Doubling in Indian Sign Language

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1. Indian Sign Language (ISL):
- An SVO language, with asymmetry between embedded and matrix clauses.
- Overt arguments and adjuncts are scrambled towards the left of the verb.
- A present vs. non-present language lacking overt tense markings-resorts to temporal adverbs, tense neutralisation, and aspectual marking for time reference.
- Wh-phrase is always clause final.
- Delhi-Bombay variety (rather than varieties as generally assumed on the lexical basis) is one of the varieties of SL of India under the generic label of ISL.

2. Faculty of Language (FL), Modality and Feature:
- The conception of FL and its design: moulded by the requirements of the external performance systems.
- Modality differences may impose different optimal conditions for convergence.
- Modality similarities and differences are crucial in the understanding of UG.
- Feature:
    - Drives the syntactic computations (Chomsky 1995)
    - The projections are drawn identifying each head with a feature (Kayne 1994)
    - Attains the size of a morpheme, a word and a phrase (Starke 2009).
    - Introduces:
        - a sense that syntax is "language-free" (see Starke 2009 for details).
        - cross-linguistic similarities and differences are rather due to the feature/s
        - all phenomena and structures can be analysed syntactically.

> 'there are **features**, and none other enters into computation.'

3. Sign Language (SL) and Spoken Language:
- Share extensive properties and grammatical correlates
- Exhibit substantial differences in structure and organisation.
- SLs exhibit features of which there are no parallels in spoken languages – generally dubbed as SL universal in SL literature.
- SL universals are ascribed to modality differences that SL employ.

> **Consequence:**
> Such account fail to provide account of phenomena arising from the same C-I system as the difference between SL and spoken language is the difference of the S-M system that impose different optimal conditions for convergence rather than the difference of the C-I system.

4. Addresses:
Conceptualisation:
- the 'modality differences' do not make SL unique by virtue of its S-M system
- the interface requirements of the S-M system creates the differences in terms of the feature

Addresses:
- Unified approach to two known SL universals - "INDEX" and "Verb Argreement"
- Provides an account of the structure building feature(s) associated with the phenomena.
- To provide an account of doubling and various other instances of the phenomena.

5. Phenomenon 1: Index and Localisation
- Real reference frame (physical presence of a referent in the discourse context) **Index** to the actual location of the referent.
- Abstract reference frame (a non-present referent): a nominal sign is *assigned a distinct, specific locus by index* in the ipsi/contralateral signing space or a nominal sign is *assigned a locus by articulating* it at the ipsi/contralateral signing space - **Localisation**.
- Abstract reference frame and Real reference frame is 'Linguistic reference frame'
- SL is articulated in Linguistic reference frame.

(1)   **RAM INDEX** $_{IPSI}$ **INDEX**$_{CONTRA}$ BOOK $_{IPSI}$ GIVE $_{CONTRA}$
      Ram   localisation Paroma   book   give.
      Ram gave a book to Paroma.

- Subsequent references to that nominal in the discourse: Index the locus even after many intervening signs; unambiguous referent.

(2)   AFTER DAY 3 **INDEX**$_{CONTRA}$ **INDEX**$_{IPSI}$ BOOK $_{CONTRA}$ GIVE $_{IPSI}$
      After three days, Paroma gave a book to Ram.

- Indexing is a subsequent INDEX, not localisation as it does not involve assigning a locus to the referent.
- Indexing and localisation, although similar in articulatory terms, are different.
- In ISL, not all nouns allow localisation: only [+animate], [+concrete], [+locative] nouns may be localised, and [+abstract], [+mass], and [+generic] nouns may not.
- It shows that there is semantic restriction regarding localisation.
- Interestingly, there may be intervening material between a noun and localisation like adjective that modifies the noun.

(3)   BOOK RED   IX $^{LOC: IPSI}$ OLD
      A red book is old.

Localisation has barely received any distinct linguistic analysis, whereas **INDEX** has received a fair amount of attention as an equivalent of spoken language categories.

6. Analyses

- In SL literature, localisation and INDEX are, often, regarded as one.
  - Zeshan (2003): ISL index is a multifunctional sign realised by pointing at various locations, and localisation is one of them.
    - Index to the locus of the signer = 1P
    - Index to the locus of the addressee = 2P
    - Index to the actual location of the referent and/or to the R-loci = 3P
    - Index is used for deictic function - Demonstrative
  - Hidam (2010): favours person feature for ISL.

