On understanding the ‘paradox’ of sign language morphology

Adam Schembri

25th July 2020

Acknowledgments

- Thanks to my collaborators on related projects:
  - Jordan Fenlon, Kearsy Cormier, and Trevor Johnston

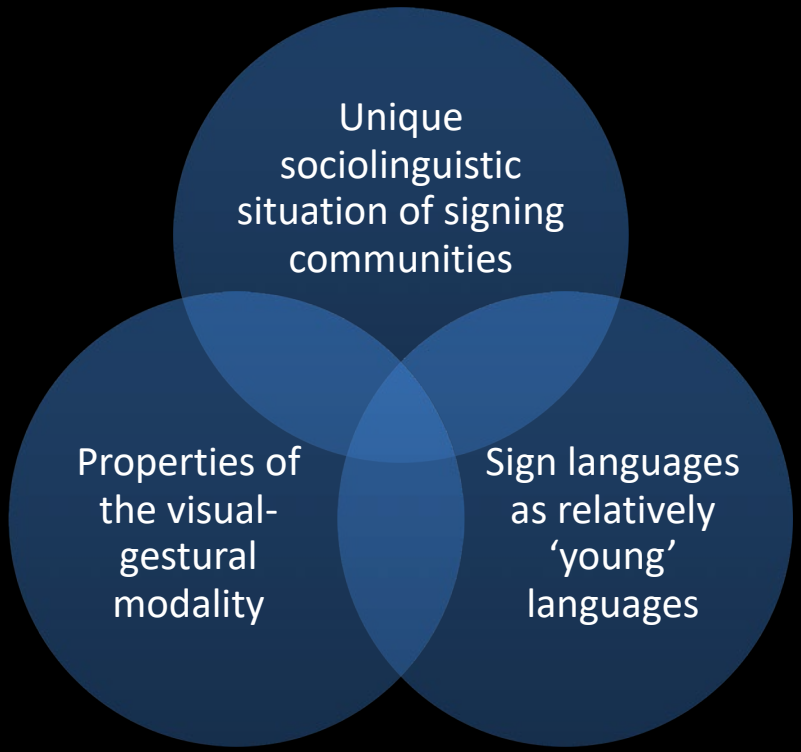
Overview

- Background
- SignMorph: Studying diverse signing communities
- Morphology of sign languages
- The paradox of sign language morphology
- Indicating verbs in BSL
- Sociolinguistic typology
- SignMorph: future research

My research focus

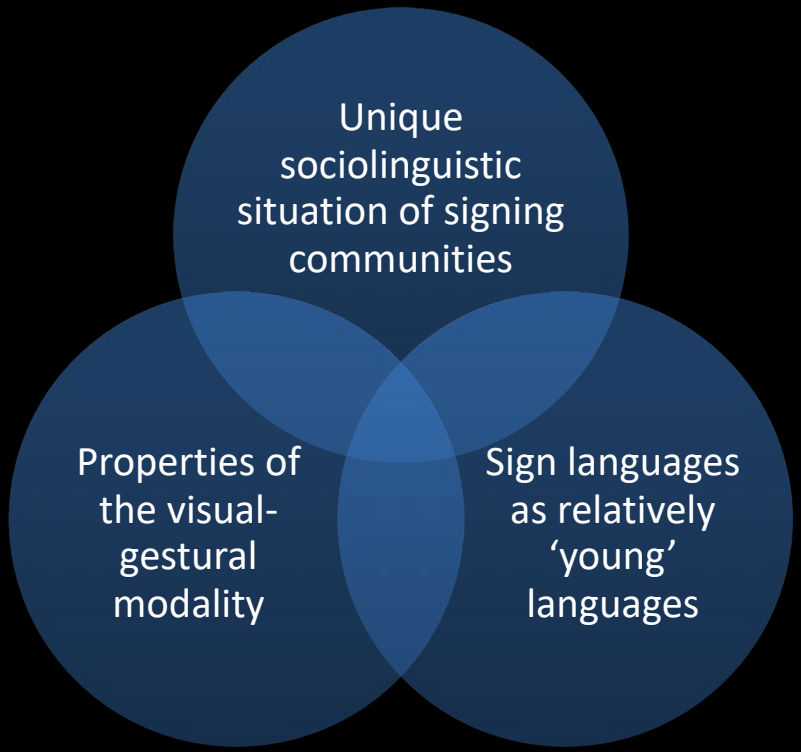
- Sign languages are languages…
- …but what KIND of languages are they?

How can we answer this question?



