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LOOKING BACK, MOVING FORWARD

Deconstructing notions of morphological 'complexity': Lessons from creoles and sign languages

Felicia Bisnath[1], Hannah Lutzenberger[2], Marah Jaraisy[3], Rehana Omardeen[4] and Adam Schembri[3]

[1]Western Norway University of Applied Sciences, Norway
[2]Stockholm University, Sweden, & University of Birmingham, UK
[3]University of Birmingham, UK
[4]Independent Researcher
Corresponding author: Adam Schembri; Email: a.schembri@bham.ac.uk

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Abstract

Ideas about morphological complexity have been used to classify languages and to link complexity to language age and social structure. Creoles and sign languages are often framed as younger and structurally simpler than other languages. Concurrently, sign language morphology has been described as paradoxical, as both simple and complex. This paper is a critical examination of claims about morphological complexity and its relationship to language age and social structure. We show that the theoretical and empirical foundations of claims that sign language morphology is paradoxical are flawed. Specifically, argumentation and evidence supporting analogies between creole and sign language complexity adopt theoretically contested and ideologically problematic assumptions about creoles and uncritically apply them to sign languages. We identify four flaws in argumentation: (i) use of limited morphological data to generate claims about global complexity, (ii) association of binary language categories with categorical complexity differences, (iii) use of language age to motivate predictions about morphological complexity, and (iv) extrapolating from creole complexity to sign language complexity. Based on these flaws, we develop nine theoretical and practical recommendations for working with morphological complexity and discuss uncritical cross-disciplinary transfer of ideas.

1. Introduction

'Sign languages and creoles are two kinds of young languages, and, as such, may be expected to be less complex than their older counterparts' (Gil 2014: abstract). This and similar claims illustrate cross-fertilisation of ideas between creole and sign language linguistics that has led to predictions that sign language structure should be SIMPLE like creole structure is claimed to be. However, sign language structure, namely its morphology,

has been discussed as COMPLEX: For example, Aronoff, Meir & Sandler (2005: 304) suggested that sign languages '…seem to present the impossible combination of Navajo-like and Tok-Pisin-like languages, a typological puzzle', while Napoli (2018: 603) explained '…on the one hand, sign language morphology appears complex, given verb inflections and classifier constructions' but 'on the other hand, sign language morphology appears simple in that there is little affixation'. In this paper, we show that the theoretical and empirical foundations of claims that sign language morphology is paradoxical are flawed and concretise theoretical and practical recommendations for studying morphological COMPLEXITY. We show that the argumentation and evidence in analogies between creole and sign language complexity adopt theoretically contested and ideologically problematic assumptions about creoles and uncritically apply them to sign languages.

The idea that sign languages are like creoles is typically attributed to Fischer (1978), who argued that American Sign Language is a creole, based on a comparison with Hawaiian Creole (see Lupton & Salmons 1996 for critique and Deuchar 1984 and Adone 2012 for other comparisons). This idea appears regularly in the sign language literature, especially with reference to Bickerton's (1984) proposal that creoles develop from pidgins: For example, Ladd & Edwards (1982: 112) suggest that 'BSL [British Sign Language] should be recognized as a creole'. Senghas (1995: 543) observed of isolated deaf signers in Nicaragua that soon after contact with each other 'they developed a now partially crystallised pidgin called Lenguaje de Signos Nicaragüense (LSN)' and later from 'this impoverished language input they produced something richer: the new creole Idioma de Signos Nicaragüense (ISN)'. Based on this, Emmorey (2003: 7) suggests that the case of Nicaraguan Sign Language '…is unprecedented because researchers have been able to observe the creolization process firsthand'. Nyst (2010: 419) remarks that 'Kamei (2006) claims a creole status for ASL [American Sign Language]-based sign languages in francophone African countries' due to the '(1) the integration of French elements and (2) the integration of local or "natural" signs'. Underlying these quotes are assumptions about similarities in the relationship between language age, grammatical structure, and linguistic typology in creoles and sign languages, despite an early warning from Washabaugh:

> The use of the terms creole and creolization as labels for sign language phenomena is, at this point in the development of both sign language studies and creole language studies, uncautious. It may well be that both sign languages and creole languages are produced by similar processes (though radically different characterizations of those processes have been advanced in creole language studies); but the recognition of that similarity should do no more than guide research…It should not be used as a justification for identifying sign language phenomena and creole language phenomena (Washabaugh 1981: 244).

In dissecting the transfer of ideas about creole complexity to sign languages, we limit ourselves to morphology (see Adone 2012 for a structural comparison). We identify four flaws in argumentation: (i) use of limited morphological data to generate claims about global complexity, (ii) association of binary language categories with categorical complexity differences, (iii) use of language age to motivate predictions about morphological complexity, and (iv) extrapolating from creole complexity to sign language complexity. These flaws guide our discussion of theoretical and empirical issues common to the study of sign

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language and creole complexity and motivate the recommendations (listed below and elaborated in Section 5) we make to avoid them:

1. Assume heterogeneity in structural and social criteria within groups and build up categories that are meant to represent structural properties of creoles and sign languages incrementally by taking ecological context into consideration (Bisnath 2024, Mufwene 2000).
2. Limited examples of morphology should not be used as proxies for the global complexity of languages (Bonami & Luís 2013).
3. Be aware that notions of linguistic complexity may be used to argue for or against the legitimacy of 'languages' vs. 'non-language', e.g. by non-specialists (Fusellier-Souza 2006).
4. Reflect on positionality and academic tradition when working with and making claims about differences in complexity, particularly when referencing minoritised groups. This includes critically engaging with one's own positionality in doing research and seeking out literature and insights from community insiders and outsiders.
5. Avoid assuming that complexity (structure), time depth, and sociolinguistic typology are straightforwardly related. For sign languages, this may mean that village sign languages (those used in smaller rural communities)[1] or 'younger' sign languages should not be assumed to be on a developmental pathway towards grammatical properties the same as those identified in older deaf community sign languages (used across entire nation states) (Kusters & Hou 2020).
6. Explain and motivate the usefulness of complexity.
7. Actively avoid reductive, provocative rhetoric.
8. Be clear that complexity measures are a product of linguistic analysis and not a natural property of languages or forms in languages.
9. Avoid uncritically transferring ideas between fields – ideas about creole complexity should not be uncritically applied to sign languages.

This paper is directly informed by our personal and academic experiences as linguists. We are a team of sign language researchers working on intersections of sign language linguistics, language evolution, typology, language documentation, variation, and language acquisition. We are all hearing and have acquired signing skills in one or more sign languages as adults. FB is an Indo-Trinidadian cis woman who grew up in Trinidad. Her research on sign–spoken language contact is informed by creole linguistics. HL is a white woman who grew up in Germany and studies the acquisition of and variation within the sign language of a Balinese village. MJ is a Palestinian woman who grew up in Nazareth and currently living in the UK. She researches Kufr Qassem Sign Language, the local sign language of a Palestinian deaf community in what is now known as Israel. RO is a Trinidadian woman living in Europe whose research has focused on documenting and describing Providence Island Sign Language, a sign language used in a small Caribbean island. AS is a white Australian cis man living in the UK who has investigated the linguistics of Auslan and British Sign Language. As creole speakers and citizens of the global south and occupied territories working in the global north, we are acutely aware of linguistic minoritisation and how resource inequalities across the world condition research and narratives in linguistics. As community-focused

[1] The terms 'village'/'micro-community'/'rural'/'shared' sign language roughly refer to the same group and are typically positioned against 'deaf'/'community'/'macro-community/'urban' sign languages (Kusters & Hou 2020; Hou & de Vos 2022). We follow the cited researchers' terminology to refer to these languages instead of using single terms throughout.

