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Person features and shiftiness

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1 Theme

What are the basic syntactic pieces underlying person systems, and how does the grammar combine and manipulate them? Such questions have attracted significant attention as relates to matters of possible and impossible pronouns and paradigms (Noyer 1992, Harley and Ritter 2002, Bobaljik 2008, Wechsler 2010, Harbour 2016, i.a.) as well as patterns of agreement (Béjar 2003, Nevins 2007, Wechsler 2011). These discussions have taken place against a relatively simple and familiar backdrop of semantic behaviors for first and second person elements. First person refers to the individual who is speaking, and second person refers to the individual who is being addressed.

This paper explores what can be learned about the syntactic and semantic representation of person from cases where this baseline behavior fails to hold: morphological first person fails to refer to the individual who is speaking, and/or morphological second person fails to refer to the individual who is being addressed. I will describe such cases as involving *shifty person*. Such behaviors are readily found in direct quotation, of course, as a consequence of the general way in which direct quotations represent or mimic the words of another speaker. But they are also found in a range of cases to which a direct quotation analysis is inapplicable, and I will reserve the term *shifty person* for these cases. Examples from Amharic (Semitic; Ethiopia) and Nez Perce (Penutian; USA) are given in (1) and (2).

(1) *Amharic* (Leslau 1995, 779)

pro [pro_{subj} pro_{obj} [*pro* mɨm amt'-a] ɨnd-al-ə-ññ]
1SG [3SG 1SG [2SG what bring.IMPER-2M] COMP-say.PERF-3M-1SO]
al-səmma-hu-mm
NEG-hear.PERF-1S-NEG
I didn't hear what he told me to bring.
more literal: I didn't hear what he told me, you bring!

(2) *Nez Perce* (Deal 2020)

Context: I travel to the town where my dad grew up and I go to the address he said he grew up at. Someone sees me looking at the house and I explain:

Na-'toot-am hi-i-cee-ne *pro* [kine 'iin tewyenik-∅-e].
my-father-ERG 3SUBJ-say-IMPERF-REM.PAST 1SG [here 1SG live-P-REM.PAST]
My father$_i$ told me he$_i$ used to live here.
more literal: My father$_i$ told me I$_i$ used to live here.

These examples demonstrate two types of evidence against a clausal quotation account. First, shifty person complement clauses do not demonstrate the characteristic syntactic opacity of quoted clauses;

for instance, a *wh*-phrase inside this type of complement clause may scope outside its clause, as (1) shows.[1] Second, deictic elements in these clauses may diverge in their anchoring. In (2), the first person subject pronoun is shifty; one might think of this element as deictically anchored to the reported speech context. The locative adverbial, on the other hand, is deictically anchored to the overall utterance context. By contrast, deictic elements in clausal quotation must all draw their anchoring from the context of reported speech. As evidenced by data of these two general types, shifty person is a widespread phenomenon in the languages of the world. It is found, for instance, in Athabaskan languages such as Navajo (Platero 1974, Schauber 1979, Speas 2000) and Slave (Rice 1986, 1989); in Dravidian languages such as Malayalam (Anand 2006), Tamil (Sundaresan 2011, 2012, 2018), and Telegu (Messick 2016, Sundaresan 2018); in Korean (Park 2016) and Japanese (McCready 2007, Sudo 2012, Maier 2014); in Indo-Iranian languages such as Farsi (Anvari 2019) and Zazaki (Anand and Nevins 2004, Anand 2006, Akkuş 2018); and in numerous Turkic languages such as Mishar Tatar (Podobryaev 2014), Poshkart Chuvash (Knyazev 2019), Turkish (Gültekin Şener and Şener 2011, Özyıldız 2012, Akkuş 2018), and Uyghur (Sudo 2012, Shklovsky and Sudo 2014, Major and Mayer 2019).[2]

The characterization of shifty person given above is deliberately broad, leaving open the choice between two quite different analytical perspectives that may be taken on examples such as (1) and (2). A first possibility is that shifty person involves indexical shift. An indexical element is one whose meaning draws on the context of interpretation; English personal pronouns such as *I* and *you* are classic examples. Theories of indexical shift such as Schlenker 1999, 2003, Anand and Nevins 2004, and Anand 2006 posit that morphological first and second person have an essentially familiar indexical semantics, but that the context with respect to which their meaning is calculated need not be the context of utterance. The relevant context is instead determined, wholely or in part, by the meaning of the attitude under which the person indexical is embedded. From this perspective, the difference between a first person that refers to the individual who is speaking and one that does not can be approached as a matter of what context the first person feature is interpreted with respect to. The meaning of first person—what Kaplan (1989) called its *character*—remains the same: it invokes a function that picks out the speaker of the context. Shifty person can arise when the input context for this calculation is varied.

A second possibility is that shifty person reflects the possibility of morphological first or second person that does not involve an indexical semantics at all. That is, the meaning of the person feature does not draw, as an indexical would, on the context of interpretation. There are several precedents for this type of hypothesis in the analysis of morphological first and second person, the most familiar of which comes from the literature on "fake indexicals", such as *my* in (3).[3]

(3) I am the only one taking care of my children.

One reading of this sentence conveys that the speaker is the only individual x such that x is taking care of x's children. On this reading, the morphologically first person pronoun *my* is interpreted as a bound variable, rather than a referential expression; and moreover, it ranges over individuals other than the

[1] While this scope-taking involves no overt movement in Amharic, it does in corresponding examples in Nez Perce, for instance; see Deal (2014, 2020) for examples.

[2] This is not a complete list of languages in which shifty person has been reported. See Deal (2020) for a more exhaustive listing. Note furthermore that not every language on this list allows mixed deictic anchoring. For Zazaki, for instance, Anand (2006) presents evidence for shifty person based purely on the absence of quotational opacity.

[3] Other precedents include Anand (2006), von Stechow (2003), and Deal (2018) on certain cases of shifty person in attitude reports. (Note that (3) is not an attitude report.) I return to this matter below.

sentence utterer. A prominent class of approaches holds that this reading is obtained via a semantic representation of *my* that involves no reference to the context at all (Kratzer 1998, 2009, von Stechow 2003, Rullmann 2004, Heim 2008, Reuland 2010, Sudo 2012, Podobryaev 2014, 2017, Landau 2016, Wurmbrand 2017). Broadly, from this perspective, the difference between a first person that refers to the person speaking and one that does not may reflect underlying semantic differences which happen not to receive distinct morphological realization.

These possibilities for the analysis of shifty person are not incompatible with one another. It could be that some instances of shifty person merit an analysis of the first type, whereas others merit an analysis more along the lines of the second. Here I will argue (as Anand 2006 also did) for a view on which there is a role for each to play. Some cases of shifty person involve indexical shift; this is for example the case for instances of shifty person in Nez Perce such as (2) (Deal 2020). Other cases involve syncretism between indexical person and a related though non-indexical semantic category; this is a notable source of shifty person in Amharic (Anand 2006). Both types of shifty person offer an opportunity to investigate the syntactic and semantic foundations of person systems. The case of indexical shift, as I will show, allows for a close study of the relationship between first person syntactic and semantic primitives and those involved in second persons and in locative indexicals. The case of shifty person without indexical shift—in particular, as instantiated in Amharic and languages with a similar pattern—points the way to a rethinking of the primitive nature of first person features.