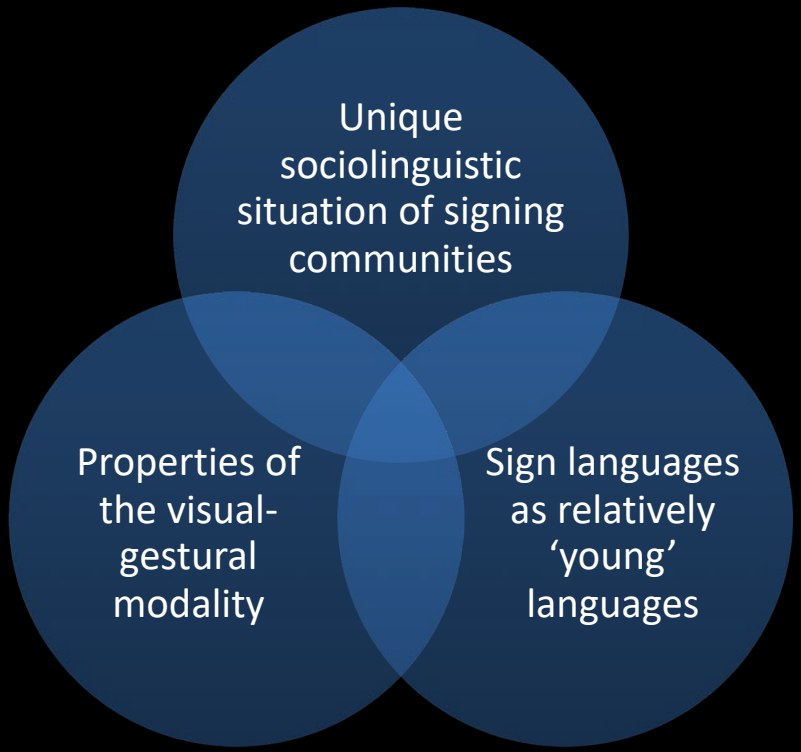
- How do these three distinctive aspects of sign languages impact on the structure and use of sign languages?

Why is this question important?



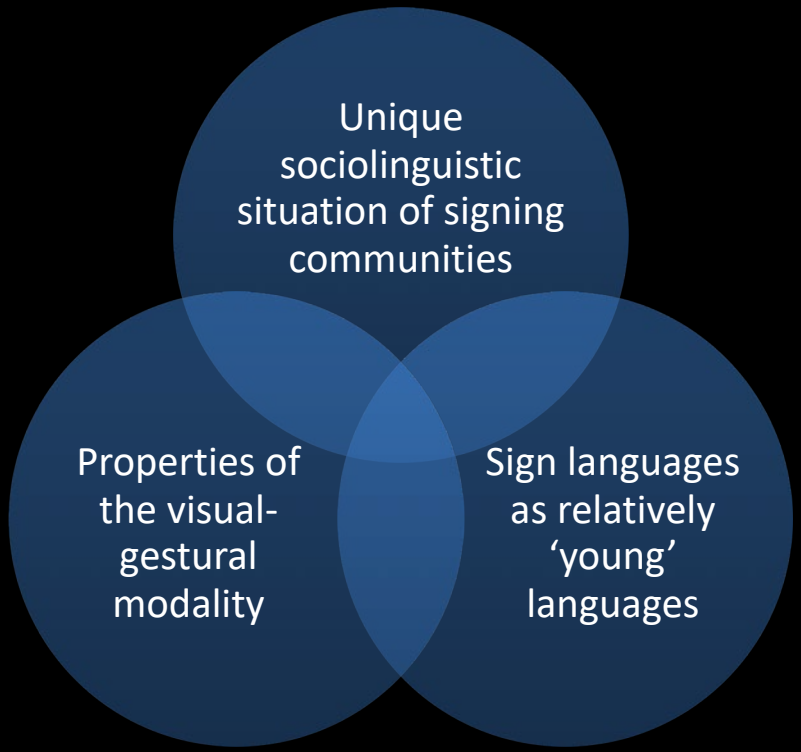
- Sign languages offer an important 'test case' for theories of linguistic universals and language diversity

Why is this question important?



- Understanding the nature of sign language structure and use has important implications for applied sign linguistics, including the teaching of sign languages

Why is this question important?



- Important to acknowledge that the sociolinguistic situation of the BSL and Auslan communities is the result of oppression and marginalisation.

ERC Advanced Grant ‘SignMorph’

- A new five year project: ‘SignMorph’ (full title *The Dynamics of Sign Language Grammar: Morphology, Language Change, Iconicity, and Social Structure in Signing Communities*)
- SignMorph aims to better understand similarities and differences in the grammar of sign languages, and how these are shaped by language-internal and language-external factors.

