_{4,5}^{3F} \text{ past}_2^{\leftarrow} \text{ know-}w_1 \text{ her}_{4,7}^{3F} \rrbracket^{c',C,g'} = 1$.

In (58) $c=C$, and the pronouns are both ‘de re’ pronouns. Since we know John is looking at Mary, $\llbracket she_{4,5}^{3F} \rrbracket^{c,C,g} = \llbracket her_{4,7}^{3F} \rrbracket^{c,C,g}$ (=Mary). In (59), where the pronouns are interpreted ‘de dicto’, the values supplied by g for these pronouns are different. In other words, $\llbracket she_{4,5}^{3F} \rrbracket^{c,C,g} \neq \llbracket her_{4,7}^{3F} \rrbracket^{c,C,g}$.

Finally, consider again the antecedent options of *it/that* (section 3.5, (29)-(30)). When *he* is interpreted ‘de re’ (in the SID case), we get a good result, because *it* refers to the proposition <John, SICK>. But when *he* is interpreted ‘de dicto’, we get an odd result because *it* cannot refer to this proposition.

(60) John thought that he was sick. It wasn’t true. John was perfectly fine.
 $\llbracket it/that \rrbracket^{c,C,g} = \langle \llbracket he_{6,3}^{3M} \rrbracket^{c,C,g} (=John), SICK \rangle$ (29)

(61) He was sick(, thought John). It wasn’t true. #John was perfectly fine.
 $\llbracket it/that \rrbracket^{c,C,g} = \langle \llbracket he_{6,3}^{3M} \rrbracket^{c,C,g} (\neq John), SICK \rangle$ (30)

To sum up, the idea that the FID operator is a universal quantifier over context-assignment pairs, where ‘context’ is understood broadly, allows us to disallow ‘de re’ pronouns in FID. Recall, however, that *I* is interpreted in FID as the author of the matrix context. This is explained in the following way. By adding an index to *I* we make it a variable (cf. Heim 2001). By replacing the relevant part of (3b) with (62), we render it an inherently ‘de re’ pronoun.

(62) For any index j , $\llbracket I_j \rrbracket^{c,C,g}$ is defined only if $\text{assignment}(C)(j) = \text{author}(C)$.
 When defined, $\llbracket I_j \rrbracket^{c,C,g} = g(j)$.

The presuppositions in (62) and in (49)) together guarantee the right interpretation of *I*. Let us look at (1) (*he would ask me₃ to marry him*) again. By the presupposition in (62), $\text{assignment}(C)(3)$ is the speaker. The embedded assignment may assign the index 3 a different value (reflecting the fact that John might fail to recognize me). Still, the description that John uses to describe me to himself has to hold of me in the actual context as well (by (49)). *You* has a similar presupposition regarding the addressee.

4.5. Can ‘de dicto’ pronouns account for ‘de se’/‘de nunc’ readings in FID?

There is a debate in the literature (Lewis 1979, Chierchia 1989, Reinhart 1991, Percus and Sauerland 2003, among others) concerning whether genuine “null” (‘de se’/‘de nunc’) overt pronouns are really needed in the grammar of English. For example, it has been suggested that the ‘de se’ reading of *Kaplan believes that his pants are on fire* is a special case of the ‘de re’ reading, where *he/his* happens to refer to the attitude holder, and the attitude holder happens to know that he is the person he is in contact with. Therefore, only a ‘de re’ LF is needed.

A similar question arises for tenses. Given that tenses may be interpreted ‘de re’ (recall ‘double access’ readings), can a ‘de re’ interpretation of a past tense account for simultaneous ‘de nunc’ readings? Abusch (1997) shows that this is not always possible. Crucially, in the following example, the most deeply embedded past tense (under the most natural interpretation of the sentence) refers

to a time of an event that occurs after the utterance time. A ‘de re’ interpretation of the past tense would require it to refer to a time before the utterance time.

- (63) A week ago, John decided that in ten days, during breakfast, he would tell his mother that he loved her.

This means that we need to assume a feature deletion mechanism (or some such mechanism, with the same effects) that allows the embedded tenses to be interpreted without their anteriority presuppositions.