The paper is organized as follows. I begin in section 2 with an overview of indexical shift, drawing from recent work (Deal 2020). I highlight three generalizations about indexical shift of importance to the theory of person, and briefly demonstrate how they can be captured on the shifty operator approach pioneered by Anand and Nevins 2004 and Anand 2006. This background makes it possible to identify distinctive behaviors for indexical shift as opposed to other types of shifty person phenomena. In section 3, I use these diagnostics to explore how indexical shift can cast light on the relationship between second person and first person. Drawing on Rice's (1986) study of indexical shift in Slave, I argue that the basic semantics for second person must not be defined in terms of first person primitives. On the syntactic side, the data from indexical shift is (perhaps surprisingly) compatible both with a view that posits a distinctive second person feature (e.g. [ADDR], [2], [TU]) and with a view that treats second persons as syntactically endowed only with a [PART(ICIPANT)] feature, in contrast to the [PART,SPKR] feature of first person. In section 4, working again with indexical shift, I ask how widely person features are distributed in the grammar, and in particular, whether (as per Harbour 2016) person features play a role in the feature structure of locative indexicals such as *here*. I argue once again that distinct classes of indexicals require distinct semantic primitives; locative indexicals such as *here* cannot be given meanings akin to 'the vicinity of the speaker'. Finally, in section 5, I return to shifty person beyond indexical shift, focusing in particular on the behaviors of a class of elements that have been described as 'first person logophors' (Curnow 2002), 'personal logophors' (Anand 2006), 'egophors' (Coppock and Wechsler 2018), or 'indexiphors' (Deal 2018, 2020). Here I argue, based on patterns of syncretism in Amharic and other languages, for a representation of standard indexical first person which is not atomic. First person should be modeled as possessing not simply an [AUTH] or [SPKR] feature, but rather, this type of feature in combination with a feature that specifies reference to the context.

2 Indexical shift: an overview

Starting from seminal work by Schlenker (1999, 2003), Anand and Nevins (2004), and Anand (2006), the past two decades have seen explosive growth in research on indexical shift in languages all around the world. In Deal 2020, I synthesize the findings of this literature. In this section I present three generalizations about indexical shift which bear on the analysis of person, drawing on this previous work. I then outline a version of the standard theory of shifty indexicals, the shifty operator theory (Anand and Nevins 2004, Anand 2006, Sudo 2010, 2012, Shklovsky and Sudo 2014, Deal 2014, 2018, 2020, Park 2016), and show how the three generalizations are accounted for.

2.1 The domain of indexical shift

Indexical shift affects a wide range of indexical expressions—not just first and second person pronouns, but also locative and temporal adverbials (Anand 2006) and evidentials (Korotkova 2016). The simplest thesis compatible with the crosslinguistic findings is that *all types of indexicals can, in principle, shift*. This is our first generalization. We see locative indexical shift in (4), from Nez Perce: the locative indexical *kínix* 'from here' refers not to the utterance location (Lapwai), but to the location of reported speech (Lewiston).[4]

(4) *Nez Perce* (Deal 2014)
Context: Elicited in Lapwai, ID. Lewiston is the closest major city.

Miniku cewcewin'es$_2$ *pro* hi-i-caa-qa Simiinikem-pe
which phone.NOM 3SG 3SUBJ-say-IMPERF-REC.PAST Lewiston-LOC

[t_2 hi-muu-no'qa kín-ix met'u weet'u t_2 hi-muu-no'qa kon-íx] ?
[3SUBJ-call-MODAL here-from but NEG 3SUBJ-call-MODAL there-from] ?

Which phone did they say in Lewiston can call from Lewiston but not from Lapwai?
lit: Which phone did they say in Lewiston can call from here but not from there?

An example of temporal indexical shift in Korean is given in (5). Here the temporal indexical *nayil* 'tomorrow' refers not to the day after utterance (January 9) but to the day after reported speech (January 2).

(5) *Korean* (Park 2016)
Context: It is January 8th.

Cinan cwu-ey Mary-ka [nwuka nayil ttenanta-ko] malhayss-ni?
Last week-in Mary-NOM [who-NOM tomorrow leave-C] said-Q

Who did Mary say a week ago would leave on January 2nd?
lit: Who did Mary say a week ago would leave tomorrow?

Finally, examples of shifty person for which I will defend an indexical-shift analysis are given in (6), repeated from above, and (7). In (6), the first person indexical *'iin* 'I' refers not to the utterance speaker, but to the reported speaker (the utterance speaker's father).

[4] Here and below, I present only the relevant (in this case, shifty) readings in translation lines. Readers are advised that indexical shift is optional in both Nez Perce and Korean, and thus, other readings are possible (and may be more or less available depending on context, as with other cases of ambiguity).

(6) *Nez Perce* (Deal 2020)

Context: I travel to the town where my dad grew up and I go to the address he said he grew up at. Someone sees me looking at the house and I explain:

Na'-toot-am hi-i-cee-ne *pro* [kine 'iin tewyenik-∅-e].
my-father-ERG 3SUBJ-say-IMPERF-REM.PAST 1SG [here 1SG live-P-REM.PAST]
My father$_i$ told me he$_i$ used to live here.
lit: My father told me I used to live here.

In (7), the second person indexical *'ee* refers not to the utterance addressee, but to the reported addressee (R.).

(7) *Nez Perce* (Deal 2020)

Manaa we'nikt 'u-us haama-nm, ke ko-nya$_1$ T.-nm pee-∅-n-e
how name.NOM 3GEN-be.PRES man-GEN C RP-ACC T-ERG 3/3-say-P-REM.PAST
R.-ne, ['ee 'o-opayata-yo'qa t_1] ?
R-ACC [2SG.CL 3OBJ-help-MODAL]
What is the name of the man that T told R$_i$ that he$_i$ should help?
lit: What is the name of the man that T told R that you should help?

It is certainly not the case that every type of indexical can shift in every language. (We see this, for instance, by the impossibility of the shifted readings in the literal English translations of the above examples.) However, the crosslinguistic data are consistent with the claim that every type of indexical can shift in *some* language (Anand 2006, Deal 2020). This generalization highlights the need for a theory of indexical shift which is not person-specific.

2.2 Shift Together

The second generalization is emphasized by Anand and Nevins (2004) and Anand (2006). Noting that shifted readings of indexicals are in many cases optional, their core observation is that shift is a clause-level phenomenon and does *not* operate on an indexical-by-indexical basis. The statement of the Shift Together constraint in (8), capturing this behavior, follows Deal 2020.[5] Classes of indexicals include first person, second person, locative, and temporal.

(8) *Shift Together*
If one indexical of class Ψ picks up reference from context c, then all indexicals of class Ψ within the same minimal attitude complement must also pick up reference from context c.

This behavior can be seen in (9) for temporal indexicals in Korean, a language where shift is in general optional (Park 2016). Here the embedded clause contains two temporal indexicals, *onul* 'today' and *nayil* 'tomorrow'. Sentence (9) has a reading according to which *onul* denotes the utterance day (June 25) and *nayil* denotes the day thereafter (June 26), as well as a reading on which *onul* denotes the

[5] This formulation is slightly different from those given by Anand and Nevins (2004) and Anand (2006). See Appendix B of Deal 2020 for discussion of the motivation behind the revised formulation, as well as critical discussion of putative counterexamples to Shift Together mentioned by Quer (2005), Korotkova (2016), Sundaresan (2018), and Hübl, Maier, and Steinbach (2019), some of which appear to be based on faulty interpetations of the principle as stated by Anand and Nevins.

day of the reported speech (June 18) and *nayil* denotes the day thereafter (June 19). These readings, indicated as (a) and (b) below, are both in keeping with Shift Together. In the first case, both temporal indexicals pick up their reference from the utterance context. In the second case, both pick up their reference from the context of reported speech. What is ruled out are the mixed readings in (c) and (d), where the indexicals draw on two different contexts.

(9) *Korean* (Deal 2020)

Context: It is June 25. We are discussing Bob's strange work schedule. I consulted Bob's supervisor, John, on June 18, and am sharing with you the information I got from him.

Cinan cwu-ey John-i [Bob-i onul-pota nayil te il-ul (manhi)
Last week-Loc John-Nom [Bob-Nom today-than tomorrow more work-Acc (a.lot)
hal-geora] malhay-ess-ta.
do-C.fut] say-Pst-Decl
Lit: Last week John said that Bill work[FUT] more tomorrow than today.

a. The plan was for Bob to work more on June 26 than on June 25.
b. The plan was for Bob to work more on June 19 than on June 18.
c. ✗ The plan was for Bob to work more on June 19 than on June 25.
d. ✗ The plan was for Bob to work more on June 26 than on June 18.

