Argument realization and argument referencing in Soranî Kurdish

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Soranî morphological argument referencing has received quite a bit of attention in the HPSG literature in the last 15 years (Samvelian, 2007; Bonami & Samvelian, 2008; Crysmann, 2021), as it poses interesting challenges to the interface between syntax and morphology. The overall consensus has been that syntactic arguments (members of the ARG-ST list) can be referenced (1) by a verbal suffix or (2) by a second position verbal affix or a second position clitic (affix). For ease of reference we will refer to morphs that always reference an argument within the verb form (the first case) as *verb-bound* and to morphs that reference arguments sometimes within the verb form and sometimes on a sister to the verb (the second case) as *mobile* morphs. This paper provides data that show that *mobile* morphs—when they do not occur within the verb form—are affixed at the right edge of the verb's least oblique NP complement and are not second position (endo)clitics. We propose an analysis of Soranî morphological argument referencing that properly dissociates syntactic status (properties of members of ARG-LIST or valence lists) from morphological status (properties of members of the inflectional feature set, MS). Our analysis provides a unified set of exponence rules for mobile morphs: they always occur after the first morph of an inflected word, either after the first morph of a verb form or after the last word of an NP complement which constitutes the first morph of a word-to-word morphological inflectional construction.

Soranî morphologically references one (1) or two (2) arguments.[1] An external NP can co-occur with subject argument referencing (3) but object argument referencing is in complementary distribution with external object NPs (4). In other words, subject referencing morphs are agreement markers and object referencing morphs realize arguments in the sense of Levin & Rappaport Hovav (2005) or are incorporated pronouns in the terminology of Bresnan & Mchombo (1987) who discuss a similar distinction in Chicheŵa.

(1) *minał-ek-an/(ewan) e-řo-n*
kid-DEF-PL/they IPFV-go.PRS-3PL:S
'The kids/they are leaving.'

(2) *e-t-bîn-ê*
IPFV-2SG:P-see.PRS-3SG:A
'S/he (will) see you.'

(3) *(êma) nan e-xo-yn*
we food IPFV-eat.PRS-1PL:S
'We are eating food.'

(4) *koř-eke e-bîn-im*
boy-DEF.SG IPFV-see.PRS-1SG:A
'I (will) see the boy.'

The straightforward pattern in (1)-(4) is only found when the verb is in the present tense. In the past tense, the order of subject agreement and incorporated object pronoun switches: the

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[1] All examples in this work are from fieldwork data unless stated otherwise. Soranî speakers were all from Suleymanî in Iraq or Baneh in Iran.

former occurs before the stem while the latter occurs after the stem (5). Furthermore, when the object is an external NP, the subject agreement marker is suffixed to the last word of the object NP (6). The suffixation of the subject agreement marker to the least oblique NP complement occurs whether that NP corresponds to an argument of the verb (6) or is a deverbal complement of a light verb (7). Example (8) illustrates the fact that the affixation of the subject marker is at the right edge of the least oblique NP complement. The complex predicate is semantically dyadic (corresponding to English *look*), but its second argument (what is looked at) is modifying the deverbal, as indicated by the ezafe (EZF) suffixed to the deverbal: the subject agreement marker is now a suffix to the modifier of the deverbal. The contrast between the verb form-internal subject agreement marker in (9) and the verb form-external subject agreement marker in (10) shows that it is the presence of an external NP complement not semantic dyadicity that governs the verb external occurrence of the mobile morph.

(5) *e-m-nûsî-n*
     IPFV-1SG:A-write.PST-3PL
     'I was writing them.'

(6) *koř-eke-m   bînî*
     boy-DEF.SG-1SG:A see.PST
     'I saw the boy.'

(7) *heřmê-ek-an-yan beş kird*
     pear-DEF-PL-3PL:A share do
     'They shared the pears.' (Mohammadirad, 2020)

(8) [*seyr-î wêne-kan-yan*]   *kird*
     look-EZF photo-DEF.PL-3PL:A do.PST
     'They looked at the photos.'

(9) *(ewan)/dar-ek-an kewt-in*
     they/tree-DEF-PL fall.PST-3PL:S
     'They/the trees fell.'

(10) *pyase-man kird*
     walk-1PL   do.PST
     'We walked.'