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sign language linguists, we have first-hand knowledge of the linguistic and cultural diversity that is at the risk of being homogenised or exoticised.

This paper is structured as follows. Section 2 reviews selected approaches to measuring morphological complexity in spoken languages before narrowing to how it has been theorised, measured, and critiqued in literature on creoles (Section 3) and sign languages (Section 4). We summarise influential positions in the literature and review their theoretical, empirical, and ideological foundations. In Section 5, we identify key flaws common to creole and sign language linguistics and work towards a set of recommendations for more accurate and mindful analysis of how language age, typology, and morphological complexity might interact. Finally, we summarise the impact of these recommendations and provide future directions.

2. What is morphological complexity?

Complexity has two main meanings in everyday usage: Something complex is either (i) made up of many smaller parts, with intricate connections between them (i.e. formal complexity) and/or (ii) difficult to do or understand (Miestamo 2017). While both meanings are used in linguistics to discuss morphological structures[2] (Kusters 2003, Dahl 2004), we focus on (i) because of its central role in the creole complexity debate (Section 3) and its influence on sign language linguistics (Section 4). Formal complexity is defined on individual lexical items and takes a quantitative approach (i.e. counting 'the many smaller parts' but not always accounting for the 'intricate connections between them'). Formal complexity metrics compare languages by contrasting the number of distinctions they contain with comparisons targeting inflectional, as opposed to derivational, morphology (Schlegel 1808; Sapir 1921; Baerman, Brown & Corbett 2015). We exemplify five approaches to measuring morphological complexity: (i) counting morphemes in lexical items; (ii) counting meanings associated with each morpheme; (iii) counting how many features are morphologically marked and how many values/contrasts are available in each feature (overspecification); (iv) predictability of allomorphy; and (v) counting how often the same meaning is expressed within a phrase/clause (syntagmatic redundancy).

2.1 Counting morphemes in lexical items

These approaches enumerate the average number of morphemes in lexical items (Arkadiev & Gardani 2020) and compare languages by contrasting this. Thus, words in Kasong (example 1), which typically consist of single morphemes, are considered lower in complexity than words in Alutor (example 2), which are often polymorphemic.

(1) Kasong (Austro-Asiatic language family: Bo Rai, Trat Province, Thailand)[3]
nak kamlaŋ lɔːŋ ceːw prĭ
3.SG PROG FUT go forest
'He/she will be going to the forest'

(Kamnuansin 2003: 173)

[2] For this paper, we assume that morphology represents a set of features of languages that can be studied independently of phonology and syntax, though this has been problematised in typology (Haspelmath 2017). Other approaches problematise divisions between different levels of linguistic structure (Halliday 1961, Goldberg 2003).

[3] We have adapted the spoken language glosses to reflect the Leipzig Glossing Rules: https://www.eva.mpg.de/lingua/pdf/Glossing-Rules.pdf

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(2) Alutor (Chukotko-Kamchatkan language family: Kamchatka, Russia)
gəmmə t-akka-n-nalgə-n-kuwwatavə-tk-ən
1.ABS 1SG.-son-CAUS-skin-CAUS-dry-PRS–1SG.
'I am making a son dry some skins'
(Koptjevskaja-Tamm & Murayova 1993: 403)

2.2 Counting meanings in each morpheme

A language that tends to have one morpheme per meaning, such as Turkish (example 3), is considered less complex than a language with inflectional morphemes, such as Spanish (example 4), in which many meanings may be associated with one form:

(3) Turkish (Altaic language family: Turkey)
tan-ış-tır-ıl-a-ma-dık-lar-ım-dan-dır
know-RECP-CAUS-PASS-can-NEG-NMLZ-PL-3.POSS-able-3.COP
'It is because they cannot be introduced to each other'
(Bickel & Nichols 2007: 191)

(4) Spanish (Indo-European language family: Spain, Mexico, Argentina etc.)
yo habl-é
1.SG speak-1SG.PST.IND.PFV
'I spoke'

2.3 Counting how many features are morphologically marked and how many values/contrasts are available in each feature (overspecification)

Languages may overtly and obligatorily mark semantic distinctions (e.g. noun classes, obviatives, person/number, inalienable possession, tense, aspect, case, gender, animacy, definiteness; Baerman, Brown & Corbett 2015). English is considered less complex than Yagua because it marks past and non-past distinctions in its verbs only (example 5) while Yagua has five different types of temporal distance in its past tense morphology (examples 6a–e).

(5) English
(a) I walk
1.SG walk
(b) I walk-ed
1.SG walk-PST

(6) Yagua (Peba-Yaguan language family: Amazon basin, Peru, Colombia)
(a) *ray-jiya-yásì*
1SG-go-PROX1
'I went (this morning)'
(b) *ray-yunnúúy-jay-níí*
1SG-see-PROX2–3SG
'I saw him (yesterday)'
(c) *Sa-díí-siy-maa*
3SG-die-PST1-PRF
'He died (up to 1 month ago)'

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(d) *Sa-díiy-tíy-maa*
3SG-die-PST2-PRF
'He died (up to 2 years ago)'
(e) *Ray-rupay-jada*
1SG-born-PST3
'I was born (a long time ago)'

(Payne 1985: 36)

2.4 Predictability of allomorphy

Whether allomorphy is predictable or not in complexity measures (Baerman, Brown & Corbett 2015) aligns with irregularity (i.e. the extent to which irregular forms and rules, such as grammatical gender, irregular roots, suppletion, etc., need to be learned). Plural marking in German is considered more complex than in Spanish; Spanish consistently marks plural with the same suffix *-(e)s* (example 7) while German plurals involve different strategies depending on the gender of the noun and some phonological characteristics, in addition to some exceptions. For example, the German noun *Frau* 'woman' is pluralised as *Frauen* by adding the plural suffix *-en* and the noun *Buch* 'book' is pluralised as *Bücher* by both an affix and a vowel change in the root (example 8).

(7) Spanish (Indo-European language family: Spain, Mexico, Argentina etc.)
La mujer compra muchos libro-s
DET woman buy.3SG DET book-PL
'The woman buys many books'

(8) German (Indo-European language family: Germany, Austria, Switzerland)
die Frau-en kaufen viele Bücher
DET woman-PL buy.3PL DET book.PL
'The woman buys many books'

2.5 Counting how often the same meaning is expressed within a phrase/clause (known as syntagmatic redundancy)

East Flemish is considered more complex than standard Dutch in subject marking as the subject is tripled in the first-person plural in East Flemish (example 9) but appears once in standard Dutch (example 10; Vogelaer 2003).

(9) East Flemish (Indo-European language family: Belgium)
We zulle-me wij dat doen
1.PL FUT-1.PL 1.PL DET do
'We shall do that'

(10) Standard Dutch (Indo-European language family: The Netherlands)
Wij zull-en dat doen.
1.PL FUT-PL DET do
'We shall do that'

This non-exhaustive review of approaches to morphological complexity illustrates that working definitions of complexity include a range of different grammatical characteristics,

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demonstrating a lack of consensus in the aspects of morphology considered relevant in defining morphological complexity and in how to compare morphological properties across languages (Arkadiev & Gardani 2020). It is also clear that morphological complexity is a comparative concept.