- (64) *John* $past_{4,5}^<$ *decide* 2 *he* $past_2^{\neq}$ *will tell his mother* 3 *he* $past_3^{\neq}$ *love her*

Since we have introduced ‘de dicto’ pronouns, it makes sense to ask, can we claim that ‘de se’/‘de nunc’ readings of FID are always special cases of ‘de dicto’ readings? There are data that show that the answer is No. First, an example similar to (63) can be constructed using FID (cf. Kamp and Rohrer 1983).

- (65) Ten days from now, at breakfast, he would tell his mother that he loved her(, thought John a week ago).

The reading where the loving is simultaneous with the telling cannot be captured either by a ‘de dicto’ LF or by a ‘de re’ LF (which is excluded independently). As for person pronouns, notice that (66a,b) (based on Banfield 1982 and Doron 1991) contrast in acceptability when Mary mistakenly thinks she is a man.

- (66) a. *He would make an excellent bishop(, thought Mary).
b. She would make an excellent bishop(, thought Mary).

(66a) is bad despite the fact that *he* is a male in the contexts compatible with what Mary believes (see (32b)). This is because, just like we normally don’t use 3rd person pronouns to talk or think about ourselves (whatever the reason for this might be), we normally cannot report someone else doing so. So the value of *he* is – in the normal case – distinct from the “embedded” author (Mary, or whoever Mary takes herself to be). (66b) is good because *she* is a ‘de se’ pronoun, whose gender features are deleted at LF under agreement with *Mary*. It is not a ‘de re’ pronoun because we have excluded ‘de re’ pronouns independently. It is not a ‘de dicto’ pronoun either, since we know from (16)-(17) that the gender features of ‘de dicto’ pronouns reflect the beliefs that the attitude holder has regarding the gender of the individual corresponding to it. (The reader is referred to Percus and Sauerland 2003 for an argument for genuine ‘de se’ pronouns based on SID.)

5. Conclusion

The behavior of pronouns in SID vs. FID suggests that the FID operator quantifies over broad contexts. On the other hand, the behavior of English attitude verbs is

better understood if we don't regard them as quantifiers over broad contexts. It would be interesting to see, given this, how 3rd person pronouns behave in languages where attitude verbs have been argued to be quantifiers over contexts on the basis of the shifted reference of various types of expressions in complement clauses of such verbs (Anand and Nevins 2004). If it turns out that these languages systematically ban 'de re' pronouns in the relevant cases, this might show that natural languages never use narrow contexts (and Schlenker's claim that all attitude verbs quantify over contexts might turn out to be incorrect).

Endnotes

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¹ See Banfield (1982) regarding pragmatic restrictions on the use of *I/me* in FID.

² Other time-adverbials that behave like this are *this week, tomorrow, yesterday*, etc. See Banfield and Doron for discussion of adverbs such as *really* (see also (16)), which are fine in FID but not in SID.

³ In addition, for any root node S, no free and bound occurrences of the same index may occur in S.

⁴ Judgments reported in Schlenker 2004 (which I do not share) conflict with these.

⁵ This doesn't explain why the pregnancy must also stretch into the past. See references cited for possible explanations of this fact.

⁶ Schlenker (p.c.) points out correctly that present tense in FID is good in generic or characterizing sentences. For space limitations I do not go into this here.

⁷ Also, the binder and the bindee must be interpreted relative to the same (big) C.

⁸ Actually, $[[past_{k,j}^<]]$ is shorthand for $[[past^<]]([[t_k]])([[t_j]])$ (so $[[past^<]]$ is of type $\langle i, \langle i, i \rangle \rangle$), and $[[past_k^=]]$ is shorthand for $[[past^=]]([[t_k]])$ (so $[[past^=]]$ is of type $\langle i, i \rangle$). Similar comments apply to *he*.

⁹ See Cresswell and von Stechow (1982), Heim (1994), and Percus and Sauerland (2003) a.o., for suggestions as to how this meaning is read off the syntax.

¹⁰ Having an overt FID operator affords a simple account of SOT facts in FID. Notice that in non-SOT languages, the present serves as the "local" evaluation time in embedded clauses, in SID and FID (see Borer 1981, Sharvit 2003).

¹¹ Paul Portner has pointed out to me that this semantics raises some issues regarding the introduction of new discourse referents in FID, and the use of pronouns to refer to them. I leave these problems open for now.

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