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The Landscape of Perspective Shifting

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Overview: We examine shifting possibilities of Perspective Sensitive Items (PSIs) in various linguistic contexts. We identify two groups: **pronominal PSIs** and **epistemic PSIs**. Although their shifting possibilities differ slightly (see Table 1), we observe that they shift in the same set of grammatical contexts. Furthermore, when they shift in attitude contexts, they obligatorily receive *de se* interpretations. We propose a uniform semantics where all PSIs refer to a common component, the **Perspective Center (PC)**, which we claim is responsible for the shifting behavior and for the obligatory *de se* interpretation in attitude contexts. We also claim that the difference between the two classes of PSIs follows from other semantic components. Specifically, while shifting of pronominal PSIs is optional, epistemic PSIs are subject to further restrictions and shift obligatorily in attitude contexts and in questions. We attribute this property of epistemic PSIs to their evidence-sensitivity.

Data: Certain PSIs, such as *left/right*, *come/go* and perspective-sensitive anaphoric pronouns (e.g. Japanese *zibun*)—which we call **pronominal PSIs**—have attracted much attention in the previous literature (Kuno 1972, 1973 1987, Kuno & Kaburaki 1977, Sells 1987, Abe 1997, Fillmore 1997, Oshima 2006, Nishigauchi 2013). For instance, *left* asserts that the individual in question is on the left side of PC, and *come* presupposes that the movement of the subject is towards PC. In a simple sentence, PC is typically taken to be the speaker, but it may shift to other individuals in various syntactic contexts, as shown in (1–4). Items such as predicates of personal taste (POTs), vague predicates, evidentials and epistemic modals—which we call **epistemic PSIs**—also exhibit shifting behavior that is very similar to that of pronominal PSIs. For instance, the interpretation of the POT *interesting* is relative to some individual, called the “judge” (Lasersohn 2005, Stephenson 2007). The judge defaults to the speaker in simple sentences, but it can shift in contexts such as questions, conditionals, attitude contexts as shown in (5–8). Analogous observations have been made for evidentials and epistemic modals (Tenny 2006, McCready 2007a).

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|--|---|
| (1) It is on the left side. (PC = speaker) | (5) This was interesting. (PC = speaker) |
| (2) If it is on the left side, Mary will move it. (PC = speaker or Mary) | (6) If John’s idea is interesting, Mary will be satisfied. (PC = speaker or Mary) |
| (3) Mary said that it is on the left side. (PC = speaker or Mary) | (7) Mary said that this was interesting. (PC = Mary) |
| (4) Is it on the left side? (PC = speaker or hearer) | (8) Was this interesting? (PC = hearer) |

Given that pronominal and epistemic PSIs shift in the same set of environments, a uniform analysis suggests itself. Furthermore we observe that all PSIs (can) shift in attitude contexts, and the shifted interpretations are always obligatorily *de se* (example omitted here). This has been noted separately for some PSIs (e.g. Kuno’s “awareness condition” on *zibun*; Oshima 2006 and Nishigauchi 2013 for pronominal PSIs; Stephenson 2007 for POTs and epistemics), but has not been discussed in a broader context.

There is, however, an important difference between pronominal and epistemic PSIs. As shown in Table 1, shifting of epistemic PSIs is obligatory in attitude contexts and questions, while shifting of pronominal PSIs is largely optional in shiftable contexts in general.

	conditional antecedents	relative-clauses on objects	temporal clauses	attitude contexts	questions
Pro-PSIs	◇	◇	◇	◇	◇
Epis-PSIs	◇	◇	◇	□	□

Table 1 (◇=shift possible; □=shift obligatory)

We take this to suggest that shifting of PC is generally optional, and attribute the difference between the two classes of PSIs to the evidence sensitivity in epistemic PSIs. That is, the semantics of epistemic PSIs, unlike pronominal PSIs, makes reference to the evidence available to PC, which obligatorily gets shifted in attitude contexts and questions, and forces a particular PC.

Analysis: In order to account for the common shifting behavior of pronominal and epistemic PSIs, we propose that all PSIs refer to PC in one way or another, and PC in attitude contexts can be shifted to the *de se* individual (optionally for pronominal PSIs and obligatorily for epistemic ones). In order

to capture this formally, we postulate a PC parameter p to the interpretation function, which stores a sequence of individuals that are potential PCs. PSIs bear indices indicating which coordinate of p is referred to (the i th coordinate of p is represented as $p(i)$). We assume that any coordinate of p can in principle be picked out, although some choices might be ruled out pragmatically. We also postulate another parameter E , representing the body of evidence, which the semantics of epistemic PSIs crucially refer to. Thus, we propose that while both pronominal and epistemic PSIs make reference to p , only epistemic PSIs make reference to E . For example, (9) for the pronominal PSI *left*.