3. Complexity and creoles

Notions of complexity shape creole literature and are closely linked to overt and covert characterisations of creoles. Definitions of what a creole is differ in the properties they foreground: sociohistorical vs. structural vs. temporal, etc. The most well-described creoles are the Atlantic Creoles (the 'Classic Creoles'), which are often implicitly and explicitly used as a representative of all creoles, despite the emergence of creoles in other contexts (Meakins 2023). The Atlantic Creoles emerged on the West Coast of Africa and plantations in the Caribbean during the transatlantic slave trade in a context where large groups of enslaved peoples using West/Central African languages were subjugated by smaller groups of settlers using European languages, especially English, French, Portuguese, and Dutch (usually non-standard varieties). The form of the lexicons primarily draws on the European language(s) and both European and West African languages influence the grammatical system. Creoles are typically less prestigious compared to standard varieties of European languages; however, they are often de facto national languages and strongly associated with cultural identity.

Creole complexity is much-discussed in linguistics and exemplifies problems in using complexity to theorise typology. Complexity metrics are by nature comparative (see Section 2) and motivate typological separation of creoles from non-creoles (referred to as 'Creole Exceptionalism' in DeGraff 2005: 533). Below, we discuss complexity in the debate about creole SIMPLICITY to exemplify how typology intersects with ideology and motivates the creole vs. non-creole binary. We first summarise the creole complexity debate focussing on formal complexity and inflectional morphology and follow with how empiricism has been pitted against ideology. We do not provide a comprehensive account of creole complexity but use key aspects of the debate to draw out issues in argumentation that are relevant to sign language complexity (Sections 4 and 5). We refer readers to the citations for more nuance.

3.1. Creoles are simple – or not?

The debate about creole complexity is multifaceted, but we distil it into two major positions that can be thought of as a proposal and a response, or an older and a newer approach, respectively. We then move to discussing what the debate has drawn out about complexity as it relates to measurement, typology, and ideology.[4]

As mentioned above, the older proposal has been referred to as 'Creole Exceptionalism' and 'distinctivism' (DeGraff 2005, Bakker 2014), defined as 'a set of beliefs, widespread among both linguists and non-linguists, that creole languages form an exceptional class on phylogenetic and/or typological grounds' (DeGraff 2005: 533). It has two major distinct, but related, facets: (i) Creoles are structurally simpler than other languages, or that a language is

[4] Note partial compromises between the two main proposals in which a language is likely to be grammatically simple IF it is a creole, but other kinds of languages can also be simple (Gil 2014, Sampson 2006).

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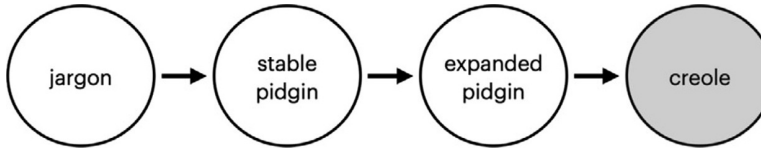

Figure 1. Adapted Pidgin-creole lifecycle (Bakker 2008: 131) (only creoles are considered languages).

simple if it is a creole, and (ii) Creoles are a structurally identifiable class of languages (McWhorter 2001, 2011; Parkvall 2008; Bakker, Daval-Markussen, Parkvall & Plag 2011). Related to this is an assumption that creoles develop from pidgins, where pidgins are makeshift communicative systems without native speakers (Birkeland, Block, Craft, Sedarous, Wang, Wu & Namboodiripad 2024 problematise nativeness), and creoles are the restructured output of children who receive a pidgin as input during language acquisition (Figure 1) (Bickerton 1984, Todd 1990; see Mufwene 2020 for critique). A driving idea in these proposals is that creoles are young/new languages, both in the historical linguistics sense (not arising from gradual changes in a SINGLE ancestral language) and in the historical sense (relatively recent emergence of the classic creoles between the seventeenth and nineteenth centuries). Creole youth is used to argue that their purported grammatical simplicity arises from a lack of historical time needed for the processes of grammaticalisation to produce the complexity of other languages (McWhorter 2001).

The newer proposal is roughly aligned with Uniformitarianism (elaborated in Walkden 2019), which is the idea that 'languages of the past […] are not different in nature from those of the present' (Croft 2002: 233). Here, creoles are a sociohistorical grouping and are typically aligned with the context of emergence of the Atlantic Creoles, despite the existence of creoles in other contexts (Ansaldo 2012; Michaelis, Haspelmath & Huber 2013). DeGraff (2005: 541–542) defines creole as varieties that developed on colonies and plantations in the New World from the seventeenth to nineteenth centuries, e.g. Haitian Creole. The core idea is that previous claims that creoles are structurally simpler than other languages and/or form a distinct typological grouping are theoretically and empirically unsound (Blasi, Michaelis & Haspelmath 2017; Meakins 2022). Furthermore, some argue that such a claim is rooted in a racist, colonial history that has sought to separate creoles from other languages (DeGraff 2005; Ansaldo, Matthews & Lim 2007).

3.2. Issues that the creole complexity debate draws out

Discussions of creole complexity target inflectional morphology[5] and use formal complexity measures, regardless of theoretical and descriptive orientation. The creole debate draws out issues with purely formal complexity metrics and their use to characterise entire languages and groups. We first illustrate how inflectional morphology is invoked and then describe issues relevant to sign language linguistics (Sections 4 and 5): (i) arbitrariness of complexity

[5] McWhorter's (2001) metric also explicitly mentions phonology, tone, and syntax, and Parkvall (2008) also targets phonemic segment inventories, syllable structure, tone, and syntactic alternations.

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metrics, (ii) use of morphology as a proxy for the structure of entire languages, (iii) documentation and sampling, and (iv) separating ideology from science.

Morphology, and specifically a lack of inflectional morphology, is core in the creole complexity debate. Velupillai (2015) compiles features used to characterise creoles – of the 29 features, 16 are morphological. A well-known creole complexity metric is found in McWhorter (2001) (elaborated elsewhere, including McWhorter 2007, 2018) and was developed to support the claim that creoles are less grammatically complex than other languages.[6] In it, the presence of inflectional morphology marks complexification, which is understood as referring to processing and learning difficulty (McWhorter 2001: 137–138). Other components of grammar are named, specifically phonemic inventories, syntax, and semantics/pragmatics; however, their complexity is proportional to the number of components or rules (McWhorter 2001). Inflectional morphology is used to argue for overspecification, structural elaboration, and irregularity (defined in Section 2), as it 'vividly [embodies] all the types of complexity' (McWhorter 2007: 35; for alternative positions, see Dressler 2011, Prado Martín & Fermín 2011, Ackerman & Malouf 2013, Bonami & Luís 2013, Stump 2017). In the comparison between Estonian and Saramaccan shown in (11) and (12), Estonian's specification of partitive marking (glossed here as PART) is argued to influence the grammar of Estonian in a way that Saramaccan's analytic means does not.