ERC Advanced Grant ‘SignMorph’

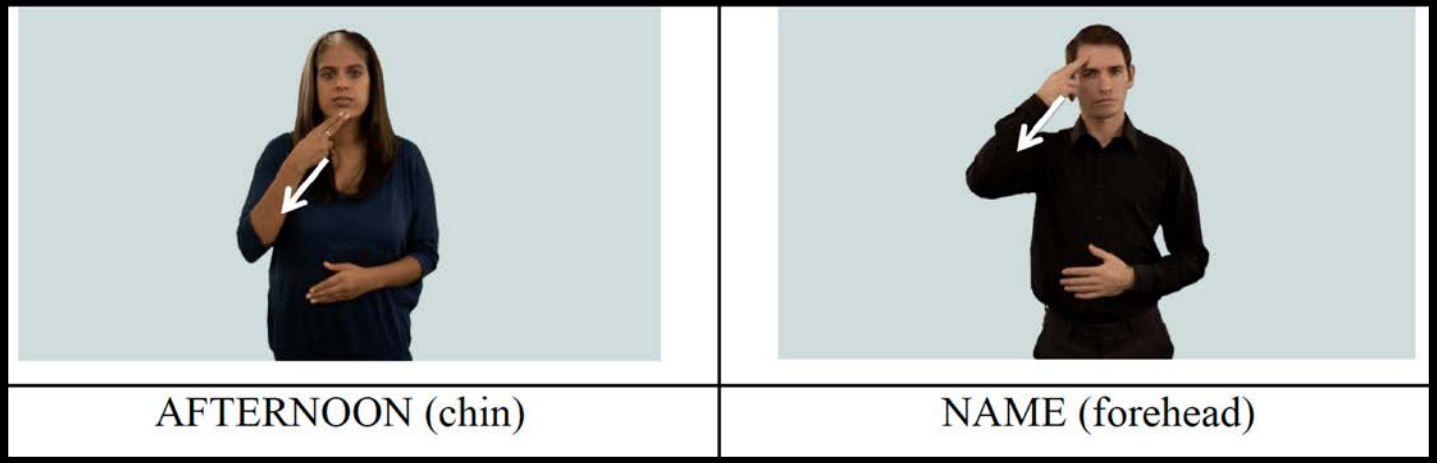
- It will involve a comparison of data from:
  - ‘Established’ ‘macro-community’ sign languages
    - E.g., BSL, Auslan, Libras etc.
  - ‘Established’ ‘micro-community’ sign languages
    - E.g., Kata Kolok (Indonesia), Adamorobe Sign Language (Ghana)
  - ‘Emerging’ sign languages
    - E.g., Nicaraguan Sign Language, Cambodian Sign Language

ERC Advanced Grant ‘SignMorph’

- The factors to be investigated in the study include
  - (1) the role of iconicity in mapping grammatical meanings onto form
  - (2) the relative ‘youth’ of sign languages, and how their short history has impacted on variation and change in grammatical structure
  - (3) the social structure of signing communities

Morphology of sign languages

- Signs in BSL and other sign languages are composed of contrastive
  - hand configurations
  - locations on the body or in space around the signer
  - movements of the hands
  - non-manual features, such as mouth actions and facial expressions



Fenlon et al. (2017)

Morphology of sign languages

- It is these formational features that exhibit a wide range of alternations that convey many key differences in meaning
- Many of these morphological patterns are widely found in unrelated sign languages

Fenlon et al. (2017)

Morphology of sign languages

- Agreement (Padden, 2016) or indicating verbs (Fenlon et al., 2018) may be directed towards locations associated with the referents of the verb's arguments
- Classifier constructions (Supalla, 1986) or depicting verbs (Liddell, 2003) include classifier handshapes which may combine with movement and location units to build complex representations of referents in motion, their relative location, and/or distribution

DC:upright.stick.object+approach+upright.stick.object+hesitate+then.pass (with simultaneous use of constructed action as approaching person)