When the proto-patient of a complex predicate or the recipient of a three-place predicate is a bound pronominal, this object bound pronoun or the subject agreement marker is suffixed to the last word of the NP complement, as shown in (11) and (12) (from Mohammadirad 2020), respectively. (We only include examples for the subject agrement marker for space considerations.)

(11) [*çend wułax-î   çak-î*]   *bo kirî-n*
     some horse-EZF good-3SG:A for buy.PST-3PL:A
     'He bought some fine horses for them.'

(12) *minal-êk-yan   jinêw-î*
     child-INDF-3PL.POSS curse-3SG:A
     pê-da-m
     ABSP-give.PST-1SG:P
     'One of their kids swore at me.'

Importantly, when the verb takes a PP argument whose preposition is meaningful, the mobile morph is not suffixed to the last word of that PP, but occurs either internal to the verb form or suffixed to the deverbal as shown in sentences (13) and (14)-(15). Sentences (13)-(15) contradict the claim put forth in Samvelian (2007) and Bonami & Samvelian (2008) that mobile morphs external to the verb form are suffixed to the last word of the first constituent of the VP. Rather, mobile morphs are suffixed to the last word of the least oblique NP complement. They are thus *not* (VP) second position clitics (see example (17) for evidence that these kinds of PPs are VP-internal). Sentence (16) shows that mobile morphs can be suffixed to the last word of a PP as long as the preposition is not semantically potent (a.k.a. is a case-marking preposition). We assume that such prepositions are markers on the following NP rather than heads of PPs (see Eynde (2021) on markers).

(13) *le   jin-eke   wer-im-ne-girt-in*
from woman-DEF.SG PV-1SG:A-NEG-take-3PL:P
'I did not take them from the woman.'

(14) *bo qotabxane minał-ekan-man nard*
to school   kid-DEF.PL-1PL:A send.PST
'We sent the kids to school'

(15) *berew dorge-ke   mele-yan   e-kird*
toward island-DEF.SG swim-3PL:A IPFV-do.PST
'They were swimming toward the island.'

(16) *be minał-ekan-yan got*
to kid-DEF.PL-3PL:A say.PST
'They told the kids.'

(17) *Ali mindał-ekan-y   timaşa kird   û   legeł*
Ali kid-DEF.PL-3SG:A watch do.PST and with

mîwan-ekan qise-y   kird
guest-DEF.PL talk-3SG:A do.PST

'Ali watched the boy and talked to the guests.'

Summarizing, subject agreement markers of intransitive verbs are *verb-bound* morphs suffixed to verb stems whether the verb is in the present or past tense. Subject agreement markers of verbs that take two NP syntactic arguments (whose ARG-ST list contains at least two NPs) are *verb-bound* morphs in the present tense and *mobile* morphs in the past tense. Pronominal proto-patient or recipient arguments are incorporated pronouns that are expounded as *mobile* morphs in the present tense or *verb-bound* morphs in the past tense. Finally, *verb-bound* morphs are always suffixed to the verb stem while *mobile* morphs occur after the first morph within the verb form (except for third singular *mobile* morphs) if the verb does not include an object NP or occur at the right edge of the first object NP otherwise.

We model Soranî morphological argument referencing as follows. We first assume the grammar of Soranî includes the inflectional feature *arg-ref* shown in (18). The sort *arg-ref* has two subsorts, *vb-arg-ref* and *mm-arg-ref* for *verb-bound* and *mobile* morph argument reference, respectively. The phonological form of the exponents of *arg-ref* (except for exponents of the third singular) is the same for *vb-arg-ref* and *mm-arg-ref*: exponence rules target the sort *arg-ref* in all cases. (19), adapted from Crysmann (2021), provides one example exponence rule for a third person plural argument index of sort *mm-arg*.