(11) Estonian (Finno-Ugric: Estonia)
jo *ve-tt*
drink water-PART
'Drink some water'

(12) Saramaccan (English-Portuguese Creole: Suriname)
bebé *só* *wáta!*
drink PART water
'Drink some water'

(McWhorter 2007: 38)

Similar prioritisation of inflectional morphology is replicated in work arguing against creole simplicity. Plural marking, attributive use of numerals and colour terms, property concepts, and case-marking and pronoun agreement are used to argue that Pichi (English Creole: Equatorial Guinea) is at least as complex as English (Yakpo 2009). Similarly, Smith (2021) considers habitual marking in Palanquero Creole (Spanish Creole: Colombia) and other (non-creole) spoken languages and argues for structural resemblances between these languages.

A crucial issue in metrics targeting inflectional morphology is their arbitrariness: (i) the focus on inflection rather than other morphological features and (ii) the lack of an independent motivation for units of analysis. First, why is inflectional morphology targeted and not derivational morphology? This choice is questionable as some classic/Atlantic Creoles have origins in languages that make limited use of inflection like English. Furthermore, Bonami & Luís (2013) note that metrics targeting grammatical properties should not be applied to languages without those properties; therefore, metrics targeting inflection should only be applied to languages, including creoles, that show (any degree of) inflection. Second, the

[6] McWhorter (2001) is used as an illustration. Holm (2008), Plag (2005), and Siegel (2004) include similar metrics.

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aspects of inflectional morphology that are chosen are biased. As DeGraff (2001) points out, the components of complexity metrics should be derived from an independent theory of complexity (see Andrason 2014 for a complex systems theory view), which does not yet exist. Without that, there is no independent motivation for which units of analysis should and should not be included.

A second issue is the use of morphology as a proxy for global complexity that is found in the separation of creoles from non-creoles. As we show, there is an unmotivated use of inflectional morphology as a proxy for the structure of entire languages (global complexity). Echoes of this assumption surface at all levels of the complexity debate as inflectional data is used to support various proposals, implying a tacit acceptance of grading languages based on their morphology. While there may be good rhetorical and empirical reasons to take this route, characterising morphological structure is more appropriate and more aligned with general linguistics practice (Bonami & Luís 2013).

The issues of creole complexity and creoles as a typological group are separate but closely linked as the former has been used to motivate the latter (McWhorter 2001). Large databases of structural features have been used to argue for (Bakker et al. 2011) and against a creole group (Blasi, Michaelis & Haspelmath 2017), but critiques of this work have raised issues of documentation and sampling. First, Aboh (2016) points out that 30% of the data on Ewegbe (Niger-Congo: Togo, Ghana, Benin) and Yoruba (Niger-Congo: Nigeria, Benin) used in Bakker et al. (2011) are disputable. This discrepancy may be due to variation and binary coding, a well-known limitation in typology. However, the problems with the Ewegbe and Yoruba data suggest further flaws as these languages are relatively well-studied – the error rate for lesser-studied languages is likely to be higher. A reviewer rightly points out, though, that the effect of potential errors on complexity metrics is unknown, and further, it is unclear why errors would skew in making creoles score lower on complexity metrics. We view these issues as important but separate from the issue of reliability.

Second, Blasi, Michaelis & Haspelmath (2017) show that the statistical evidence of a structural creole profile that Bakker et al. (2011) find is due to over-representation of Western European and West African languages in sampling.[7] They identify two types of creole profile in the literature – one rule-based and one probabilistic – and evaluate them with data from the Atlas of Pidgin and Creole Language Structures (APiCS) (Michaelis, Haspelmath & Huber 2013) and the World Atlas of Language Structures (WALS) (Dryer & Haspelmath 2013) using data mining and machine learning. They find differences in languages classed as creole vs. non-creole but suggest that most target features can be linked to contributing languages.

Meakins (2022) picks up on a different thread, arguing that the creole profile that Bakker et al. (2011) and Blasi, Michaelis & Haspelmath (2017) report is due to an ascertainment bias in the features targeted by these studies. Both investigations use databases that only contain creoles – Bakker et al. (2011) code features from 18 creole languages found in a publication on comparative creole syntax (Holm & Patrick 2007), and Blasi, Michaelis & Haspelmath (2017) use the APiCS (Michaelis, Haspelmath & Huber 2013). Meakins (2022) argues that selecting which features to compare based on a sample of creoles would necessarily return a creole signal and that features should instead be selected randomly from all languages.

[7] Over-representation of these groups is perhaps unsurprising, as a reviewer points out, because most creoles have Western European and Western African substrates. We view this as further reason to be wary of arguments for a creole profile that are linked to claims of a pidgin to creole trajectory (Section 3.1).

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Apart from these theoretical and empirical issues, the creole complexity debate raises issues of ideology vs. empiricism (Meakins 2022). As we mention in Section 3.1, arguments for the simplicity of creoles and their status as a typological group have an ideological dimension dating back to early publications on creoles, as they align with the racist, colonial aspects of the history of modern linguistics (DeGraff 2005). In the debate, we see naming of this history, and theoretical and empirical arguments against creole simplicity and distinctiveness, being framed as sociopolitically motivated and emotionally driven (Bakker, Daval-Markussen, Parkvall & Plag 2011; McWhorter 2018). For instance, McWhorter (2018: 108) describes the newer perspective on creoles as imbued with a 'quiet moral threat'. We also see reification of data-heavy methods and claims that such methods are free of ideology (Bakker 2014, 2016: 431): 'I have no hidden agenda, no ideology, no prejudice… Facts about language should be our guide, not some ideology'. As noted in Meakins (2022) and Clemons (2024), no empiricism or linguistics is ever completely free of (political) ideology. (see Section 5.2 for suggestions).

This subsection summarised the creole complexity debate to outline issues that are relevant to the discussion of sign languages (Section 4). The complexity debate is multifaceted but can be reduced to claims for and against creole simplicity and the related claim that creoles form a distinct typological class. Our discussion identifies assumptions and ideological baggage taken on when sign languages are uncritically compared to creoles, which we elaborate next.

4. Complexity and sign languages

Sign languages have been compared to creoles in terms of morphological complexity based on assumptions about similarity in language age[8] (Section 5.3) (Aronoff, Meir & Sandler 2005; Dachkovsky, Stamp & Sandler 2018; Schembri, Fenlon, Cormier & Johnston 2018). Below, we discuss sign language morphology (Section 4.1) and how complexity figures in sign language linguistics, focusing on the opposing positions of whether sign language morphology is seen as highly complex and/or relatively simple (Section 4.2). We also explain how ideology comes into play as illustrated by the fallacy of assuming sign language TYPES and correlating them with complexity (Section 4.3).

4.1. Sign language morphology

Sign languages, like spoken languages, show derivational and inflectional morphology (Klima & Bellugi 1979) and have been classified as falling into the agglutinative or polysynthetic morphological type (Pfau & Steinbach 2023). Derivational morphology is exemplified by the use of movement to distinguish nouns and verbs (Supalla & Newport 1978) and lexical compounding (Tkachman & Hudson Kam 2020), while inflectional morphology is exemplified by marking aspect with movement (Oomen 2016) or verb directionality to identify verb arguments (Johnston & Schembri 2007). There has also been an interest in morphological form-meaning resemblances in signed language morphology

[8] We do not discuss issues of language acquisition in making analogies between creoles and sign languages like differences in adult vs. child learners, L1 vs. L2 learners, access to spoken and sign language, environmental context, etc. Adone (2012) provides a discussion.