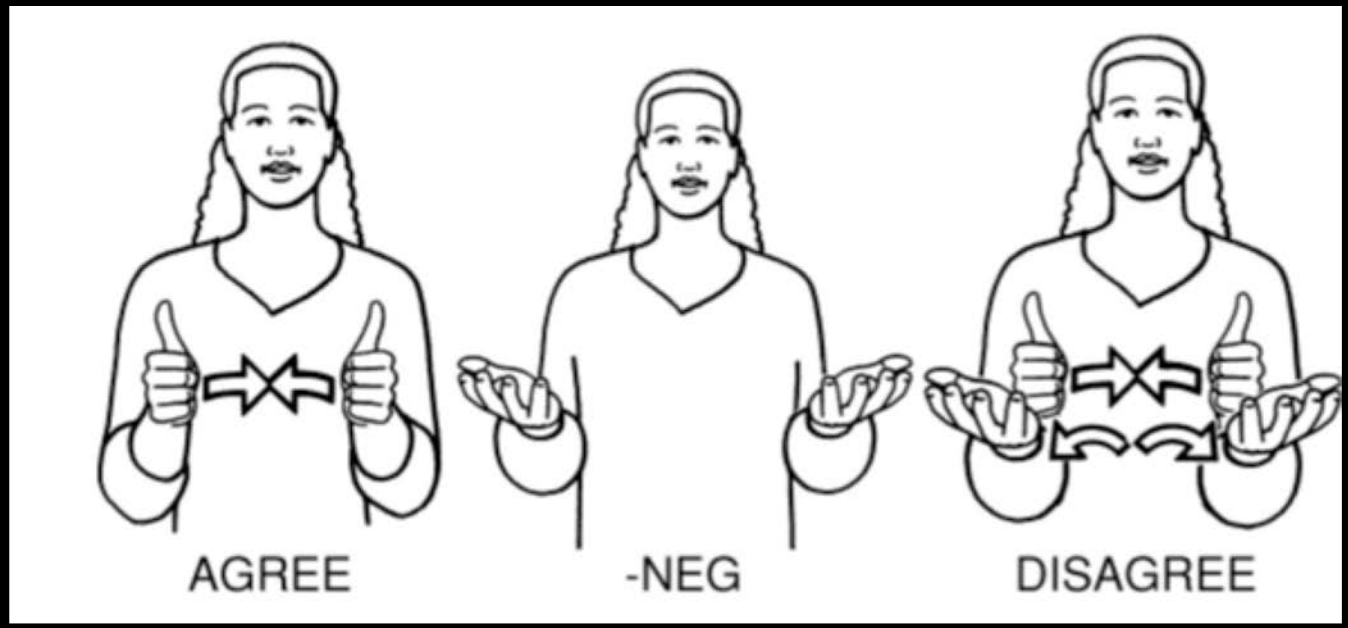
Cormier et al., 2012

Morphology of sign languages

- Reduplication of a subset of nouns is used to signal plurality, such as BSL CHILD versus CHILDREN
- Fast or slow reduplication of some verb signs may be used to signal habitual versus continuative aspect, as in Auslan JOKE (Schembri et al., 2018).

Morphology of sign languages

- Negative affix in a small number of BSL and Auslan signs, like DISAGREE.



The paradox

- Napoli (2019, p10)
  - ‘On the one hand, sign language morphology appears complex, given verb inflection and classifier constructions…On the other hand, sign language morphology appears simple in that there is little affixation and the affixes that do appear seem to have evolved from lexical items via grammaticization…’
- Aronoff, Meir, and Sandler (2005, p304):
  - ‘Sign languages seem to present the impossible combination of Navajo-like and Tok-Pisin-like languages, a typological puzzle.’

The paradox

- Aronoff, Meir, and Sandler (2005):
  - The paradox comes about because ‘sign languages…have two different routes to morphological complexity’
  - They claim these two routes reflect the modality and history of sign languages
    - The visual-gestural modality allows for simultaneity and iconicity, creating complex sign-internal morphology
    - The relative youth of sign languages means there has been insufficient time for affixal morphology to emerge through grammaticalisation: it is widely assumed that the oldest sign languages are less than 300 years old, and most are younger
  - It is these claims that SignMorph aims to explore.

But what is morphological 'complexity'?

- Aronoff et al. (2005) do not define what they mean by 'morphological complexity'.
- Let's look at this Auslan indicating verb with alternations in the initial and final location of HELP signalling agent and patient roles.
- 2SG-HELP-1SG
- 'You help me'

But what is morphological ‘complexity’?

- This might be compared to the Turkish word:
  - *teyzelerim* ‘my maternal aunts’
  - *teyze-ler-im*
  - maternal.aunt-PL-1SGPOSS
- The Auslan sign might be analysed as a base morpheme plus two inflectional morphemes.
- The Turkish word as a root plus two inflectional morphemes.
- Both forms have complex internal structure.

Indicating verbs

- So how did this internal structure come about?
- The development of verb directionality has been studied in emerging sign languages, such as Nicaraguan Sign Language (Senghas, 2003; Montemurro et al., 2019)
- This data suggests that although such verb signs may start with no alternations in the first generation of signers, they change over the following generations from a system where arguments are represented by the signer's own body to one in which arguments are associated with abstract locations in space around the signer's body.