The same can be seen for locative indexicals in Nez Perce, (10). This sentence attempts to report an inequality of temperature between two locations, each denoted by the locative indexical *kine* 'here'. Because the two indexicals cannot refer to different locations—for instance, the utterance location and the location of reported speech—the sentence only has the (necessarily false) reading that a single location is hotter than itself. Accordingly, the sentence is infelicitous.

(10) *Nez Perce* (Deal 2020)

'In-lawtiwaa-nm paasx̂a-pa hi-hi-n-e *pro*, [kine hii-wes qetu
my-friend-ERG Boise-LOC 3SUBJ-tell-P-REM.PAST 1SG [here 3SUBJ-be.PRES more
'iyeeqis kin-ix].
hot here-from]

a. ✗ My friend in Boise told me it was hotter here than there.
b. ✗ My friend in Boise told me it was hotter there than here.

Finally, the Shift Together pattern is shown for person indexicals in Nez Perce (45). Shift of person indexicals is optional, though preferred, in Nez Perce. Example (11) is parallel to Korean (9): the only possible readings are those where either the first person indexicals both draw on the utterance context or both draw on the reported context.

(11) *Nez Perce* (Deal 2020)

Ne-'níc-em pee-∅-n-e 'in-haama-na,
1SG-older.sister-ERG 3/3-tell-P-REM.PAST 1SG-husband-ACC

['iin-im ciq'aamqal hi-twehkey'k-∅-e 'iin-e].
[1SG-GEN dog(ERG) 3SUBJ-chase-P-REM.PAST 1SG-ACC]

a. ? My sister$_s$ told my husband that my dog chased me.

b. My sister$_s$ told my husband that her$_s$ dog chased her$_s$.

c. ✗ My sister$_s$ told my husband that my dog chased her$_s$.

d. ✗ My sister$_s$ told my husband that her$_s$ dog chased me.

The Shift Together effect is a distinctive behavior for indexical shift compared to a number of surface-similar phenomena. One of these is logophoricity. Logophors are classically like shifted first person indexicals in that, when embedded in a speech report, they refer to the reported speaker.[6] However, logophors are typically not subject to a restriction like Shift Together. In Ewe (Niger-Congo), for instance, two clausemate logophoric pronouns need not have the same reference:

(12) *Ewe* (Pearson 2015, 96)

Marie be Kofi xɔse [be yè na yè cadeau].
Marie say Kofi believe [COMPL LOG give LOG gift]

a. Mary said that Kofi believed that she gave him a gift.

b. Mary said that Kofi believed that he gave her a gift.

Another case in which no Shift Together-like behavior is found is fake indexicality. In English sentences containing multiple first or second person pronouns which can be interpreted as bound variables, mixed readings are possible: one pronoun is interpreted as a bound variable while the other retains its ordinary indexical meaning.[7] This contrast in behavior between fake indexicals and indexical shift underlines the need to treat shifty person as a heterogenous phenomenon.

(13) Only you recommend your books to your librarian. (Kratzer 2009)

a. You are the only *x* such that *x* recommends *x*'s books to *x*'s librarian.

b. You are the only *x* such that *x* recommends your books to your librarian.

c. You are the only *x* such that *x* recommends your books to *x*'s librarian. (Mixed reading 1)

d. You are the only *x* such that *x* recommends *x*'s books to your librarian. (Mixed reading 2)

2.3 Shifty asymmetries

The Shift Together effect regulates the behavior of indexicals of the same class. Across classes, we find asymmetries, in particular an implicational hierarchy, (14). This constitutes our third generalization about indexical shift.[8]

(14) *Shifty hierarchy by indexical type* (Deal 2017, 2020)
Within and across languages, the possibility of indexical shift is determined by the hierarchy *temporal* > *1st* > *2nd* > *locative*. Indexicals of a certain class undergo shift in a particular verbal complement only if indexicals of classes farther to the left undergo shift as well.

[6] There is a further similarity in that, in both cases, *de se* interpretation is typically required. See Anand (2006), Haida (2009), Pearson (2015), and Bimpeh (To appear) for discussion of logophors. Issues in the *de se* interpretation of shifted indexicals are discussed at length in Deal (2020).

[7] Kratzer (2009) claims that a Shift Together-like pattern reemerges when the fake indexicals are further embedded. However, I have not found any English speakers who share the judgment she reports.

[8] See Deal (2020, ch 4) for discussion of certain complexities related to this pattern in Korean.

Internal to particular languages, aspects of this hierarchy effect can be seen in patterns of indexical shift in Slave and Nez Perce. In Slave, the set of indexicals that can be shifted in a particular clause is determined by the choice of embedding verb. Under *hadi* 'say', only first person shifts; second person remains anchored to the utterance context.

(15) *Slave* (Rice 1986, 53)

Simon [rásereyineht'u] hadi.
Simon [2SG.hit.1SG] 3SG.say
Simon$_i$ said that you hit him$_i$.

Under *édedi* 'tell/ask', by contrast, both first and second persons shift: first person refers to the reported speaker, and second person to the reported addressee.

(16) *Slave* (Rice 1986, 51)

[Segha ráwǫ́dí] sédi̜di yi̜lé.
[1SG.for 2SG.will.buy] 2SG.tell.1SG PAST
You told me to buy it for you.
lit.: You$_i$ told me$_j$ that you$_j$ will buy it for me$_i$.

What is not found is a Slave verb in whose complement only second person is shifted.

In Nez Perce, the hierarchy effect can be seen even in cases where the embedding verb is held constant. Under *hi* 'say/tell', for instance, it is possible for locative indexicals and person indexicals to shift; see (4) and (6)-(7), respectively. In a clause that contains only locative indexicals or only person indexicals, indexical shift is optional. When both types of indexicals are present in a single clause, however, the hierarchy effect emerges: locative indexicals shift only if person indexicals also shift. A case of person shift without locative shift was given in (2), repeated below in (17a). The ill-formedness of locative shift without person shift is shown in (17b). In this example, given the shifty interpretation of *kine* 'here', the first person embedded subject must be shifty.[9]

(17) *Nez Perce* (Deal 2020)

a. Context: I travel to the town where my dad grew up and I go to the address he said he grew up at. Someone sees me looking at the house and I explain:
Na-'toot-am hi-i-cee-ne *pro* [kine 'iin tewyenik-∅-e].
my-father-ERG 3SUBJ-say-IMPERF-REM.PAST 1SG [here 1SG live-P-REM.PAST]
My father$_i$ told me he$_i$ used to live here.
lit.: My father$_i$ told me I$_i$ used to live here.

b. 'In-lawtiwaa-nm Boston-pa hi-nees-∅-n-e *pro* [weet'u kine *pro*
1SG-friend-ERG Boston-LOC 3SUBJ-O.PL-say-P-REM.PAST 3PL [NEG here 1SG
wees kii kaa].
be.PRES this then]
My friend$_i$ in Boston$_j$ told them that { ✓he$_i$ is / ✗I am } not there$_j$ right now.

Such data again indicate that person indexical shift must be understood as part of a broader phenomenon, encompassing shifty indexicals of other types.

[9] Note that a first person parse of the null embedded subject in (17b), rather than a third person parse, is forced by verb inflection. Nez Perce (like English) shows a typologically unusual pattern of overt agreement for third person subjects but not local person subjects. On agreement in Nez Perce, see Deal (2015). Note also that all Nez Perce first and second person pronouns (whether tonic, clitic, or null) are subject to indexical shift (Deal 2020).