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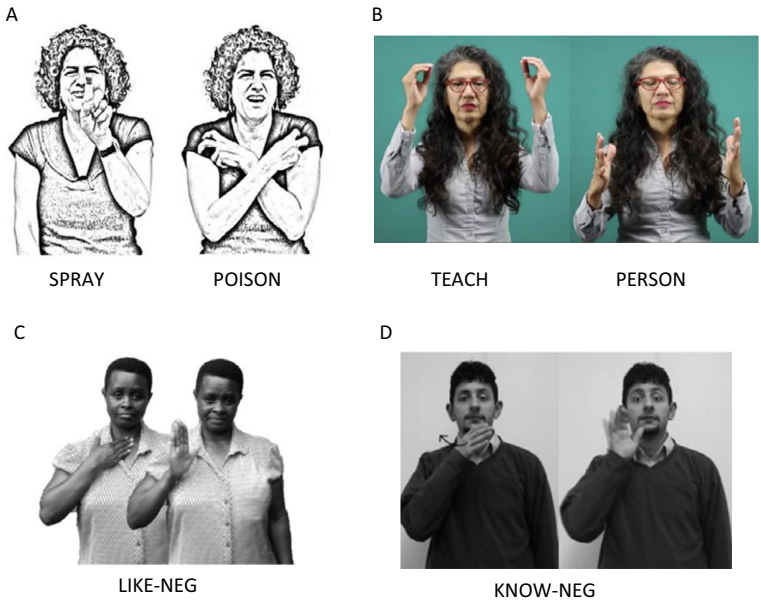

Figure 2. Examples of sequential morphology (A) Lexical compound in Israeli Sign Language: 'cockroach spray' (Tkachman & Kam 2020: 215) (B) Affixation in American Sign Language: 'teacher' (Hochgesang, Crasborn & Lillo-Martin 2017) (C) Negative affix in Ugandan Sign Language (Zeshan & Palfreyman 2017: 196) (D) Clitic in Turkish Sign Language (Türk İşaret Dili) (Zeshan 2004: 46)

(Börstell, Lepic & Belsitzman 2016; Lepic, Börstell, Belsitzman & Sandler 2016). However, most research on morphology has centred around sequential and simultaneous morphology (Sandler & Lillo-Martin 2006), of which the latter is framed as special to the affordances of the visual-spatial modality.

Sequential morphology parallels structures in spoken languages where different words/signs or morphemes are concatenated and includes (i) lexical compounding, (ii) affixation, (iii) cliticisation, and (iv) reduplication. In lexical compounds, two (or more) signs are sequenced and often undergo phonological reduction or assimilation (e.g. in handshape) (Klima & Bellugi 1979; Aronoff, Meir, Padden & Sandler 2008; Meir, Sandler, Padden & Aronoff 2010; Santoro 2018; Tkachman & Meir 2018; and see Lepic 2016 for critique) (Figure 2A).[9] Modifying the meaning of signs through affixation is relatively uncommon in sign languages (Figure 2B, 2C) and so is the use of clitics (Zeshan & Palfreyman 2017); where clitics are found, they include completives (Palfreyman 2019) and negatives (Figure 2D) (Johnston & Schembri 2007). Plurality may be marked through reduplication of movement with different signs showing restrictions in how movement can be repeated (Pfau & Steinbach 2006).

Simultaneous morphology capitalises on the potential of the visual-spatial modality to allow concurrent use of articulators, e.g. two hands, face, body (Loos, German & Meier 2022). Examples include (i) number marking on nouns (numeral incorporation) and

[9] All signs, following standard sign language linguistics glossing practices, are represented by English equivalents in upper case letters.

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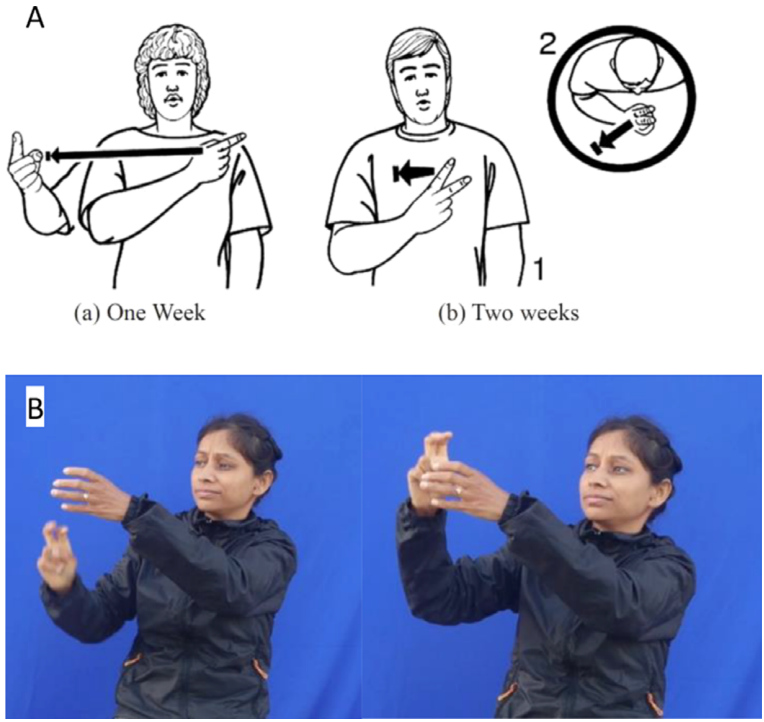

Figure 3. Examples of simultaneous morphology (A) Numeral incorporation in New Zealand Sign Language: TWO-WEEKS (McKee 2016: 364) (B) Classifier construction in Nepali Sign Language: 'legged entity moving up inside a cylindrical entity'

(ii) classifier constructions/depicting signs. Numeral incorporation, integrating a number handshape into a base sign, is common cross-linguistically and frequent in signs related to time and money (Zeshan & Sagara 2016, Semushina & Mayberry 2019) (Figure 3A). Classifier constructions/depicting signs describe motion events or spatial relationships between referents, using handshapes that incorporate properties of a class of referents (Figure 3B), and are found across sign languages. Simultaneous morphology in sign languages show cross-linguistic similarities in form and frequency and has been described as specific to sign languages (Meier, Cormier & Quinto-Pozos 2002; Aronoff, Meir & Sandler 2005; Zeshan & Palfreyman 2017); however, parallels can be made with tone in spoken languages (Nespor & Sandler 1999; Pfau 2015, 2016) or templatic morphology in Semitic languages (Sandler & Lillo-Martin 2006). Additionally, simultaneous constructions may share parallels with multimodal constructions in spoken languages (Hoffmann 2021, Hodge & Ferrara 2022).

In sum, two types of distinctions have been made in sign language morphology: (i) Inflectional vs. derivational morphology draws on differences in grammatical function, and (ii) Simultaneous vs. sequential morphology focuses on differences in form. The latter may or may not be specific to sign languages given cross-modal parallels, particularly with tone and multimodal constructions in spoken languages.

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4.2. Is sign language morphology simple or complex?

Examination of sign language morphology as inflectional vs. derivational and sequential vs. simultaneous undergirds the debate about the complexity or simplicity of sign language morphology (Aronoff, Meir & Sandler 2005; Schembri et al. 2018). Disagreements are rooted in the (i) status of inflectional morphology, (ii) role of simultaneity and sequentiality, (iii) status of morphological complexity, and (iv) relation between social factors and complexity.