Indicating verbs

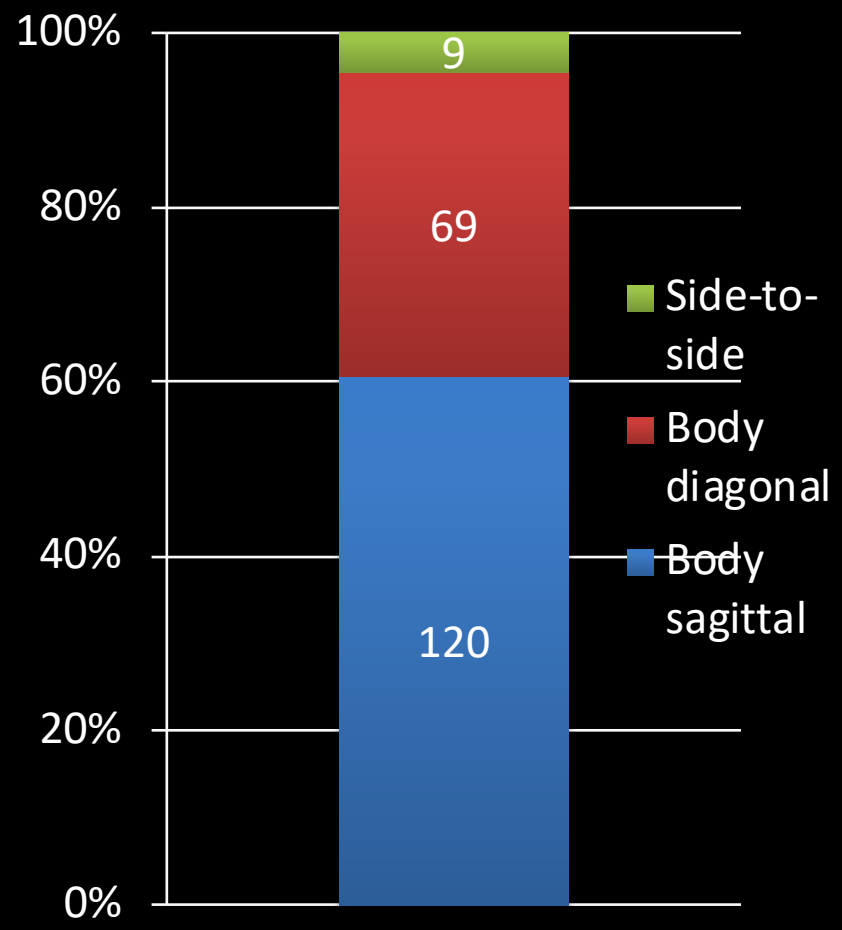
- This seems to support the Aronoff et al. (2005) claim that iconicity leads to rapid development of sign-internal complexity.
- But recent studies of BSL as an ‘older’ sign language suggest the picture is more complicated than this.

Indicating verbs

- BSL corpus data show that the use of abstract spatial locations away from the signer's body is not the preferred strategy (Cormier et al., 2015).
- In fact, there is a strong preference for one of the arguments to be represented by the signer's body.

Indicating verbs

- Only 9 tokens (4%) involving the use of abstract locations were identified out of 238 indicating verbs in 3rd to 3rd person contexts.
- This stands in contrast to what the data from emerging sign language studies suggests.
- Thus we need more data to compare 'emerging' and 'established' sign languages in more detail.



So what is morphological ‘complexity’?

- Beyond the complex internal structure of words and signs, Trudgill (2011) proposes instead that the following factors are also relevant:
  - irregularity
  - morphological opacity (i.e., unpredictable allomorphy)
  - redundancy
  - morphological marking of categories such as tense, gender, voice etc.
- He claims all of these are difficult for adult learners to master, and represent an additional type of morphological complexity.

So what is morphological ‘complexity’?

- Atsugwei (northern California, USA) has, for example, a great deal of complex allomorphy in verbs of different classes (Baerman et al, 2010).

	class I ‘scratch’	class III ‘kill’
1SG	s- twojoq-a	s- pwəhn-mijehe:
2SG	twojoq-ene?e	pwəhn-mije
3SG	twojoq-enye:	pwəhn-mit?e
1PL	twojoq-enyeyaw	pwəhn-awmit?eyaw
2PL	mohja- twojoq-ewmehe	je- pwəhn-aw
3PL	twojoq-enyi	pwəhn-enwa?waywa

So what is morphological ‘complexity’?

- East Flemish dialects have subject tripling in the first person plural (Trudgill, 2011):
  - *We* *zulle-me* *wij* *dat* *doen*
  - We shall-we we that do
  - ‘We shall do that’

Auslan & BSL

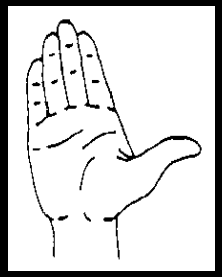
- Characterising the morphology of sign languages is a relatively controversial topic, with no consensus on how many aspects of structural organisation are best analysed (compare Napoli, 2019, with Lepic & Occhino, 2018).
- How does Trudgill's notion of morphological 'complexity' apply to 'older' macro-community sign languages, such as BSL and Auslan?