2.4 The shifty operator theory

The shifty operator theory of indexical shift was introduced by Anand and Nevins (2004) and Anand (2006). It begins with relatively standard assumptions about semantic interpretation and the meanings of indexical expressions, following Kaplan (1989). Linguistic expressions are interpreted with respect to a context and an index (what Kaplan 1989 called a "circumstance of evaluation").[10] Indexicals' meanings are functions on context. First person, for instance, picks out the speaker in a context of speech, or the thinker in the context of thought; these two can be thought of as particular instances of a more general role of context *author*.[11]

(18) $[\![I]\!]^{c,i} = author(c)$

Attitude verbs quantify over the circumstance of evaluation for their complement clause. They do so in a way that delimits a *de se* perspective, identifying not only worlds in which the attitude holder self-locates but also individuals that she considers she might be, times she considers she might be located at, etc (Schlenker 1999, Ogihara 1999, von Stechow 2003, Anand 2006, i.a.; cp. Lewis 1979). This type of centered quantification can be straightforwardly modeled as quantification over indices of evaluation for the complement clause, provided that indices, like contexts, specify not just worlds but also other aspects of a self-locating perspective. Indeed, indices and contexts can be taken to have the same structure (von Stechow 2003, von Stechow and Zimmermann 2005, Anand 2006): tuples that specify an author, a time, a location, etc. (Thus, in principle, just as certain linguistic expressions must denote the author of the context, others could denote the author of the index. We return to this idea below.) A sample denotation for an attitude verb, incorporating these assumptions, is given in (19).

(19) $[\![think\ \alpha]\!]^{c,i} = \lambda e.\lambda x.\lambda w.thinking(e)(w)\ \&\ \forall i' \in DOX(x,\tau(e),w) : [\![\alpha]\!]^{c,i'}$
Where $i' \in DOX(x,\tau(e),w)$ iff x thinks in w at $\tau(e)$ that she might be $auth(i')$ in $world(i')$ at $time(i')$ at $loc(i')$.

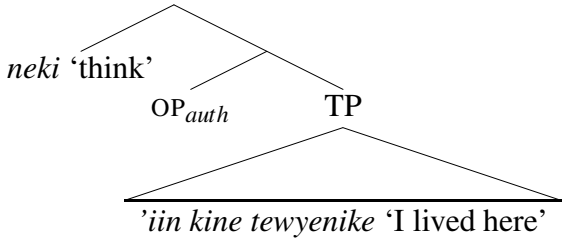
The distinctive innovation of Anand and Nevins (2004) and Anand (2006) is the shifty operator. This is a linguistic element (presumably a functional head) which sits in the scope of an attitude predicate, and thus in the scope of centered quantification over indices. The semantic contribution of the operator is to overwrite information in the context tuple with information from the index tuple. The OP_{auth} operator in (20), for instance, forces its complement to be interpreted relative to a context whose author value has been overwritten with the author value of the index.

(20) $[\![\text{OP}_{auth}\ \alpha]\!]^{c,i} = [\![\alpha]\!]^{c^{auth(i)/auth},i}$

The effect of this overwriting will be felt on any element in the complement of the shifty operator that references the overwritten value. In the complement of OP_{auth}, for example, a first person indexical will refer not to the original context author (the utterer), but rather to the attitude holder, *de se*. An example demonstrating how such an operator makes its compositional contribution is given in (21), based on Nez Perce example (17). Note that the complement TP in this example contains two indexicals, *iin* 'I' and *kine* 'here'. Because OP_{auth} overwrites only the author coordinate of context, the former shifts and the latter does not.

[10] I set aside sensitivity to variable assignments.
[11] Note that I will often abbreviate 'author' to 'auth'.

(21) a.



b. $[\![(21a)]\!]^{c,i} = [\![think]\!]^{c,i}(\lambda i'.[\![\text{OP}_{auth}$ *'iin kine tewyenike*$]\!]^{c,i'})$

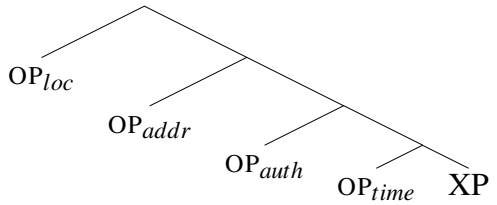
c. (by lexical entry 'think') $= \lambda e.\lambda x.\lambda w.thinking(e)(w)$ & $\forall i' \in DOX(x, \tau(e), w) : [\![\text{OP}_{auth}$ *'iin kine tewyenike*$]\!]^{c,i'}$
Where $i' \in DOX(x, \tau(e), w)$ iff x thinks in w at $\tau(e)$ that she might be $auth(i')$ in $world(i')$ at $time(i')$ at $loc(i')$

d. (by lexical entry OP_{auth}) $= \lambda e.\lambda x.\lambda w.thinking(e)(w)$ & $\forall i' \in DOX(x, \tau(e), w) : [\![$*'iin kine tewyenike*$]\!]^{c^{auth(i')/auth},i'}$

e. (by remaining lexical entries) $= \lambda e.\lambda x.\lambda w.thinking(e)(w)$ & $\forall i' \in DOX(x, \tau(e), w) : auth(i')$ lived at $loc(c)$ in $world(i')$

Shift of multiple types of indexicals—for instance, both first person and second person, or both first person and locative—involves stacking shifty operators, the relative syntactic position of which is specified by a functional sequence (Deal 2014, 2017, 2020):

(22)



The denotations for the various operators in this sequence can be given on the model of (20); each shifts just one coordinate of context, overwriting the original value with a *de se* value from the index.[12]

The generalizations about indexical shift reviewed in this section are captured on this theory in the following way. To capture the broad domain of indexical shift, and in particular the fact that all types of indexicals are shiftable in at least some language, we posit a shifty operator for every parameter of context, including author (relevant for first person), addressee (relevant for second person), location (relevant for locative indexicals), and time (relevant for temporal indexicals). The semantics of shifty operators involves overwriting of contextual parameters. Once contextual parameter Ψ is determined for a given attitude complement, all indexicals of class Ψ must reference it; there is no storage of values that Ψ would have had had an operator not been present. This gives rise to the Shift Together effect. Finally, the postulation of a functional sequence as in (22) allows implicational hierarchies in co-shifting to be captured as a pattern of syntactic selection. Whenever OP_{addr} is present, for instance, OP_{auth} must be present to head its complement. Shift of some indexical types but not others can be modeled by truncation of (22). In a truncated structure, some contiguous portion of (22), starting from the bottom, will be present. This might be a structure containing only OP_{time}; OP_{time} and OP_{auth}; OP_{time}, OP_{auth} and OP_{addr}; or all four shifty operators, OP_{time}, OP_{auth}, OP_{addr}, and OP_{loc}. These various options yield shift only of those types of indexicals whose corresponding operators are syntactically present.

[12] This is a slight simplification of the proposal in Deal (2017, 2020), where I propose that shifty operators may also overwrite context information with information drawn from the attitude event, skirting the *de se* requirement.

3 Case study: second person

With this background in hand, we now turn to the question of how shifty person can inform and constrain theories of person more generally. The impetus for this first case study is Rice's (1986) observation, noted above, that first person may be shifty in Slave even in cases where second person is not. Suppose, for instance, I utter sentence (23) to Mary, describing a conversation between Simon and Bart.[13] The embedded morphological first person refers to the reported speaker, Simon, (and so is shifty,) but the embedded second person refers to the utterance addressee (and so is not shifty).

(23) *Slave* (Rice 1986, 53)

Simon [rásereyineht'u] hadi.
Simon [2SG.hit.1SG] 3SG.say
Simon said that you [Mary] hit him [Simon].

What can such data tell us about the relationship between the primitives underlying second person and those underlying first person?[14]

The question might be thought of primarily as a matter of morphosyntactic featural representation. Most theories of person features have a distinctive second person feature (labeled [ADDR], [HEARER] [TU], [2], or similar), either as a privative feature or a binary one (Noyer 1992, Harley and Ritter 2002, Béjar 2003, McGinnis 2005, Nevins 2007, Bobaljik 2008, Kratzer 2009). Some theories, however, restrict this feature only to certain languages, typically those with clusivity contrasts (see Harley and Ritter 2002, McGinnis 2005, Nevins 2007). Slave, notably, does not make a clusivity contrast (Rice 1989, 253, 431). Finally, at least one approach does without distinctive second person features entirely, even for languages with clusivity (Harbour 2016).