(18) $\begin{bmatrix} arg\text{-}ref \\ \text{AGR} & agr \end{bmatrix}$

(19) Exponence rule for argument indices of sort *mm-arg-ref*:

$$\begin{bmatrix} \text{MUD} & \begin{bmatrix} mm\text{-}arg \\ \text{AGR} & \begin{bmatrix} \text{PERS} & 3 \\ \text{NUM} & pl \end{bmatrix} \end{bmatrix} \\ \text{MPH} & \left\langle \begin{bmatrix} \text{PH} & \langle j\hat{a}n \rangle \\ \text{1ST-PC} & \boxed{1} \\ \text{PC} & \boxed{1}+1 \end{bmatrix} \right\rangle \end{bmatrix}$$

We then posit a set of constraints that introduce argument reference features in the representation of verbs (as part of the value of their MS attributes) for both subject agreement markers (20)-(22) and incorporated object pronouns (23)-(24) (constraints are simplified for presentation purposes). While the inflectional feature for subject agreement markers of verbs with only one NP on the ARG-ST list is always of sort *vb-arg-ref*, it is only of sort *vb-arg-ref* in the present for verbs with at least two NPs on the ARG-ST list; in the past it is of sort *mm-arg-ref*. Conversely, for

incorporated object pronouns, the inflectional feature is of sort *vb-arg-ref* in the past while it is of sort *mm-arg-ref* in the present.

Subject agreement present

(20) $\begin{bmatrix} \text{TNS} & pres \\ \text{ARG-ST} & \langle \text{NP}_{\boxed{1}} \rangle \oplus list \end{bmatrix} \Rightarrow \begin{bmatrix} \text{INFL} & \begin{bmatrix} \text{MS} & set \uplus \left\{ \begin{bmatrix} vb\text{-}arg\text{-}ref \\ \text{AGR} & \boxed{1} \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$

Subject agreement past

(21) <u>Intransitive:</u> $\begin{bmatrix} \text{TNS} & past \\ \text{ARG-ST} & \langle \text{NP}_{\boxed{1}} \rangle \oplus list\left(\begin{bmatrix} \text{CAT} & \neg\ noun \end{bmatrix} \right) \end{bmatrix} \Rightarrow \begin{bmatrix} \text{INFL} & \begin{bmatrix} \text{MS} & set \uplus \left\{ \begin{bmatrix} vb\text{-}arg\text{-}ref \\ \text{AGR} & \boxed{1} \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$

(22) <u>Transitive:</u> $\begin{bmatrix} \text{TNS} & past \\ \text{ARG-ST} & \langle \text{NP}_{\boxed{1}}, \text{NP} \rangle \oplus list \end{bmatrix} \Rightarrow \begin{bmatrix} \text{INFL} & \begin{bmatrix} \text{MS} & set \uplus \left\{ \begin{bmatrix} mm\text{-}arg\text{-}ref \\ \text{AGR} & \boxed{1} \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$

Object incorporated pronoun

(23) <u>Present:</u> $\begin{bmatrix} \text{TNS} & pres \\ \text{ARG-ST} & \langle \text{NP}, \text{NP}^{pron\text{-}aff}_{\boxed{2}} \rangle \oplus list \end{bmatrix} \Rightarrow \begin{bmatrix} \text{INFL} & \begin{bmatrix} \text{MS} & set \uplus \left\{ \begin{bmatrix} mm\text{-}arg\text{-}ref \\ \text{AGR} & \boxed{2} \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$

(24) <u>Past:</u> $\begin{bmatrix} \text{TNS} & past \\ \text{ARG-ST} & \langle \text{NP}, \text{NP}^{pron\text{-}aff}_{\boxed{2}} \rangle \oplus list \end{bmatrix} \Rightarrow \begin{bmatrix} \text{INFL} & \begin{bmatrix} \text{MS} & set \uplus \left\{ \begin{bmatrix} vb\text{-}arg\text{-}ref \\ \text{AGR} & \boxed{2} \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$

To account for the fact that inflectional features of sort *mm-arg-ref* alternatively occur within the verb form and at the right edge of the first NP complement, we split the Morphological Well-formedness Constraint in Crysmann & Bonami (2016, 351) into two constraints, one that applies to words of sort *intr-wd* (words without an NP on the COMPS list) and one that applies to words of sort *tr-wd* (words with at least one NP on the COMPS list). Words of sort *intr-wd* obey the constraint represented in Figure 19 of Cryssman & Bonami: the word's list of morphs includes in the order of their position class the values of the MPH attributes of all members of the set of exponence rules (RR) (25). Words of sort *tr-wd* obey a similar constraint, except that the word does not include an exponence rule for the argument referencing index of sort *mm-arg-ref*; the *mm-arg-ref* feature is a member of the right edge feature of the first NP on the COMPS list, as shown in (26). (See Miller & Halpern (1993) and Crysmann (2010) for the need to distinguish between trigger (TRIG in (26)) and marking (MARK in (27)) edge features).