BSL & Auslan: Irregularisation

- Both BSL and Auslan exhibit low levels of irregularisation.
- There is, however, a small set of irregular negative forms in each language, for example:
  - CAN, CANNOT
  - SHOULD, SHOULD-NOT (BSL)
  - ALLOW, NOT-ALLOW (Auslan)
  - KNOW, NOT-KNOW
  - HAVE, NOT-HAVE1a/b (BSL), NOT-HAVE2(Auslan)
- There are few other examples of irregular forms:
  - PERSON, but PEOPLE

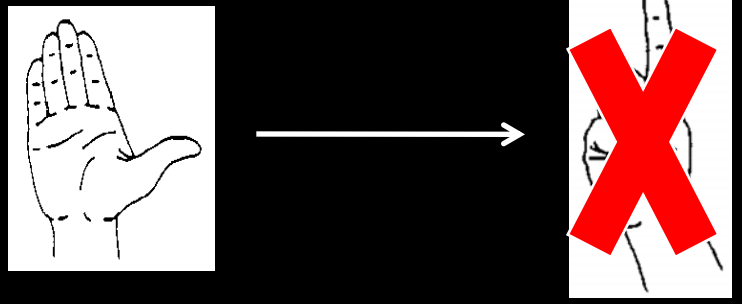
Unpredictable allomorphy

- There is only limited allomorphy in BSL and Auslan that cannot be predicted on the basis of morphophonemic processes.
- The handshape in the first person singular pronoun, for example, is conditioned by the handshape for the preceding or following sign (Fenlon et al., 2013)



?

BAD BREATHING 1SG



BAD BREATHING 1SG

Morphological categories

- Neither BSL nor Auslan employ morphological markers for gender, tense, or voice.
- Temporal information may be conveyed with separate time signs. Defocussing agents is realised by argument drop. Classifier handshapes in depicting verbs do represent a kind of nominal classification system similar to gender, but these markers are found only on a subset of constructions.
- Case marking is also not used, because other means may be used (such as associating arguments with spatial locations) to distinguish argument roles. Genitive is optionally marked on nouns, using a possessive marker that is based on fingerspelled '-s' (borrowed from English).
  - MOTHER POSS-S SISTER 'mother's sister'
- Sign languages do include morphological marking of aspect, and verb directionality has been analysed as person agreement

Redundancy

- There is limited syntagmatic redundancy, with plural marking of most nouns being optional, for example, even when the nominal occurs with a lexical quantifier or verb modified for number.
- The use of directionality in indicating verbs, the classifier handshape in depicting verbs, and the use of constructed action, do represent forms of syntagmatic redundancy.

The paradox and ‘complexity’ issues

- Overall, it might be argued that BSL and Auslan have many signs which show complex internal structure, but – like many other languages, such as Mandarin and Thai (Riddle, 2008)– not a great deal of Trudgill’s type of morphological complexity
- We have seen that the complex internal structure of signs and words may emerge quite quickly due to iconicity, as suggested by Aronoff et al (2005).
- But we must be careful about assumptions about developmental pathways and language change: verb directionality is variable even in an ‘established’ sign language (Fenlon et al., 2018)

The paradox and ‘complexity’ issues

- So while sign languages *are* morphologically complex in the Aronoff et al. (2005) sense, we need to understand more about variation and change in complexity
- Moreover, certain types of morphological complexity found in *some* spoken languages do not appear to be present in sign languages.
- Apart from language age, why else might this be the case?

Trudgill's 'Sociolinguistic typology'

- Peter Trudgill (2011) introduced the term *sociolinguistic typology:* a 'sociolinguistically-informed' approach to linguistic typology.
- This approach assumes that the cognitive skills involved in language processing and production is the same the world over and throughout human history.
- This common set of skills may, however, produce different types of language in different places and at different moments in history due to the influences of varying social structures.

Sociolinguistics and typology

- Trudgill (2011) claims languages which undergo extensive acquisition by adults appear to have relatively less inflectional ‘complexity’
- The moderate morphological ‘complexity’ of languages like English and French, compared to Old English and Latin, may reflect the fact that each of these languages has had large numbers of adult L2 speakers through their history.

So what's *sociolinguistic* about sociolinguistic typology?