- Schlenker (2011:9), "…it would be an overstatement to claim that all the features of sign language pronouns are analogous to those of their spoken language counterparts."

- Following **dynamic approach**, Sinha (2008) distinguishes Localisation and Index.
  - Uses the ideas of Heim (1982) in distinguishing localisation and index.
  - Localisation is governed by the Novelty Condition.
  - Indexing is in service of the Familiarity Condition.
  - This entails that a noun introduced into a discourse without localisation is indefinite while the subsequent articulation of the same in the discourse is definite.

- **Generative framework**: localisation, index and possessive sign in SL are usually associated with the head of the determiner phrase.
- **Research agenda:** directed towards decomposition of D.
- **Assumption**:
  - D is not a monolithic element but composed of features
  - these features vary within and across languages cross-linguistically as well as on cross-modality basis.

- **Attempt**: To determine the composition of features expressed in D (henceforth d-features) in terms of their content from ISL data.
- Sinha (2013)
  - **Number**: [±singular] and [±augmented] (following Harbour 2007)
    - [+singular, –augmented] is singular
    - [–singular, –augmented] is dual
    - [–singular, +augmented] is plural

  - **Gender**: Harley & Ritter (2002) had independently argued that animacy is a form of gender. Following Harley's (2008) two-feature system: [±feminine] and [±neuter]
    - [+feminine, - neuter] is FEM
    - [-feminine, - neuter] is MASC
    - [-feminine, +neuter] is neuter

○ The d-feature **Respect**: [± honorific]

Adger and Harbour (2008) appropriate respect (their honorification) within the ambit of φ-features.

○ The d-feature **Deixis** :[±proximate] and [±remote]
   • [+proximate, -remote] is proximate
   • [-proximate, -remote] is distal
   • [-proximate, +remote] is remote

○ The d-feature S**peech role**: [±status].

Schlenker et al. (2012) maintains that this distinction of high or low position of a locus in signing space has a direct semantic reflex, akin to the semantic contribution of gender features of pronouns.

○ **Definiteness**: [+fam(iliarity)] and [-fam(iliarity)]

Aboh (2003): D-link features like familiarty and novelty

LOCALISATION/INDEX – Number, Gender, Respect, Deixis, Speech Role, ± Fam(iliarity)

7. Phenomenon 2: Verb Agreement
   • Across sign languages, verbs basically fall into two classes –
   • verb signs with directional movement or spatial displacement
   • verbs that do not.

In SL literature, the onset and the offset of the verb's path movement are labeled as 'verb agreement'.

   • Padden's (1988) typology of verbs:
   i. Plain verbs: Those verbs, which do not inflect for 'agreement' are called plain verbs. The form of the verb is not determined by the referential features of its arguments.

(4)   YESTERDAY IX[FRONT] **RUN**
         You ran yesterday.

ii. Agreement verbs: Those verbs that 'agree' with their subject and object. The 'agreement' verbs are further divided into two groups. These two groups differ on the basis of the linear ordering of the 'agreement' affixes.

   • ***Regular verbs:*** The onset of the sign marks the subject and the offset marks the object.
(5)   PAST IX [SELF] S-I-T-A IX [LOC: IPSI] BOOK [SELF]GIVE[IPSI]
         I gave a book to Sita.

   • ***Backwards verbs:*** The offset of the sign marks the subject and the onset marks the object.

> hf----------   hf----------------
(6)   PAST IX $^{FRONT++}$ IX $^{SELF++}$ BOOK $_{SELF}$GET$_{FRONT}$
        You got a book from me.

iii. Spatial verb: These verbs 'agree' with the spatial referents i.e. locations. The onset and the offset of the sign are associated with the actual locations, the source of motion and the goal of motion, respectively.

(7)   CL: HANDLE-BAG CL: HANDLE-BOX ^{FRONT} R-A-M IX $^{LOC: CONTRA}$ $_{CONTRA}$PUT$_{FRONT}$
        Ram puts a bag in a box.

- Citation form of the verb is basically between the signer and the addressee (depending pon the verb typology)

Additional observations (from ISL)

- *'Agreement' is optional*
  - the onset of the verb can be **dropped** if the subject noun associated with is topicalised or is a discourse topic
  - both the onset and the offset are **dropped** - the relative position of the nouns, along with **animacy**, determines the relationship with the verb.

In (8), RAM is topicalised, and is associated with the [EXPRESSION: rb].