(25) Intransitive word mobile morph inflection:

$intr\text{-}wd \rightarrow \begin{bmatrix} \text{ARG-ST} & \langle \text{NP} \rangle \oplus list\left(\begin{bmatrix} \text{CAT} & \neg\ noun \end{bmatrix} \right) \\ \text{INFL} & \begin{bmatrix} \text{MS} & \boxed{0}\left(\boxed{\text{M}_1} \cup \ldots \cup \boxed{\text{M}_n} \right) \\ \text{RR} & \left\{ \begin{bmatrix} \text{MUD} & \boxed{m_1} \\ \text{MS} & \boxed{0} \end{bmatrix}, \begin{bmatrix} \text{MUD} & \boxed{1}\boxed{m_2} \\ \text{MS} & \boxed{0} \end{bmatrix}, \ldots, \begin{bmatrix} \text{MUD} & \boxed{m_n} \\ \text{MS} & \boxed{0} \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$

(26) Transitive word mobile morph inflection:

$tr\text{-}wd \rightarrow \begin{bmatrix} \text{INFL} & \begin{bmatrix} \text{MS} & \{f_1,\ldots,f_n\} \cup \{\boxed{1}mm\text{-}arg\text{-}ref\} \\ \text{RR} & \left\{ \begin{bmatrix} \text{MUD} & f_1 \end{bmatrix}, \ldots, \begin{bmatrix} \text{MUD} & f_n \end{bmatrix} \right\} \\ \text{COMPS} & \left\langle \text{NP}\begin{bmatrix} \text{EDGE|TRIG|RIGHT} & set \uplus \{\boxed{1}\} \end{bmatrix} \right\rangle \oplus list \end{bmatrix} \end{bmatrix}$

To ensure the proper verb-external expounding of the *mm-arg-ref* features, we posit the unary-branching *word* to *word* construction shown in (27). Crucially, the INFL feature of the mother includes a morph whose phonology (②) is that of the daughter. As the exponence rules for *mm-arg-ref* require its exponence to be in the position that follows the first position (the construction in (27) follows the analysis of the *relative* placement of morphs discussed in Bonami & Crysmann (2013) and Crysmann 2021 exemplified in (19)). Note that we assume the agreement feature is only part of the value of the MPH attribute on the mother node, as mobile morphs can attach to uninflected words. Positing a *word*-to-*word* construction has the advantage of directly accounting for the expounding of the *mm-arg-ref* in the same position class as when it is expounded verb-internally: the mobile morph follows the first morph of the last word of the NP complement just as it follows the first morph of the verb form.

$$
(27) \quad
\begin{bmatrix}
\textit{wd-to-wd-infl} \\[4pt]
\text{INFL} \quad
\begin{bmatrix}
\text{MS} \quad \{ ③\textit{mm-arg-ref}, ⑥ \} \\[6pt]
\text{RR} \quad \left\{ \left[\text{MUD} \; \left\{ ⑥ \begin{bmatrix} \textit{mm-stem-lid} \\ \text{STEM} \; ② \end{bmatrix} \right\} \right] \right\} \uplus \textit{set}
\end{bmatrix} \\[6pt]
\text{EDGE|MARK|RIGHT} \quad \{ ③ \} \\[6pt]
\text{DAUGHTERS} \quad \left\langle \begin{bmatrix} \textit{word} \\ \text{PH} \quad ② \end{bmatrix} \right\rangle
\end{bmatrix}
$$