- The main point of the theory is that distinctive social characteristics of communities influence the nature of the grammar of their languages.
  - small vs. large population
  - dense vs. loose social networks
  - higher vs. lower social stability
  - lesser vs. greater language and dialect contact

Trudgill's model

	1	2	3	4	5	6
size	small	small	small	small	large	large
network	dense	dense	loose	loose	loose	loose
contact	low	high	low	high	low	high

- Morphosyntactic 'complexification', such as we saw earlier in Atsugewi, tends to be found in small, dense communities and stable situations of language contact (i.e., especially situation 1, but also 2)

So where do sign languages fit sociolinguistically?

- small vs. large population
  - most sign language communities are relatively small
- dense vs. loose social networks: variable
  - communities vary in density of social networks, with subgroups of the Auslan/BSL community having high density/multiplex networks, but many other individuals having loose/simplex social networks
- higher vs. lower social stability
  - intergenerational transmission of Auslan/BSL is perhaps less stable than in the past
- lesser vs. greater language and dialect contact
  - high levels of contact with English

Sociolinguistic situation of sign languages

- The sociolinguistic situation of macro-community sign languages is unique (i.e., unlike anything in spoken languages?) due to the specifics of their history of oppression and marginalisation resulting in language deprivation.
- Only a minority of adult signers acquired BSL and Auslan from birth in a signing family environment.
- Many deaf adults acquired BSL and Auslan from other deaf children in primary or secondary school, or in early adulthood.
- Some of these deaf adults may have acquired these sign language varieties as delayed first languages (e.g., Emmorey, 2002; Hall et al., 2019).

Sociolinguistic situation of sign languages

- Together with hearing adult learners of Auslan and BSL, deaf signers with varying ages of acquisition are the majority in these signing communities
- As well as extensive contact with spoken and written English, heritage signers are in regular contact with L1 and L2 new signers of varying backgrounds.
- These sign languages may have ‘streamlined’ morphological complexity, with little irregularity, unpredictable variation, and redundancy, in order to maximise their acquisition by signers of varying ages from varying backgrounds
- They may perfectly reflect their ecological niche (Wilkinson, 2020), although comparative work on established macro-community sign languages is needed (de Vos & Pfau, 2015).

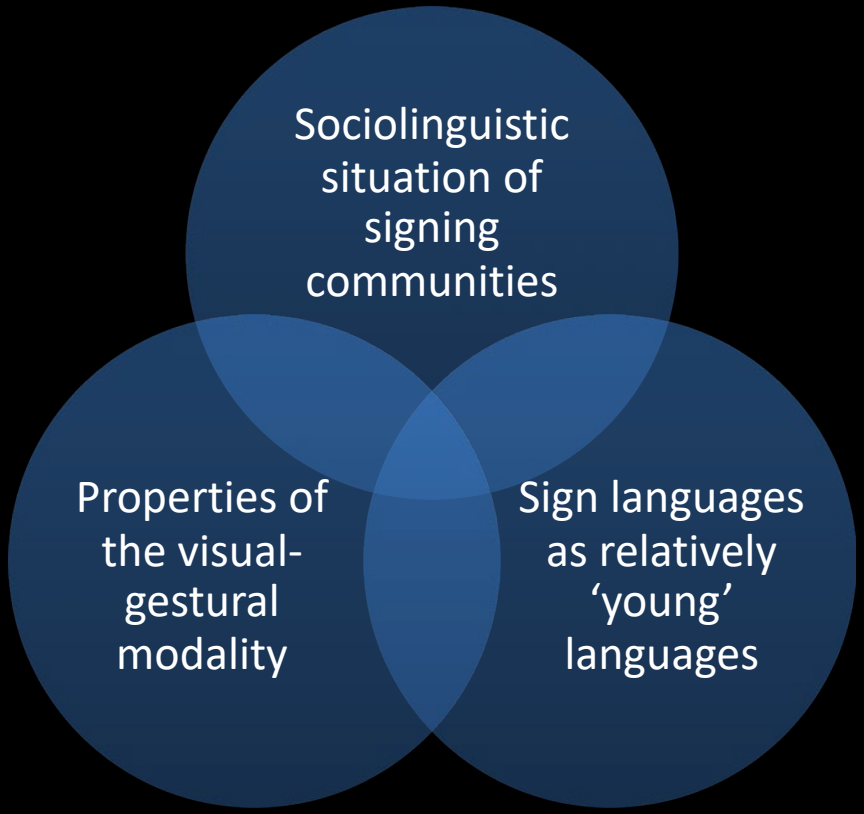
Summary

- Thus, the social structure of the BSL and Auslan communities may play a role in shaping the types of morphological complexity in these languages, and may also be relevant for other types of signing communities– more research is needed, however, to more accurately characterise the variety of signing communities which exist in order to more accurately compare and contrast them.
- Together with language age and the iconic properties of language in the visual-gestural modality, this key social factor may contribute to the nature of sign language grammar in a way perhaps not fully appreciated until now.
- This is something that the new ERC SignMorph project hopes to find out!