> rb----
(8)   a. RAM S-I-T-A BOOK $_{SELF}$ GIVE $_{FRONT}$

> rb-----
        b. R-A-M BOOK S-I-T-A $_{SELF}$GIVE$_{FRONT}$

        c. S-I-T-A BOOK $_{SELF}$ GIVE $_{FRONT}$
           Ram gave a book to Sita

- *Argument drop*
  - Overt arguments of the verb can be **elided**
  - The onset and the offset of the verb's path movement can determine its arguments.

(9) $_{IPSI}$HELP$_{CONTRA}$
        Ram helps Sita.

- *Adjunct*

the offset or the onset marks not only arguments, but adjuncts as well, particularly those adjuncts that serve to delimit the event.

(10)   R-A-M IX $^{LOC: IPSI}$ FLOWER+Cl: FLAT SURFACE IX $^{LOC: CONTRA}$ $_{IPSI}$WALK$_{CONTRA}$
        Ram walks to the garden.

- *Deletion in wh-questions*

In content wh-subject and wh-object questions, the verb is in the citation form.

(11)   a. S-I-T-A IX $^{LOC:\ IPSI}$ R-A-M IX $^{LOC:\ CONTRA}$ $_{IPSI}$**HELP**$_{CONTRA}$

    Sita helps Ram.

    b. S-I-T-A IX $^{LOC:\ IPSI}$ $_{IPSI}$HELP$_{FRONT}$ FACE-WH
       Whom did Sita help?

    c. R-A-M IX $^{LOC:\ IPSI}$ $_{SELF}$HELP$_{FRONT}$ FACE-WH
       Who helped Ram?

(12)   IX $^{LOC:\ CONTRA}$ IX^{FRONT} IX $^{LOC:\ IPSI}$ IX $^{LOC:\ IPSI-2}$ PEN FEM- S-I-T-A IX $^{LOC:\ IPSI\ -3}$ $_{FRONT}$ GIVE$_{IPSI}$ WH

    Which pen did you give to Sita?

Mechanisms for manifestation

- **Appendage**: In body-anchored verbs, like SEE and TELL, the object locus is marked with the **addition** of direction of path movement in the verb stem, with all other formational parameters of its citation form intact.
    - *Appendage - offset appendage and onset appendage*

Fig.1.1 Onset   Fig. 1.2 Offset and offset appendage

(13)   IX^{FRONT} MASC-IX$^{LOC:IPSI}$ $_{FRONT}$TELL$_{IPSI}$ MASC-IX $^{LOC:IPSI-2}$ SICK
         You told him$_i$ that he$_j$ is sick.

Fig.2.1 Onset appendage   Fig. 2.2 Offset

- **Aphesis:** the onset or offset are **muted**.
    (14b) is an instance of *onset aphesis.*

Thus, there are two ways of signing 'Ram gave a book to Sita,' as shown below. The aphesis is assumed to be licensed by **topicalisation** associated with the [EXPRESSION: rb].

(14)   a. FEM-S-I-T-A IX $^{LOC:IPSI}$ RAM IX $^{LOC:CONTRA}$ BOOK^{++} THREE $_{IPSI}$GIVE$_{CONTRA}$
                  rb------------------
               b. FEM-S-I-T-A IX^{IPSI} RAM $^{IXLOC:CONTRA}$ BOOK THREE $_{SELF}$GIVE$_{CONTRA}$
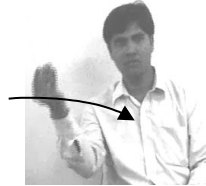   Sita gave three books to Ram.

    Fig. 3.1 Onset   Fig. 3.2 Onset aphesis   Fig. 3.3 Offset

- **DIR**: A **strategy** of 'agreement' with plain verbs, which is labelled in the sign language literature as Person Agreement Marker (PAM) (Rathmann 2000) or AUX (Smith 1990; Fischer 1996) or as auxiliary verb (Bos 1994 for Sign Language of the Netherlands).

(15)   PLANT+ CIRCLE IX $^{LOC: IPSI}$ IX ^{SELF} RUN $_{SELF}$ DIR $_{IPSI}$
        I ran to the park.

                    Fig. 4 DIR

UNDERLYING FORM		PHENOMENON					
ONSET	OFFSET	APPENDAGE		APHESIS		APPENDIX	
TELL, SEE, GIVE, LIKE		ONSET	OFFSET	ONSET	OFFSET	ONSET	OFFSET
		TELL	SEE	GIVE	------	DIR	

Table 1. Verb and its mechanisms for marking.