(24) Some theories of the syntax of second persons

[-SPKR, +HEARER]	Bobaljik 2008
[ADDR]	Kratzer 2009
[ADDR,PART]	McGinnis 2005 (languages with clusivity)
[PART]	McGinnis 2005 (languages without clusivity)
[+PART,-SPKR]	Harbour 2016

Data like (23) also raise the question of which semantic primitives are involved in person systems. Here, on the model of the featural choice point just outlined, we might envision options with and without a basic second person semantic primitive. Supposing, as above, that first person refers, relative to a context, to the author of that context, a theory with a basic second person feature might be understood semantically either as in (25a) or as in (25b); in the latter case, second person has no distinctive semantic primitive. Some precedent for a proposal like (25b) can be found in Sudo 2012.[15] Similar options can be given on a theory with only a [PART] syntactic feature, as shown in (26).[16]

[13] I add these details for clarity of exposition. Note that Rice does not provide this particular context.

[14] Thanks to Karlos Arregi and Peter Jenks for raising this question.

[15] Sudo floats this proposal to account for the absence of a *de te* requirement on shifty second person in Uyghur. In Deal 2020 I argue against this proposal on the grounds that it fails to capture an implicational hierarchy effect regarding *de se* interpretation, and propose a way to capture the interpretation of Uyghur shifted second person while giving the indexical a standard Kaplanian treatment in terms of an $addr(c)$ functor, as in (25a).

[16] Here and throughout I give a very simple semantics in which person features are of type e. The main point carries over straightforwardly into a system in which person features introduce presuppositions and are of type $\langle e,e\rangle$ (e.g. Kratzer 2009).

(25) $[\![\ [\text{ADDR}]\ ]\!]^c =$

a. $addr(c)$

b. the person who $auth(c)$ is talking to

(26) $[\![\ [\text{PART}]\ ]\!]^c =$

a. $auth(c) + addr(c)$

b. $auth(c)+$ the person who $auth(c)$ is talking to

What (25b) or (26b) amounts to is a paring back on the basic semantic notions underlying person—we have a primitive author function on context, but not a primitive (partial) addressee function on context.[17] Would this paring back help us explain the first person/second person shifty asymmetry, perhaps even without positing a functional sequence of shifty operators?

Alas, no. Quite to the contrary, (25b) and (26b) make it impossible to derive cases of first person shifting without second person shifting. We predict that first and second person should always shift together, even if we only posit an OP_{auth} shifter. To see this, we return to the Slave example with which this section began, repeated in (27a). Suppose the structure for this sentence is as outlined in (27b) (noting the presence only of an OP_{auth} shifter[18]). A proposed denotation for the speech verb is given in (27c), on the model of the centered denotation for a verb of cognition given in (19). As shown in (27d-f), if we model the semantics of second person strictly in terms of first person semantic primitives, the result is not the desired one: we derive only a reading where both second and first person shift, rather than the attested reading where only first person shifts.

(27) a. *Slave* (Rice 1986, 53)

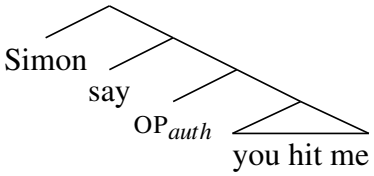
Context: I say to Mary, describing a conversation between Simon and Bart:

Simon [rásereyineht'u] hadi.

Simon [2SG.hit.$\boxed{\text{1SG}}$] 3SG.say

Simon said that you [Mary] hit him [Simon].

b.



c. $[\![SAY\ \alpha]\!]^{c,i} = \lambda e.\lambda x.\lambda w.saying(e)(w) \wedge \forall i' \in SP(x,\tau(e),w) : [\![\alpha]\!]^{c,i'}$
Where $i' \in SP(x,\tau(e),w)$ iff x thinks in w at $\tau(e)$ that she might be $auth(i')$ in $w(i')$ at $time(i')$ at $loc(i')$ (talking to $addr(i')$), and $w(i')$ conforms to what x says in w at $\tau(e)$

d. $[\![(27b)]\!]^{c,i}(w_c) = 1$ iff $\exists e.saying(e)(w_c) \wedge \forall i' \in SP(Simon,\tau(e),w_c)$:
$[\![you]\!]^{c^{auth(i')/auth},i'}$ hit $[\![me]\!]^{c^{auth(i')/auth},i'}$

e. If we adopt a theory where second person involves an *auth(c)* function:
$[\![(27b)]\!]^{c,i}(w_c) = 1$ iff $\exists e.saying(e)(w_c) \wedge \forall i' \in SP(Simon,\tau(e),w_c)$: the person who $auth(i')$ is talking to hit $auth(i')$

f. $\approx$ according to Simon, the person who Simon is talking to [Bart] hit Simon

[17] An *addr(c)* function could only be a partial function on the assumption that not all contexts have addressees. Contexts of thought notably lack addressees.

[18] Compliance with (22) requires that there also be an OP_{time} shifter in this structure, though I omit all temporal aspects of interpretation here for simplicity.

The challenge holds regardless of whether we adopt (25b) or (26b). (In the latter case, second person picks out that member of the sum of $auth(c)+$ the person who $auth(c)$ is talking to who is not $auth(c)$.)

In a theory that recognizes an $addr(c)$ function—either (25a) or (26a)—no such problem arises. Example (28) resumes the computation with (27d) and continues with theory (25a) or (26a).

(28) a. $[\![(27b)]\!]^{c,i}(w_c) = 1$ iff $\exists e.\forall i' \in SP(Simon, \tau(e), w) : [\![you]\!]^{c^{auth(i')/auth}, i'}$ hit $[\![me]\!]^{c^{auth(i')/auth}, i'}$

b. If we adopt a theory where second person involves a distinctive *addr(c)* function:
$[\![(27b)]\!]^{c,i}(w_c) = 1$ iff $\exists e.\forall i' \in SP(Simon, \tau(e), w) : addr(c)$ hit $auth(i')$

c. $\approx$ according to Simon, Mary hit Simon

The correct result is derived here: first person receives a shifty reading and second person does not. This is because first person *but not second person* depends semantically on the author parameter of context, shifted by OP_{auth}. This result demonstrates that a theory with an [ADDR] feature (or other distinctive second person feature) can capture the Slave pattern in (27), *so long as* it cashes the semantics of that feature out with a distinctive semantic *addr(c)* primitive for second person. The same holds for a theory with a [PART] feature and no feature [ADDR]: the participants, relative to a context c, must be identified as $addr(c)$ and $auth(c)$. If second person as modeled featurally as merely [PART], in contrast to [PART,SPKR] for first person, then second person is that participant that is not $auth(c)$; $(addr(c)+auth(c))-auth(c) = addr(c)$. The same holds in a system where second person is [+PART,-SPKR] (Harbour 2016).

The upshot is that shift of first person without second person causes no problem for a system without second person syntactic features, so long as that system recognizes an $addr(c)$ function on context and uses it to constrain the denotation of [PART]. In a theory without [ADDR] syntactic features, the result is a kind of mismatch between the semantic (or "ontological") primitives and the syntactic ones. The semantics has a dedicated *addr* function (in Harbour's (2016) terms: *u* is a "mental primitive"). But there need not be any dedicated syntactic piece that references it.