First, inflection is considered a hallmark of complex morphology in spoken languages (see Sections 2 and 3) and the focus of most complexity measures (Bjerva & Börstell 2016 is an exception). Researchers, however, do not agree whether sign languages have extensive inflectional morphology (Liddell 2003, Johnston & Schembri 2007, Napoli 2018). Some argue that sign languages have complex morphological structural organisation (unlike creoles) that is both inflectional and derivational in nature (Sandler & Lillo-Martin 2006). Others are more conservative, arguing for low to moderate complexity based on little inflectional morphology (Gil 2014, Schembri et al. 2018). This is because there is no consensus on the analysis of certain so-called inflectional phenomena, like use of space in verb directionality. Directionality refers to spatial modifications of verb signs (e.g. British Sign Language PAY, Figure 4) to mark reference to the agent and the patient. In Figure 4, the beginning point and endpoint of the verb reflect the locations of the signer and the addressee representing the agent and patient arguments. Directionality can be analysed as inflection, namely person agreement marking (Lillo-Martin & Meier 2011), or as derivation, namely as different verb forms with different meanings (Liddell 2003).

In addition, the status of simultaneous morphology is unclear given the affordances of the visual-spatial modality. Simultaneity is used to argue for high complexity, as in reports of

1. SG-PAY-2.SG

2. SG-PAY-1.SG

Figure 4. Two spatially modified forms of British Sign Language PAY (Schembri et al. forthcoming).

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sign languages using rich and complex simultaneous morphology and more simple sequential morphology (Aronoff, Meir & Sandler 2005: 303). This is at odds with approaches to morphological complexity in spoken languages that use formal complexity metrics (Sections 2 and 3) and that are likely biased to spoken Indo-European languages. Schembri et al. (2018) applied the sociolinguistic typological framework (Trudgill 2011; Shcherbakova, Michaelis, Haynie, Passmore, Gast, Gray, Greenhill, Blasi & Skirgård 2023 for an alternative), to explore the relative complexity of four morphosyntactic features identified by Trudgill as varying between spoken language communities having different social structures. This approach targets sequential morphology and concludes that sign language morphology is low to moderately complex (Schembri et al. 2018); however, this work did not fully address modality-specific aspects of morphology in sign languages that have been framed as highly complex.

A broader issue with sign language complexity claims is their foundation in limited evidence as opposed to controlled and systematic studies of sign languages. First, examples from different sign languages are used piecemeal without broader contextualisation about their representativeness or usage. Empirical evidence from naturalistic data may show that complex morphological forms are infrequent or restricted in everyday signing. This is the case for verb directionality in British Sign Language, which is less commonly used in spontaneous discourse than previously assumed (Fenlon, Schembri & Cormier 2018; Hochgesang & Becker 2019 for absence of reduplication of nominal plural in American Sign Language). Meir (2016: 115) makes a similar point, generalising across American Sign Language, Danish Sign Language, Auslan, and British Sign Language to say that verb inflection/agreement is variable (although see Oomen 2021 for a different claim regarding German Sign Language). This questions the representativeness of verb agreement structures in American Sign Language, which have been used to illustrate complexity (Aronoff, Meir & Sandler 2005). More general questions are: How frequently is a feature used by language users, given alternatives? How widespread across the community is that feature? and Is the existence of a feature enough to make a claim about a language as a whole? This questioning is not intended to devalue the place of uncommon phenomena in linguistic theory but to point out that features are often not contextualised and that contextualisation is relevant to what they can represent about a sign language as a whole on a descriptive level. Second, examples from different sign languages are used to argue for complexity of sign languages more generally. The studies mentioned above do not systematically examine sign language(s) but concatenate evidence from different sign languages (see Section 4.1) to make generalisations about sign language morphology. For example, Schembri et al. (2018) base claims about sign language morphology on individual examples from Auslan, New Zealand Sign Language, and British Sign Language. It thus remains unclear whether these morphological phenomena are found in multiple sign languages and how generalisable they are.

This discussion shows that definitions of complexity differ in the morphological units they target and how they can be applied to sign languages. There is also dissociation in the study of sign and spoken languages: In creoles, low presence of inflection is an argument for low complexity (simplicity), while in sign languages, low complexity is predicted but defied by simultaneous morphology, which is complex but not necessarily inflectional. Across all studies the empirical data is scarce; evidence is collected from different sign languages, and cross-linguistic and typological studies rarely focus on morphological phenomena, making it premature to extrapolate to sign language morphology more generally.

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4.3. Complexity and the sociolinguistic profile of sign languages – how ideological biases surface

The debate about sign language complexity is fuelled by discussions of how morphological complexity is driven by sociodemographic characteristics of language communities, like language age (Aronoff, Meir & Sandler 2005; McWhorter 2005) or community size and social structure (Lupyan & Dale 2010, Trudgill 2011). Sign language communities vary in their demographic and social characteristics and factors like geographical location (de Vos 2011, 2012, 2014; Zeshan, Delgado, Dikyuva, Panda & de Vos 2013), community size (Schembri et al. 2018), time depth (Coppola & Senghas 2010, Meir et al. 2010), social features of the emergence process (Meir et al. 2010), association with a country and/or an educational setting (Woodward 2000, Aronoff et al. 2008), opportunities for social interaction (Morgado 2024), and degree of usage by both deaf and hearing people (Nonaka 2007, 2009; Kisch 2012) are sometimes linked to differences in language structure (Aronoff, Meir & Sandler 2005; Lupyan & Dale 2010; Meir et al. 2012; de Vos & Pfau 2015; Nichols 2016; Schembri et al. 2018; Nichols & Bentz 2019).

Some argue for a direct relationship between social and linguistic structure in terms of complexification and simplification (Sampson, Gil & Trudgill 2009; Trudgill 2009). There, smaller language communities with high social stability and low contact with adult language learners are associated with increased complexification, whereas larger communities with, for example, more adult second language speakers, tend to undergo simplification (Wray & Grace 2007, Schembri et al. 2018). This argument is echoed in the sign language literature with social properties used to classify sign languages into types (Israel 2009; Meir et al. 2010; Padden, Meir, Aronoff & Sandler 2010; Meir et al. 2012; de Vos 2012), and linked to structural properties (Aronoff, Meir & Sandler 2005; Meir et al. 2012; Schembri et al. 2018). In this reasoning, structural properties of older and/or more widespread sign languages are (implicitly or explicitly) placed at the endpoint of a developmental cline, implying that such languages and their linguistic features are an end goal for younger and/or smaller sign languages whose structures are viewed as still developing. Kusters & Hou (2020) identify and critique this practice as reflecting an ideological bias that marks certain kinds of language as more language-like than others (Figure 5) (also Hou & de Vos 2022). A similar developmental cline is found in the pidgin-creole life cycle (Figure 1); however, in the case

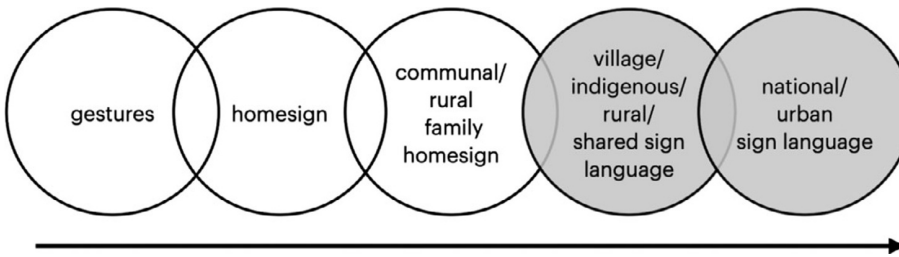

Figure 5. Adaptation of 'A visualisation of different forms of signing arranged on a developmental cline' (Kusters & Hou 2022: 566). Highlighted types are considered languages. Homesign refers to signing that emerges among individual deaf children and their hearing family members. Family homesign often describes such situations with multiple deaf people in the (extended) family.