(9) $\llbracket \text{John is to the left}_i \text{ of Mary} \rrbracket_w^{p,E} \Leftrightarrow \text{John is on the left side of Mary relative to } p(i) \text{ in } w$

For epistemic PSIs, we suggest that they all have an ‘epistemic semantics’, which reflects evidence-sensitivity in their semantics, which we spell out in terms of (epistemic) modality. This is clear for epistemic modals; POTs have already been proposed to be evidence-sensitive via the ‘direct experience’ requirement (Anand 2009, Pearson 2013, Bylinina 2014), and vague predicates have been argued to have an epistemic content in at least one influential line of research on vagueness, such as Williamson (1994) and Barker (2002, 2009).

(10) $\llbracket \text{might}_i \phi \rrbracket_w^{p,E} \Leftrightarrow \text{for some } w' \text{ compatible with } p(i) \text{'s epistemic state given } E \text{ in } w, \llbracket \phi \rrbracket_{w'}^{p,E} = 1$

(11) $\llbracket \text{the cake is tasty}_i \rrbracket_w^{p,E} \Leftrightarrow \text{for each } w' \text{ compatible with the evidence in } E \text{ that is directly perceptible to } p(i) \text{ in } w, \text{ the cake is tasty in } w'$

(12) $\llbracket \text{John is pos}_i \text{ tall} \rrbracket_w^{p,E} \Leftrightarrow \text{for each } w' \text{ compatible with } p(i) \text{'s epistemic state given } E \text{ in } w, \text{ John's height counts as tall in } w'$

The shifting behavior of PSIs is accounted for by reference to p . In simple cases, p defaults to a singleton sequence of the speaker $\langle s \rangle$, but in appropriate contexts it can contain other individuals including contextually salient individuals (cf. McCready 2007b on *zibun*). Also in complex sentences, various arguments are added to p .

For attitude verbs, we assume that they append the *de se* individual (cf. Lewis 1979), and furthermore shift the evidence parameter to E' that is the *de se*-evidence for John in w' , following the idea that evidential aspects of natural language are attributed *de se* (cf. McCready 2014). This reflects the requirement for a coherent evidential basis for attitude holders (cf. Hawthorne 2004), and is expected given our evidential parameter E . Recall now that epistemic PSIs obligatorily shift under attitude verbs. We claim that this is because the evidence parameter gets obligatorily shifted to E' . By way of illustration, consider (13).

(13) $\llbracket \text{John thinks that it might}_i \text{ rain} \rrbracket_w^{p,E} \Leftrightarrow \text{For each } \langle x', w', E' \rangle \text{ such that } w' \text{ is a doxastic alternative of John in } w \text{ and } x' \text{ is the person in } w' \text{ that John identifies as himself and } E' \text{ is the evidence that } x' \text{ has access to in } w', \text{ there is } w'' \text{ compatible with } p(i) \text{'s epistemic state given } E' \text{ in } w' \text{ such that it rains in } w''.$

If the PC that *might* refers to is the *de se* individual (i.e. $p(i) = x'$), the desired interpretation will obtain. On the other hand, if $p(i)$ is some other person (e.g. the speaker), we claim that the semantics of epistemic PSIs gives rise to a pragmatically anomalous inference. More precisely, we assume that epistemic PSIs interpreted presuppose that the PC that they refer to has access to the evidence E . In attitude contexts, the relevant evidence is all the evidence that the attitude holder is aware of (in each doxastic alternative), which includes evidence only accessible to the attitude holder (e.g. the taste of the cake, etc.). Thus, if $p(i)$ is not the *de se* individual, there is an inference that that person has access to the attitude holder’s direct perception, which is typically infelicitous (but there are some cases where this inference is tolerated; see Stephenson 2007, Anand 2009, Pearson 2013, Bylinina 2014).

We will give a similar analysis to questions where the question operator shifts the parameter to the *de se* alternative of the hearer and the evidence available to them in each world w' (cf. related facts about evidential shifts in questions in Quechua and Cherokee; Faller 2002, Murray 2010 respectively). As for the other environments where shifting is observed but is optional for both classes of PSIs, we propose that such environments differ from attitude verbs and questions in not directly referencing the epistemic state of any particular individual in p , meaning that shifts will not be obligatory.