4 Case study: locative indexicals

There are two primary reasons to suspect that person and locative indexicals are in some way connected. The first, as we saw in section 2, is that person indexical shift and locative indexical shift stand in an implicational relationship: person indexicals can shift without their clausemate locative indexicals also shifting, but not vice versa. The second reason comes from Harbour's (2016) work on locative indexical typology, and in particular, his finding that the structure of locative systems shows parallels with the typology of personal pronouns. Harbour describes locative systems as divided among four types. The first type, found in English, is an author-based two-way locative system, where one element (*here*) picks out the vicinity of the speaker, and the other element (*there*) is an elsewhere item. This is in parallel to a rare but attested type of person system which opposes a form for first person to one used for second and third person alike; such a system is found for instance in Sanapaná (Enlhet-Enenlhet, Paraguay; Harbour 2016, 55-56). The second type of locative system, found in Bulgarian, is a participant-based two-way system, where one element (Bulgarian *tuk*) picks out the vicinity of either the author or the addressee, and the other element (*tam*) is an elsewhere term (Harbour 2016, 58). This is in parallel to another type of rare but attested person system, in which one form is used for first and second person alike and stands in opposition to a third person form. Such a pronominal system is found in Hocąk (Siouan, USA; Harbour 2016, 57-58). The third type of locative system, found in Korean, is a participant- and author-based three-way system, where one element

(Korean *yeki*) picks out the vicinity of the author, another (*keki*) picks out the vicinity of the addressee, and a final element (*ceki*) is an elsewhere term (Harbour 2016, 172). This is in parallel to a classic three-person system. Finally, the fourth and last type of locative system, found in languages such as Waray-Waray (Austronesian), is a participant- and author-based four-way system, essentially a three-way system with the addition of a clusivity distinction; the four elements pick out the vicinities of the author alone (Waray-Waray *a(a)di*), the author and addressee (*a(a)nhi*), the addressee alone (*a(a)da'*), and elsewhere (*a(a)dtu*) (Harbour 2016, 172-173). This is in parallel to a three-person system with an inclusive/exclusive contrast. To capture these patterns, Harbour proposes that pronouns and locative indexicals share a common syntactic core. Locative indexicals are essentially person indexicals with something added. This extra piece contributes a meaning of "vicinity of" or "characteristic space of" (p. 179).

As we will see in this section, it turns out that these two reasons for finding a connection between person and locative indexicals are essentially at odds with one another. Harbour's proposal has in common with the approaches to second person raised in (25b) or (26b) the use of a single semantic primitive to underlie two types of indexicals that are notionally distinct. Like in the case of second person, indexical shift offers a means of assessing whether this reduction in semantic primitives is warranted. The conclusion in the case of locatives is like the conclusion in the case of second persons: locative indexicals require their own semantic primitives and cannot be reduced to those of first (or second) person. And, of course, if the semantic primitives for the two cases must be kept apart, then on the natural assumption that syntactic primitives have a constant semantic interpretation, the syntactic featural representations of the two cases must be kept apart as well.

The logic of the argument to be given here closely follows the previous section. Like for second person, getting rid of a semantic primitive for locatives means that we expect locatives and the appropriate persons to show a Shift Together effect. But this is not what we find. Consider the case of Nez Perce, a language with an English-style two-way locative system. *Kine* 'here' is used for the vicinity of the speaker; otherwise, *kona* 'there' is used.

(29) *Nez Perce*

Context: We are in different places, talking on the phone.

Weet kine hi-weeqi-se?
Y.N.Q here 3SUBJ-rain-IMPERF
Is it raining { ✓here / ✗at your location } ?

We saw a case of person shift without locative shift in Nez Perce in (17) above. An additional example is given in (30):

(30) *Nez Perce* (Deal 2020)

Context: my friend is calling me on his cellphone and describing his location. He is trying to make it to Lapwai, but he is lost.

pro hi-hi-ce [*pro* kine paay-ca], met'u weet'u *pro*
3SG 3SUBJ-say-IMPERF [1SG here arrive-IMPERF] but NEG 3SG
hi-paay-ca kine.
3SUBJ-arrive-IMPERF here
He$_i$ says he$_i$ is arriving here, but he is not arriving here.

Suppose that the locative indexical *kine*, relative to a context c, denotes the vicinity of the author of c, per Harbour (2016). In the bracketed clause of (30), the contextual value for the author is shifted, as witnessed by the shifty interpretation of the first person pronoun. The expectation is that the locative will shift as well. Treating attitude quantification as above, the predicted meaning of the relevant part of (30) is that all indices i' compatible with what my friend told me are such that $auth(i')$ is arriving in the vicinity of $auth(i')$. This (rather strange, if not tautologous, reading) is not what the sentence means. By contrast, if we treat the locative, relative to a context c, as denoting the location of c, the intended meaning is derived: all i' compatible with what my friend told me are such that $auth(i')$ is arriving at $loc(c)$. This makes for a sensible interpretation of the follow-up, which clarifies that the report is erroneous and the friend (corresponding to $auth(i')$ for the attitude report) is indeed *not* arriving at $loc(c)$.

Could this problem be avoided by positing that the [AUTH] feature internal to locatives picks out not one single author, but a set of authors, corresponding to the authors of the various contexts involved here? No: then we lose our account of locative Shift Together. In example (31), for instance, there is no reading where one locative picks out the vicinity of the overall context author whereas the other picks out the vicinity of the author of the embedded context.

(31) *Nez Perce* (Deal 2020)

'In-lawtiwaa-nm paasx̂a-pa hi-hi-n-e *pro*, [kine hii-wes qetu
my-friend-ERG Boise-LOC 3SUBJ-tell-P-REM.PAST 1SG [here 3SUBJ-be.PRES more
'iyeeqis kin-ix].
hot here-from]

a. ✗ My friend in Boise told me it was hotter here than there.

b. ✗ My friend in Boise told me it was hotter there than here.

More generally, if the [AUTH] feature could pick out an author of any context, matrix or embedded, we lose our account of first person Shift Together, as in (11). Overall, the data from Shift Together indicates that only a single reference value is available within a given clause for first person or for locative. To capture the availability of two reference points for clauses with both locatives and person indexicals, person and locative indexicals require distinct underlying semantic primitives.

Note that this argument is not specific to languages with a two-way locative system. The very same demonstration can be made in the three-way system of Korean. A possible reading of (32) is one where the embedded first person shifts but the locative does not: the ostensibly author-based locative indexical *yeki* need not shift together with first persons.

(32) *Korean* (Park 2016)

Context: John and Mary are having a conversation in Seoul. John says:

Tom-i New York-eyse [nay-ka yeki-eyse thayenassta-ko] malhayssta.
Tom-NOM New York-at [I-NOM here-at be.born-C] said
lit.: Tom said in New York that I was born here.

✓ Tom said, "I was born in Seoul."

The conclusion of this case study is that at least one contextual semantic primitive for location is

required. Locatives cannot be totally reduced to person features semantically.[19] Accordingly, they cannot be reduced to person features syntactically, either. Plausibly, a featural theory of locative systems—one that might help to explain, for instance, why many languages make the same distinctions in demonstratives as in locative adverbs—will run on dedicated locative features.

5 Shifty person beyond indexical shift

We began with a characterization of shifty person that was deliberately broad—broad enough to include both cases where morphological first and second person reflect indexical person features as well as cases where they don't. There are several ways in which morphological person systems might fail to reflect semantically indexical person features. One of these is a morphology-semantics mismatch, as highlighted in the introductory section, where features are deleted at LF or added at PF. Another possibility will be of interest in this section. This is the possibility of conflation with a nonindexical category—that is, cases where a language draws no morphological distinction between an indexical person category and a related but distinct nonindexical category. The possibility of conflation of indexical first person with a nonindexical category comes up in connection with phenomena I have elsewhere discussed under the heading of indexiphoricity (Deal 2018, 2020), also known as "first person logophoricity" (Curnow 2002), "personal logophoricity" (Anand 2006), and "egophoricity" (Coppock and Wechsler 2018).

5.1 An indexiphoric author feature: not indexical first person, but close

In simple clauses, Donno Sɔ (Dogon, Burkina Faso/Mali; Culy 1994, Heath 2016) has what looks like an ordinary pattern of subject person agreement on finite verbs: 1st person singular subjects take a verb inflection I will indicate as *-N* (*-ŋ* according to Heath, *-m* according to Culy 1994), 2nd person singular subjects take verb inflection *-w*, and 3rd person singular subject inflection is null.

(33) *Donno Sɔ* (Heath 2016, 167-168)

a. Dă:ŋà-ŋ.
sit.STAT-N
I am seated.

b. Dă:ŋà-ẁ.
sit.STAT-2sg
You are seated.

c. Dă:ŋà.
sit.STAT
He/she is seated.