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of sign languages, it is not tied to persistence in time but to an ideology of maturity. Thus, when a sign language classed as rural but diachronically older is placed in contrast with a diachronically younger national sign language, the latter is typically treated as the baseline.

Given assumptions about the relative youth of sign languages and the time needed for grammaticalisation processes (Lichtenberk 1991), sign languages have been expected to show low morphological complexity (Aronoff, Meir & Sandler 2005; Schembri et al. 2018; Napoli 2018) by analogy with creoles. Aronoff, Meir & Sandler (2005) claim that emerging or younger sign languages have lower morphological complexity compared to established or older sign languages based on cross-linguistic differences in verb directionality and classifier constructions in American Sign Language, Israeli Sign Language, and Al-Sayyid Bedouin Sign Language. This is because they find different patterns despite similar time depth of the two latter languages and a longer time depth of the former language (discussed in Section 5.3). Language age is directly invoked in their argument by contrasting sign languages and creoles: 'sign languages, unlike young creoles, have complex inflectional systems' (Aronoff, Meir & Sandler 2005: 3). Although inflectional morphology is expected to be relatively absent at the early stages of language emergence (Lillo-Martin & Meier 2011), they argue that sign languages show some 'mature' morphology despite their young age based on claims about creoles. In contrast, Kastner, Meir, Sandler & Dachkovsky (2014) argue that emerging or micro-community sign languages do not have complex syntactic and morphological structures like verb directionality systems and syntactic embedding at all. These conflicting claims are conflated with (i) divergences in measuring time depth and (ii) typological variation. First, while rural/village sign languages are often assumed to be examples of particularly young languages, there are several examples that appear to be in fact older than national/urban sign languages (e.g. Kata Kolok: de Vos 2012). Second, the absence of certain features might not necessarily indicate a lack of morphological structure but fundamental typological differences, e.g. verb directionality in Kata Kolok is linked to the use of an absolute frame of reference (de Vos 2012).

The foundations for much of the discussion are strategic essentialisms rooted in legitimising sign languages (Kusters & Lucas 2022). Showing that sign language morphology includes derivational and inflectional processes validates them as languages on par with spoken languages (upon which the study of morphology was founded). Showing that sign language morphology is equally or more complex than that of spoken languages adds to this validation. Finally, showing that some sign languages are more complex than others may be used to suggest that specific sign languages are more 'mature' or 'established' than others (Lillo-Martin & Meier 2011; Schembri, Cormier & Fenlon 2018). Reasons for this might be due to privileges that are also reflective of the creole debate (Section 3.2): (i) Most of what we know is biased towards data from sign languages used in the global north, defined as 'historic and current geographical centres of academic wealth and power' (Braithwaite 2020: 182; see also Blum 2017, Ameka & Terkourafi 2019; Andringa & Godfroid 2020), greatly limiting the linguistic diversity in linguistics; (ii) Most researchers working on sign languages are hearing, lacking the shared experience of being deaf and being primary sign language users that deaf researchers would have with their participants (Dikyuva 2012, Kusters 2012); and (iii) Many sign language researchers working on micro-community sign languages are community-outsiders without valuable shared cultural knowledge (Dikyuva 2012, Kusters 2012, Braithwaite 2020).[10] Note that the status of researchers as hearing outsiders does not

[10] These points apply to all authors of this paper.

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preclude them from sign language research but requires active interrogation of subconscious biases.

5. Complexity in creoles and sign languages: Flaws and recommendations

We have shown how sociolinguistic typology has been linked to notions of morphological complexity in two cases: creoles (Section 3) and sign languages (Section 4). In this section, we summarise four key flaws in the reasoning behind claims that sign language morphology is paradoxical: (i) use of limited data to generate claims about global complexity (Section 5.1), (ii) association of binary language categories with categorical complexity differences (Section 5.2), (iii) use of language age to motivate predictions about morphological complexity (Section 5.3), and (iv) extrapolating from creole complexity to sign language complexity or why the paradox of sign language morphology is not a paradox at all (Section 5.4). In discussing the shared issues between creoles and sign languages, we motivate recommendations (bolded text below, listed in Section 1) about how to change and improve typological research.

5.1. Flaw 1: Use of limited data to generate claims about global complexity

The underlying assumption in the approach taken with sign languages and Exceptionalist views of creoles is that languages within each group share enough structural features to support using individual members as representatives of groups. Stated differently, any individual language can represent the group without considering the sociodemographic conditions of individual languages. For sign languages, this assumption may be related to being primarily expressed in the visual-spatial modality – it has been argued that sign language morphology shows great cross-linguistic similarities because of the shared affordances for iconic representation (Aronoff, Meir & Sandler 2005; but, see later work for a revised account). However, as it has been argued for creoles, there is no a priori reason to assume that categories identified based on social characteristics will be structurally the same (Mufwene 2001). This is because the same properties in different contexts can have different structural outcomes and vice versa (see Thomason 2007 on deliberate change, Bisnath 2024 on the need for causal links between social and structural characteristics). Therefore, the beginning assumption should be of heterogeneity in structural and social criteria within groups, and categories meant to represent structural properties of creoles and sign languages should be built up incrementally by taking ecological context into consideration (Mufwene 2001, Bisnath 2024). A reviewer points out that this is the approach taken with languages that are more established in the literature like the Romance varieties – creoles and sign languages receive unequal treatment due to their relatively recent emergence, both diachronically and in linguistics.

Limited evidence has been used to make conclusions about global complexity. In one of the best-known arguments for creole simplicity, evidence comes from ad hoc comparison of creole and non-creole languages as opposed to randomly sampling; see examples (10) and (11) (McWhorter 2001). In sign language linguistics too, random sampling is rare – often, two to three sign languages are selected that differ in many aspects with one aspect highlighted as the main difference. For example, Sandler, Aronoff, Meir & Padden (2011) highlight language age as the key difference between Al-Sayyid Bedouin Sign Language, American Sign Language, and Israeli Sign Language, despite other major differences among

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the three languages, like community size (Section 4.2). Furthermore, generalisations about sign languages are made based on examples from British Sign Language, American Sign Language, and Auslan, two of which are historically related (Schembri et al. 2018). These examples reflect a general problem in sign language linguistics of a lack of controlled comparisons with signed and spoken languages, possibly because frequent morphological features in spoken languages may be infrequent in sign languages (cf. Gil 2014). Eschewing random sampling goes against common practice in typology, where doing so and controlling for genetic relationship is standard (Miestamo, Bakker & Arppe 2016). We thus also recommend that limited examples of morphology should not be used as proxies for the global complexity of languages (see Brentari, Ergin, Senghas, Whan Cho, Owens & Coppola 2021 for an account of phonology distributed through a grammar). This aligns with Bonami & Luís' (2013) recommendation that measurements of morphological complexity should not be used to make claims about global complexity. Relatedly, we also suggest that more theorising be done on what random sampling should look like when working with minoritised and under-documented languages (relevant discussion in Omardeen 2021). If isolated examples are used as illustrations, we suggest that authors mark their prevalence or explicitly say that they do not know their prevalence.