8. Analyses

- Shepard-Kegl (1985), who argues that in ASL "the simple verb stem all take one argument which can simply be characterised as LOC" and clause as a whole assign another – a structural function "tied into **a complex metaphysical system** hooked up to the conceptual system encoded to the lexical semantics, particularly the lexical semantics of verb"
- For ASL, Lillo-Martin (1991) and Lillo-Martin and Meier (2011) posit that directional verbs have **overt or null arguments** whose features and referential index they copy. The null pronouns **licensed by agreement.**

- Sinha (2003) assumed PAH (Jelinek 1984) and MVC (Baker 1996)
  - the onset and the offset of the verb (phonologically realized or zero as in the case of plain verbs) are argument morphemes of the verb receiving **theta-roles** from it.
  - These affixes on the verb absorb Case; consequently, overt NPs are **left-dislocated** to adjunct position.
- Sinha (2008): the underlying form of the ISL verb is composed of direction of path movement i.e. every verb, including plain verbs, are specified for onset and offset marking.
  - 'Agreement', *appendage*, *aphesis* and *appendix* are the mechanisms that operate are the possible **manifestations** of this deep property.
  - 'verb agreement' is actually a relation whereby the onset and the offset of the path component of the verb come to encode **theta** relations.
  - instances of *appendage, aphesis* and *appendix* the onset and offset of verb are added in the **PF component** (see Wilbur's (2003) Visibility Hypothesis).

Shows relationship between the offset and the onset with the nouns in a sentence.

9. Towards Unified Approach

(16)   a. S-I-T-A IX $^{LOC:IPSI}$ RAM IX $^{LOC:CONTRA}$ $_{IPSI}$HELP$_{CONTRA}$

       b. IX^{CONTRA} IX^{IPSI} $_{IPSI}$HELP$_{CONTRA}$

       c. IX ^{CONTRA} $_{IPSI}$HELP$_{CONTRA}$

       d. IX^{IPSI} $_{IPSI}$HELP$_{CONTRA}$

       e. $_{IPSI}$HELP$_{CONTRA}$

        Sita helps Ram.

Index/Localisation- Verb Agreement	X Y *x-Z-y*	(1)

- There is **no semantic difference** in these sentences.
- **Information structure** is different.

- Schlenker (2012) sets an agenda for unified analysis of "INDEX" and "Verb Agreement" - formal to INDEX and gestural approaches to verb agreement
- Note that onset and offset share features with the nouns – localised and/or indexed.
- Think: Theta-roles are features (Reinhart 2003) - !/?

- Localisation and INDEX
  - **Number**: [±singular] and [±augmented] (as a single set)
  - **Gender**: [±feminine] and [±neuter]
  - **Respect**: [± honorific]
  - **Deixis** :[±proximate] and [±remote]
  - **Speech role**: [±status]
  - **Definiteness**: [+fam(iliarity)] and [-fam(iliarity)]

- Verb agreement
  - **Number**: [±singular] and [±augmented] (identified as a single set)
  - **Gender**: [±feminine] and [±neuter] (animacy)
  - ~~**Respect**: [± honorific]~~
  - **Deixis** :[±proximate] and [±remote]
  - **Speech role**: [±status]
  - **Definiteness**: [+fam(iliarity)] and [-fam(iliarity)] (topicalisation ellided)

- A sub-set of d-features is **shared** between Localisation/Index and Verb agreement.
- **Dual Doubling** of X's features and Y's features on Z as x-Z-y
- There are **variants** in the realisation- 'Agreement', *appendage*, *aphesis* and *appendix*

- **Expected Outcome**
  - the onset of the verb can be dropped if the subject noun associated with is topicalised or is a discourse topic - [+fam(iliarity)]
  - Localised noun is [- fam(iliarity)] – its onset cannot be dropped off.
  - both the onset and the offset are dropped and verb can be its citation form (bare) – animacy: *Gender*
  - Singularity is identified (as a set)

> **Tentative Conclusion (1):**
> The variations are due to realisation of different features shared between X and Y with Z.

10. Phenomenon 3: Classificatory Morpheme

- In SL literature, the phenomena is popularly known as classifier incorporation.

      hf-------   hf--------------------   ht--------------
(17)   IX ^{FRONT} CL: FLAT SURFACE-TABLE CL: HANDLE-MUG $_{FRONT}$CL: HANDLE=PUT$_{[LOCI: CL: FLAT SURFACE-TABLE]}$
      You put a mug on the table.