In attitude reports, however, *-N* inflection on the embedded verb occurs only when the embedded subject is the attitude holder. (For Culy, who identifies *-N* as first person inflection, this leads to the

[19] Are there any locatives that *are* person-based? Indexical shift gives a test: if a locative references a person category, then we should see bidirectional Shift Together between the locative and elements of that person category. Across the indexical shift literature, I am not aware of any language where this behavior is attested, apart from languages like Zazaki where all indexicals must shift together (Anand 2006). This includes temporal indexicals, which I take to be poor candidates for semantically person-based elements. See Deal (2020) for an analysis of Zazaki omnibus Shift Together.

remark that "first person inflection acts as logophoric inflection when it occurs in indirect discourse" (1994, 123).) In the pair of examples in (34), from Culy (1994), note that *-N* occurs in (34b), where the subject is a logophoric pronoun referring to Oumar, but not in (34a), where the subject is a first person singular indexical.

(34) *Donno Sɔ* (Culy 1994, 123)

a. Oumar [ma jɛmbɔ paza boli] miñ tagi.
Oumar [1SG sack.DEF drop left] 1SG.OBJ informed
Oumar informed me that I had left without the sack.

b. Oumar [inyemɛ jɛmbɔ paza bolu-m] miñ tagi.
Oumar [LOG sack.DEF drop left-N] 1SG.OBJ informed
Oumar$_i$ informed me that he$_i$ had left without the sack.

Examples (35), from Heath (2016), further confirm the generalization. What is crucial for the occurence of *-N* is that the embedded subject references the attitude holder, not that it is expressed with a logophoric pronoun, as (35a) shows. This example shows that either a logophor or an ordinary third person pronoun may serve as subject in an *-N*-marked embedded clause. Furthermore, it is possible for *-N* to occur with an embedded subject that references the speaker, so long as this is *also* the attitude holder, as (35b) shows.

(35) *Donno Sɔ* (Heath 2016, 303)

a. Sé:dù [ǹjèmɛ́ / wó yɛ̀l-lì-ŋ́] gì-ỳ.
Seydou [LOG / 3SG come-PERF.NEG-N] say-PERF
Seydou$_i$ said that he$_i$ didn't come.

b. Mí [*pro* dǎ:ŋà-ǐŋ] gì-ỳ-ǐŋ.
1SG [1SG sit.STAT-N] say-PERF-N
I said that I am seated.

The analysis I would like to advance for *-N* draws on Coppock and Wechsler's (2018) work on a partially similar type of inflection in Kathmandu Newari (which they call "egophoric").[20] This is that *-N* inflection indicates that the subject of its clause holds the author role not necessarily in the context (as a first person indexical would) but rather in the index, or circumstance of evaluation. We saw above that attitude verbs quantify over the circumstances of evaluation for their complement clause, and that this quantification is centered; it picks out not just a set of possible worlds, but also individuals in those worlds that the attitude holder takes themselves to be, as indicated in (36) (repeated from (19)). Inside the embedded clause, an element that must refer to the author of the index must, therefore, refer to the attitude holder (*de se*).

(36) $[\![think\ \alpha]\!]^{c,i} = \lambda e.\lambda x.\lambda w.thinking(e)(w)\ \&\ \forall i' \in DOX(x,\tau(e),w) : [\![\alpha]\!]^{c,i'}$
Where $i' \in DOX(x,\tau(e),w)$ iff x thinks in w at $\tau(e)$ that she might be $auth(i')$ in $world(i')$ at $time(i')$ at $loc(i')$

Outside of quantification over indices, the index by default matches the context (Kaplan 1989). Therefore, in a matrix clause, an element that must refer to the author of the index will also have to refer to the author of the context, and will appear to have a normal first person semantics and distribution.

[20] For further details of this pattern, in comparison with the pattern of Donno Sɔ, see Deal (2020, ch 5).

This analysis makes a prediction about the interpretation of *-N* inflection in environments of multiple embedding: *-N* should indicate only reference to the attitude holder of the immediately embedding attitude verb. This is because when attitude verbs quantify over indices, as in (36), they overwrite previous values. Thus we expect that an index-sensitive element will show strictly locality in multiple embedding. This expectation is borne out in (37), where the doubly-embedded subject, occurring in an *-N*-marked clause, can only corefer with the intermediate subject and not the outermost subject.

(37) *Donno Sɔ* (Heath 2016, 304)

Sé:dù [ú wà [*pro* yógù wɔ̀-ŋ̀] gí-ỳ] gì-y.
Seydou [2SG QUOT.SUBJ [nasty be-N] say-PFV] say-PFV
Seydou$_i$ said you said that {you are / *he$_i$ is } nasty.

Note that this pattern is different from indexical shift, where long-distance shifting is possible. In Korean example (38), for instance, *na-lul* 'me' may find an antecedent two clauses up (among other possibilities discussed by Park 2016). This results from a structure in which the closest OP_{AUTH} operator to the doubly-embedded first person occurs just under the outermost attitude verb, not the more deeply embedded one.

(38) *Korean* (Park 2016, (53))

John-i Seoul-eyse [$_{CP}$ OP_{AUTH} Bill-i yeki-eyse [$_{CP}$ Mary-ka na-lul cohahanta]-ko
John-Nom Seoul-at [Bill-Nom here-at [Mary-NOM I-ACC like-C
malhayssta]-ko malhayssta.
said-C said
John$_j$ said in Seoul that Bill said here that Mary likes him$_j$.

A further correct prediction is that it should be possible for embedded subjects controlling *-N* inflection to be clausemate with ordinary first person indexical pronouns, as in the most embedded clause of (39).

(39) *Donno Sɔ* (Heath 2016, 304)

Sé:dù [ú wà [*pro* mì=ŋ́ dà-dá:-dɛ̀-ŋ̀] gí-ỳ] gì-y.
Seydou [2SG QUOT.SUBJ [1SG-ACC AUGM-kill-IMPF-N] say-PFV] say-PFV
Seydou said you said that you will kill me.

That is, subjects controlling *-N* inflection do not obey Shift Together with first person pronouns. This is unsurprising if these subjects are merely required to pick out the author of the index. Donno Sɔ does not have indexical shift, and therefore the first person pronoun *mì=ŋ́* refers to the speaker; no shifty operators are present.

Let us suppose that *-N* inflection reflects syntactic agreement with a subject bearing a meaningful feature, [AUTH-I]. Whenever the subject bears [AUTH-I], it will denote (relative to the index i) $auth(i)$, and the verb will be inflected in agreement. I will refer to this inflection, which directly references information from the index, as *indexiphoric*.[21]

(40) $[\![\text{[AUTH-I]}]\!]^{c,i} = auth(i)$

[21] Note that this is a different (and, I believe, improved) use for the term 'indexiphoric' than the one found in Deal 2018. In that work, 'indexiphor' is a term used for a logophor (a special type of bound pronoun) that agrees like an indexical. The current approach but not its predecessor allows for an element to be both indexical *and* indexiphoric, as discussed just below, and does away with a close connection to logophoricity, as highlighted by (36a).

To highlight the parallel with an ordinary first person indexical feature, I will refer to the latter as '[AUTH-C]':

(41) $[\![\text{[AUTH-C]}]\!]^{c,i} = auth(c)$ = "first person"

On the natural assumption that these features are present on all elements that refer to the author of the index, or context, respectively, we can delimit three possible featural profiles for subjects:

(42) Subject type, embedding type, Donno Sɔ verbal inflection

SUBJECT	FEATURES	VERB INFLECTION
Matrix		
1st person	[AUTH-C], [AUTH-I]	-N
Embedded in a 3rd person$_j$ attitude report		
1st person	[AUTH-C]	∅
3rd person$_j$	[AUTH-I]	-N

Donno Sɔ morphology is sensitive both to [AUTH-I] and to classic first person, i.e. [AUTH-C], requiring a clear distinction between the two—first person pronouns always reflect [AUTH-C], whereas *-N* inflection reflects [AUTH-I].