SignMorph research questions: addressing the paradox

- **What is morphological complexity in sign languages?**
- **Is the use of morphological complexity variable in established macro-community and micro-community sign languages? What about in emerging sign languages?**
- **How iconic are sign language morphological structures?**
- **How learnable are sign language morphological features for adults?**
- **What is the relationship between morphology and social structure in signing communities ?**

Conclusion: the genius of sign languages



- As relatively 'young' languages, sign languages leverage the properties of the visual-gesture modality to rapidly create morphological complexity.
- They also develop grammars which may emphasise learnability by adults, partly as a reflection of their complex language ecologies.
- Providing further evidence for these claims is the aim of the SignMorph project.

References

- Aronoff, M., Meir, I., & Sandler, W. (2005). The paradox of sign language morphology. *Language, 81*(2), 301-344.
- Baerman, M., Brown, D. & Corbett, G. (2010). Morphological complexity: a typo- logical perspective. http://www.morphology.surrey.ac.uk/Papers/Morphological_ complexity.pdf.
- Cormier, K., Fenlon, J. & Schembri, A. (2015). Indicating verbs in British Sign Language favour motivated use of space. *Open Linguistics* 1:1, 684-707.
- Cormier, K., Quinto-Pozos, D., Sevcikova, Z. & Schembri, A. (2012). Lexicalisation and de-lexicalisation processes in sign languages: Comparing depicting constructions and viewpoint gestures. *Language and Communication* 32:4, 329-348.
- De Vos, C., & Pfau, R. (2015). Sign language typology: the contribution of rural sign languages. *Annual Review of Linguistics, 1*(1), 265-288.
Napoli, D.J. (2019). Morphological theory and sign languages. *The Oxford Handbook Of Morphological Theory*. (p. 594-614). DOI: 10.1093/oxfordhb/9780199668984.013.37
- Emmorey, K. (2002). *Language, Cognition and the Brain: Insights from Sign Language Research.* Mahwah, NJ: Erlbaum.
- Fenlon, J., Schembri, A., Rentelis, R., & Cormier, K. (2013). Variation in handshape and orientation in British Sign Language: The case of the '1'hand configuration. *Language & Communication*, *33*(1), 69-91.
- Fenlon, J., Cormier, K., & Brentari, D. (2017). The phonology of sign languages. In S. J. Hannahs, & A. R. K. Bosch (Eds.), *The Routledge Handbook of Phonological Theory* (pp. 453-475). Routledge. https://doi.org/10.4324/9781315675428
- Fenlon, J., Schembri, A., & Cormier, K. (2018). Modification of indicating verbs in British Sign Language: A corpus-based study. *Language, 94*(1), 84-118.
- Hall, M. L., Hall, W. C., & Caselli, N. K. (2019). Deaf children need language, not (just) speech. *First Language*, *39*(4), 367–395.
- Lepic, R. & Occhino, C. (2018). A Construction Morphology approach to sign language analysis. In G. Booij (Ed.), *The Construction of Words: Advances in Construction Morphology* (pp. 141–172). Springer.
- Liddell, S.K. (2003). *Grammar, gesture and meaning in American Sign Language.* Cambridge: Cambridge University Press.
- Montemurro, K., Flaherty, M., Coppola, M., Goldin-Meadow, S., & Brentari , D. (2019) Grammaticalization of the body and space in Nicaraguan Sign Language http://www.lingref.com/bucld/43/BUCLD43-33.pdf
- Padden, C. A. (2016). *Interaction of morphology and syntax in American Sign Language*. Routledge.
- Riddle, E. M. (2008). Complexity in isolating languages: Lexical elaboration versus grammatical economy. In Miestamo, M., Sinnemäki, K., & Karlsson, F. (Eds.). (2008). *Language complexity: Typology, contact, change* (p.131-151). John Benjamin.
- Schembri, A., Fenlon, J., Cormier, K., & Johnston, T. (2018). Sociolinguistic typology and sign languages. *Frontiers in Psychology, 9*(200). doi:10.3389/fpsyg.2018.00200
- Senghas, A. (2003). Intergenerational influence and ontogenetic development in the emergence of spatial grammar in Nicaraguan Sign Language. *Cognitive Development*. 18:4, 511-531.
- Supalla, T. (1986). The classifier system in American sign language. In Craig, C. G. (Ed.). (1986). *Noun classes and categorization* (pp181-214). John Benjamins
- Trudgill, P. (2011). *Sociolinguistic typology: Social determinants of linguistic complexity.* Oxford: Oxford University Press.