Fig. 5.1   Fig. 5.2   Fig. 5.3

- Fig. 5.1 and 5.2 show the onset and the offset of the verb of motion and location.
- Fig. 5.3 the handshape of the referent is assumed by the verb in lieu of its citation handshape – not a lexical noun itself but a handshape that "represents the shape and size of MUG" - an instance of doubling.
- Note that it is not always the properties of the theme noun that the classificatory morpheme

doubles.

(18)   a. FEM-IX [IPSI] S-I-T-A IX [CONTRA] BOOK [IPSI]CL: FLAT THICK=GIVE [CONTRA]
         She gave a book to Sita.

        b. FEM-IX [IPSI] S-I-T-A IX [CONTRA] MANY BOOK [IPSI]CL: MASS=GIVE [CONTRA]
         She gave many books to Sita.

        c.* FEM-IX [IPSI] S-I-T-A IX [CONTRA] MANY BOOK [IPSI]CL: THICK=GIVE [CONTRA]
         She gave many books to Sita.

        d. FEM-IX [IPSI] S-I-T-A IX [CONTRA] MANY BOOK [IPSI]CL: HORIZONTAL/VERTICAL=GIVE [CONTRA]
         She gave many books to Sita.

        e. *FEM-IX [IPSI] S-I-T-A IX [CONTRA] BOOK CL: SHEET [IPSI]GIVE [CONTRA]
          She gave a book to Sita.

        f. FEM-IX [IPSI] S-I-T-A IX [CONTRA] BOOK [IPSI]GIVE [CONTRA]
         She gave a book to Sita.

Classificatory Morpheme	A Z=a	(2)

- The classificatory morpheme that marks the noun BOOK is CL: FLAT THICK
- CL: FLAT THICK can mark the verb GIVE only when the noun is in singular - (47e) shows that CL: SHEET cannot be used in this context).
- MANY can have either the classificatory morpheme of the quantified noun or the handshape of the verb in its citation form – variation
- The classificatory morpheme of the referent noun, as in other modifications is disallowed.
- MANY modifies a noun, the classificatory morpheme changes to another classificatory morpheme labelled as CL: MASS, which is the offset of the sign MANY – an instance of doubling.
- The classificatory morpheme [HANDSHAPE: scB] stretches between the H1 and the H2 - shows the approximate amount of the noun sign quantified as a single unit rather than the plural entities - not found with indefinite, numeral and other quantifiers.
- In (47c-d), the noun is in plural and quantified, the classificatory morpheme must be with CL: HORIZONTAL/VERTICAL, which marks primarily the plurality and secondarily the perspective of the signer.
- In ISL the doubling of the theme by the classification morpheme is optional.
- Note: Further research is needed to determine whether the presence or absence of such agreement has any consequence for noun phrase interpretation, but for now we can assume that this optionality simply suggests that agreement is optional in ISL.

11. Analysis

- In ISL, a verb can be in the citation form or the classificatory morpheme can be attached to it – **variation** – **optional**.
- The classificatory morpheme can be of the quantified noun (Doubling) or the handshape of the verb in its citation form (bare) – **variation**.
- Number seems to be a part of the classificatory morpheme (as a single unit).

- Glück & Pfau (1997) (for German Sign Language) argues against 'incorporation' and suggests that 'classification' is an instance of inflection akin to agreement following Anderson (1992)
  a. *Agreement* properties which are assigned to words by reference to the value on a particular 'paradigmatic dimension' of some other item within the same syntactic structure (e.g. subject-verb agreement).
  b. *Phrasal* properties which are assigned to larger constituents within a structure, but which may be realized on individual words that constitute only part of those structures.

- The inherent properties of arguments (subject/object) are the relevant features for trigerring classification morphology on verbs.

12. Doubling

- ISL shows doubling in terms of Index/Localisation and Verb Agreement and Classificatory Morpheme

Doubling	(X) (Y) (Q) A(cl)	(x)-Z=((a)-(q))-(y)	(3)

Tentative Conclusion (2): – locus of doubling and variation – approach - further research
- In ISL, doubling takes place as an instance of *configurational property.*
- The variations arise due to the realisation of *different features* within the configuration.
- The manifestations are added in the *PF component.*
- *Interface requirement* forces key properties of grammar to be visible (Wilbur's (2003) Visibility Hypothesis).