5.2 Conflation of [AUTH-I] *and* [AUTH-C]

In motivating the existence of an [AUTH-I] feature, and distinguishing it from a standard indexical first person feature, [AUTH-C], the Donno Sɔ data just discussed raise questions about how [AUTH-I]—and potentially a similar feature [ADDR-I], to be motivated by addressee indexiphors—should be thought of in relation to person features. Is [AUTH-I] a new type of person feature? Or, to ask the question in a more answerable form, are there grammatical patterns that treat this type of feature in a way parallel to [AUTH-C], confirming that the two make a natural grammatical class?

A first body of evidence that this is indeed the case comes from patterns of syncretism in Amharic. In this language, both [AUTH-I] indexiphors and [AUTH-C] first person indexicals control agreement on the verb from the same "first person" series.[22] Example (43) parallels Donno Sɔ (39) in showing that an indexiphor can be clausemate with an unshifted first person indexical. Note that an indexiphoric analysis of the embedded subject reconciles this type of data with the Shift Together pattern discussed above for indexical shift. Because the embedded subject is an indexiphor, not an indexical, (43) contains only one embedded indexical and there is no Shift Together violation.

(43) *Amharic* (Leslau 1995)

John [pro_{subj} pro_{obj} al-ɨttazzəzə-ññ] alə.
John [NEG.1S-obey.MKIMPERF-1S.O] say.PERF.3SM
John$_i$ says he$_i$ will not obey me.

As expected, when the embedded clause of (43) is further embedded, as in (44), the distinctive indexiphoric locality effect seen in Donno Sɔ (37) emerges. The indexiphoric subject may only refer to the more local attitude holder, not the less local one.

[22] I use the word 'agreement' in a general way here; see Kramer (2014) for arguments that certain Amharic "agreement" markers are in fact clitics. The general analysis of Amharic given in this section follows previous work by Anand (2006); see also discussion in Deal (2018).

(44) *Amharic* (Anand 2006, 101)

Bill [John [pro_{subj} pro_{obj} al-ɨttazzəzə-ññ] alə] alə.
Bill [John [NEG.1S-obey.MKIMPERF-1S.O] say.PERF.3SM] say.PERF.3SM
Bill_b says John_j says $\text{he}_{j/*b}$ will not obey me.

Still further evidence for an indexiphoric analysis of Amharic (drawing on *De Re* Blocking effects, as noted by Anand 2006) is discussed in Deal 2018, 2020.

The contrast between these data and the picture that emerges from consideration of shifty person in Nez Perce and Korean (as discussed in section 2) reveals that a full typology of shifty person in attitude reports must be careful not to collapse together two distinct phenomena. One phenomenon is indexical shift, where Shift Together effects are in force for elements with first person morphology. In such cases, first person uniformly reflects [AUTH-C] features.

(45) *Nez Perce* (Deal 2020)

Ne-'níc-em pee-∅-n-e 'in-haama-na,
1SG-older.sister-ERG 3/3-tell-P-REM.PAST 1SG-husband-ACC

['iin-im ciq'aamqal hi-twehkey'k-∅-e 'iin-e].
[1SG-GEN dog(ERG) 3SUBJ-chase-P-REM.PAST 1SG-ACC]

a. ? My sister_s told my husband that my dog chased me.
b. My sister_s told my husband that her_s dog chased her_s.
c. ✗ My sister_s told my husband that my dog chased her_s.
d. ✗ My sister_s told my husband that her_s dog chased me.

The other phenomenon is morphological syncretism between indexical first person ([AUTH-C] features) and indexiphoric author ([AUTH-I] features). In this case there are no Shift Together effects for elements with "first person morphology", because this category does not uniformly reflect indexical first person semantics. In addition to Amharic, languages showing this type of phenomenon include Mishar Tatar, Tamil, and various Papuan languages (e.g. Dani, Gahuku, Golin), as discussed in Deal 2018, 2020. Notably, these languages show syncretism between [AUTH-C] features and [AUTH-I] features across different portions of their "first person" vocabulary; for instance, Tamil shows syncretism in agreement only, whereas Golin (Trans-New Guinea) shows syncretism in independent pronouns only. In Golin, the verbal suffix that Loughnane (2005) describes as 'first person' shows the pattern familiar from Donno Sɔ *-N*; it occurs when the embedded subject is the attitude holder, (46a), but not when the embedded subject is the overall utterer but not the attitude holder, (46b). (Accordingly, I gloss this suffix 'AUTH.I'.) Unlike in Donno Sɔ, however, the Golin embedded subject pronouns themselves take the same form in the two cases. (For this case I reprint Loughnane's gloss, '1SG', following the glossing of Amharic above.) This suggests that there is syncretism between [AUTH-C] and [AUTH-I] pronouns but not verbal inflections in this language.[23]

(46) *Golin* (Loughnane 2005)

a. gi i [na kon ne-ra-1-w-a] du-n-g-w-e
girl TOP [1SG yam eat-IRR-AUTH.I-REP-DIST] say-3-AS-3-PROX
She_i said she_i would eat yams.

[23] Evidence that this language features indexiphoricity but not indexical shift comes from the possibility of mixed readings for two clausemate elements with "first person" morphology; see Loughnane (2005, §2.2.3.5).

b. yal i [na ere n-a-m-u-a] di-n-g-w-e
man TOP [1SG do go-IRR-3-REP-DIST] say-3-AS-3-PROX
He$_i$ says that I$_j$ will go.

A plausible hypothesis regarding this type of pattern concerns the "subatomic" syntactic feature make-up of first person indexicals and *auth*(i) indexiphors. These elements have in common, semantically, an *auth* function; they differ in whether this function is applied to context or index. We might suppose, then, that the [AUTH-I] and [AUTH-C] features introduced above are not, in fact, truly atomic. Rather, they consist of two subfeatures, one of which is simply [AUTH]. It is this subfeature, I propose, that is realized by all cases of "first person" morphology in Amharic, as well as by "first person" pronouns in Golin. Accordingly, the system does not distinguish in terms of inflectional morphology between indexiphors and first person indexicals. The two categories are syncretic.[24]

(47) Golin vocabulary items
a. *na* ↔ [AUTH,D]
b. *-l* ↔ [AUTH-I]

To the extent that syncretisms such as that of the Golin pronoun *na* are best explained by reference to an [AUTH] subfeature, they provide evidence that, contrary to nearly all syntactic theorizing on the subject, first person features are not indivisible atoms of universal grammar.

6 Conclusions

What can shifty person tell us about the semantic and morphosyntactic primitives of person? I have argued for conclusions of two types. First, on the semantic front, patterns of indexical shift underline a need to recognize author, addressee, and location functions, applicable to contexts or to indices, as semantic primitives—or, better yet (though less concretely), they point to the need for a primitive notion of context and index that supports these functions but not various conceivable others.[25] Second, on the morphosyntactic front, we have seen that patterns of shifty person are silent on certain matters of featural representation but not others. What they do not tell us is whether there is a dedicated second person feature, or alternatively, whether second persons merely have a subset of the features of first persons. What they do tell us is, first, that the syntax of locative expressions cannot universally include a person feature, and thus we must recognize locative features in their own right; and second, that we must recognize a broader range of person-related phenomena than are typically countenanced, including those needed for person systems with indexiphoricity. Notably, the features of author indexiphors are not always cleanly separated by the grammar from their true indexical cousins. The overlap suggests that at least first person features (and very plausibly, all indexical feature types) are not primitives of grammar, but rather composed of two interpretable subfeatures. One indicates a basic function, e.g. author, and the other indicates the application of this function alternatively to the context or to the index.

[24] Thanks to Mark Baker for suggesting this lens on the morphological overlap.

[25] It is not entirely clear to me at the moment just what this notion will be. I have argued elsewhere that it cannot be, as per Lewis (1980, p 79) "a location – time, place, and possible world – where a sentence is said"; this conception does not allow for so-called "improper contexts", which are required for a proper treatment of indexical shift (see Deal 2020), and thus is too restrictive. On the other hand, a treatment in the style of Kaplan (1989), where a context or index is simply a tuple of values (as described in section 2), is not restrictive enough, unless some natural way of constrfaining the elements that constitute a tuple can be discovered.

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