At first glance, Soranî morphological argument referencing looks like a cross between something like Pashto second position endoclitics (see Dost (2007) for a treatment of Pahsto endoclitics within HPSG) and the distinction between subject agreement markers/object incorporated pronoun argument referencing characteristic of Bantu languages (Bresnan & Mchombo, 1987). In this paper we show, first, that Soranî verb-external argument referencing morphs are not second position clitics (or affixes): they are edge affixes on the least oblique NP complement. We argue that *mobile* morphs are best modeled as second position inflectional morphs using the relative morph placement analysis of Crysmann (2021, 983) and the approach to edge inflection outlined in Miller & Halpern (1993) and Crysmann (2010). Second, we show that Soranî morphological argument referencing displays an interesting dissociation of syntax and morphology that speaks to the architecture of grammars. Both subject and object argument referencing morphs can be either *verb-bound* or *mobile* and both *verb-bound* or *mobile* morphs can correspond to either agreement markers or incorporated pronouns. Both dissociations between syntactic status and morphological status (either with respect to grammatical function or agreement/realization) are difficult to accommodate in theories that assume an isomorphism between morphological linear order and constituency/grammatical function—be it some version of the mirror principle Baker (1985) or the view that morphological expounding feeds off functional syntactic terminals (Embick, 2015). In theories where inflectional features (members of the MS set) and syntactic information (order on the ARG-ST list or presence on both the ARG-ST list and valence lists) are kept distinct, like HPSG, such dissociation is easily modeled.

References

Baker, Mark. 1985. The mirror principle and morphosyntactic explanation. *Linguistic Inquiry* 16(3). 373–415.

Bonami, Olivier & Berthold Crysmann. 2013. Morphotactics in an information-based model of realisational morphology. In Stefan Müller (ed.), *Proceedings of the 20th International Conference on Head-Driven Phrase Structure Grammar, Freie Universität Berlin*, 27–47. Stanford, CA: CSLI Publications.

Bonami, Olivier & Pollet Samvelian. 2008. Sorani Kurdish person markers and the typology of agreement. Talk presented at the 13th International Morphology Meeting, Vienna.

Bresnan, Joan & Sam A. Mchombo. 1987. Topic, pronoun, and agreement in chicheŵa. *Language* 63(4). 741–782.

Crysmann, Berthold. 2010. Discontinuous negation in Hausa. In Stefan Müller (ed.), *Proceedings of the 17th International Conference on Head-Driven Phrase Structure Grammar, Université Paris Diderot, Paris 7, France*, 269–287. Stanford, CA: CSLI Publications.

Crysmann, Berthold. 2021. Morphology. In Stefan Müller, Anne Abeillé, Robert D. Borsley & Jean-Pierre Koenig (eds.), *Head-driven phrase structure grammar: The handbook* (Empirically Oriented Theoretical Morphology and Syntax 9), 947–999. Berlin: Language Science Press.

Crysmann, Berthold & Olivier Bonami. 2016. Variable morphotactics and Information-based Morphology. *Journal of Linguistics* 52(2). 311–374.

Dost, Ascander. 2007. A domain-based approach to second position clitics in Pashto. In Frederick Hoyt, Nikki Seifert, Alexandra Teodorescu & Jessica White (eds.), *Texas Linguistic Society IX: The morphosyntax of underrepresented languages*, 89–110. Stanford, CA: CSLI Publications.

Embick, David. 2015. *The morpheme: A theoretical introduction* (Interface Explorations 31). Berlin: de Gruyter Mouton.

Eynde, Frank Van. 2021. Nominal structures. In Stefan Müller, Anne Abeillé, Robert D. Borsley & Jean-Pierre Koenig (eds.), *Head-driven Phrase Structure Grammar: the Handbook* (Empirically Oriented Theoretical Morphology and Syntax 9), 275–313. Berlin: Language Science Press.

Levin, Beth & Malka Rappaport Hovav. 2005. *Argument realization* Research Surveys in Linguistics. Cambridge, UK: Cambridge University Press.

Miller, Philip & Aaron Halpern. 1993. English possessives and the syntax of morphological features. In *Proceedings of the 3rd meeting of the formal linguistics society of Mid-America*, 219–234. Evanston, Northwestern University.

Mohammadirad, Masoud. 2020. *Pronominal clitics in Western Iranian languages: Description, mapping, and typological implications*. Paris: Université Sorbonne Nouvelle Paris 3 dissertation.

Samvelian, Pollet. 2007. What Sorani Kurdish absolute prepositions tell us about cliticization. In Frederick Hoyt, Nikki Seifert, Alexandra Teodorescu, Jessica White & Stephen Wechsler (eds.), *Texas linguistic society IX: The morphosyntax of understudied language*, 265–285. Palo Alto, CA: CSLI Publications.