5.2. Flaw 2: Association of binary language categories with categorical complexity differences

Binary categorisation is often rooted in unacknowledged ideologies (illustrated in Figure 6). First, the creole vs. non-creole divide has been extensively discussed as linked to colonialism (DeGraff 2005). A similar exceptionalisation is found in divisions like macro- vs. micro-community sign language; the former is roughly associated with the global north as the

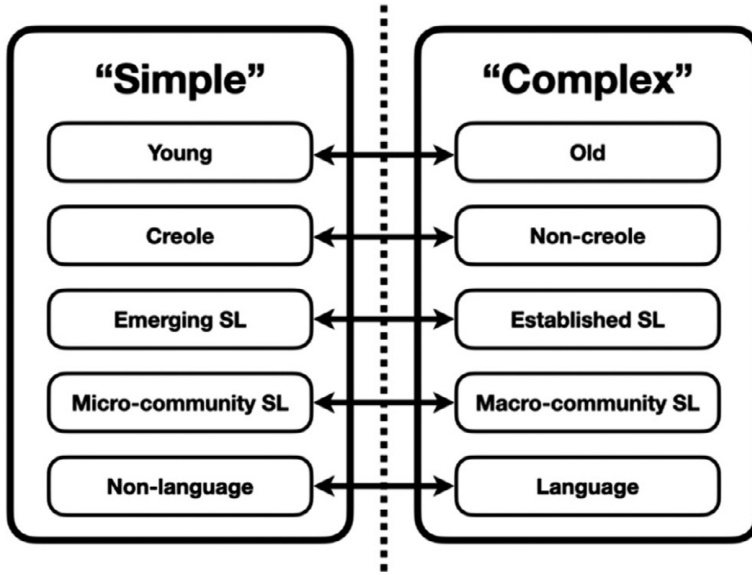

Figure 6. Examples of binary categories found in the literature on morphological complexity in creoles and sign languages. This figure is not an endorsement of these categories.

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ecological conditions under which micro-community sign languages develop are more likely in the global south (Braithwaite 2020, Bisnath 2024). This is intensified in ideologically loaded terminology for categories (e.g. village vs. urban sign language) that do not accurately represent ecological characteristics (Kusters & Hou 2020). Core in these debates about binary divisions is a separation between non-language and language. This is reflected in the pidgin-creole life cycle, in which pidgins are considered a transitory stage to creoles and creoles are considered 'fully fledged' languages because they are acquired as a first language by the children of pidgin speakers (Figure 1). In sign languages, this is paralleled by the developmental cline from gesture to sign (Figure 5), where gesture, homesign, and communal/rural family homesign are separated from village and urban sign languages, but only the latter are given the status of fully fledged languages (also Koulidobrova & Pichler 2021, Goico & Horton 2023). The coincidence of these terminological practices with developmental cline ideology can threaten the legitimacy of linguistic practices, leading to reduced provision of language support from governmental bodies. Complexity then should not be used to argue for the legitimacy of 'languages' vs. 'non-language' (also Fusellier-Souza 2006).

This is particularly important since in both cases the languages that are considered simple are often minoritised relative to their opposite. Creoles and sign languages are commonly framed as young languages and so separated from all other non-young languages. There is also a material difference in that minoritised groups are often documented less (Bonami & Luís 2013, Bisnath 2024) and users of languages in these groups often are not included in how their languages are referred to and may be stereotyped. Active efforts must then be made to present claims about such languages in a nuanced manner that leaves little room for misinterpretation or essentialism. The importance of this cannot be stressed enough when we consider the minoritisation of these languages in the history of linguistics and their communities of use (DeGraff 2005, Henner & Robinson 2023). Indeed, empiricism and ideology are not opposites, as the former is rarely free of ideology, despite claims to the contrary (Section 3.2). As research is heavily biased towards hearing views from the global north, ideology must be acknowledged and integrated into our research practise and interpretation (also Henner & Robinson 2023). We suggest that researchers reflect on their positionality and academic tradition (Obasi 2014; Ameka & Terkourafi 2019; Jamieson, Govaart & Pownall 2023; cf. Savolainen, Casey, McBrayer & Schwerdtle 2023) when working with and making claims about differences in complexity, particularly when referencing minoritised groups. Although positionality statements are increasingly common, it is not enough to simply include one (King 2024). Researchers should engage with the literature with their positionality in mind and seek out insider perspectives. Excellent examples of positionality statements include Gibson, Jerro, Namboodiripad & Riedel (2024); Plumb, Dubcovsky, Lillehaugen & Lope (2024); Lydner (2024); and Morgado (2024) (see Bucholtz, Campbell, Cevallos, Cruz, Fawcett, Guerrero, Lyndon, Mendoza & Reyes Basurto 2023 for guidelines).

5.3. Flaw 3: Use of language age to motivate predictions about morphological complexity

In creoles and sign languages, youth is used to motivate predictions about their morphological complexity (e.g. Fischer 2014). This comes from the idea that complexity takes time to develop, with older languages expected to show more complex morphology than younger ones (Section 3.1). Creoles are described as 'young' or 'new' because they emerge out of language contact, and the classic/Atlantic Creoles arose relatively recently during the

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transatlantic slave trade. Sign languages are described as young, as it has been possible to track the emergence of some, like Nicaraguan Sign Language (Senghas & Coppola 2001) and because similar patterns of emergence are assumed for many other sign languages (often linked to the opening of schools for deaf children). This commonality is used to frame research and motivate predictions that sign language morphology should be simple, neglecting that in other cases aging leads to loss of morphological contrasts, as in the case of Latin developing into the Romance languages (Dressler 2011; analysed as creolisation in Goyette 2000).

Youth as it has to do with languages is nearly impossible to measure (DeGraff 2001), and straightforward correlation between age and complexity, as a reviewer notes, can only be assumed if the social context of change is ignored. The latter cannot be assumed broadly as system internal and external (social) factors may (Woods 2001 on New Zealand English) or may not (Sano 2011 on Japanese) interact in language change, and the distinction between internally and externally motivated change is questionable (Thomason 2007, Hickey 2012). In the study of sign language emergence, multiple means of estimating age (or time depth) are in use, like biological generations, cohorts of signers in a deaf school, age groups, birth of the first deaf individual, etc. (Kisch 2012). In lieu of a principled way of determining language age, various types of languages are identified that are then associated with a notion of time. We see similar developmental clines like the pidgin to creole life cycle, in which the former is a pre-stage of the latter (Bickerton 1984; cf. Mufwene 2020) (Figure 1; Section 3.1), and the gesture to macro-community sign language pathway (Figure 5; Section 4.2). Crucially, older age is equated with the 'most developed', 'established', or 'mature' language (Aronoff, Meir & Sandler 2005; Lillo-Martin & Meier 2011; Schembri, Cormier & Fenlon 2018) and the highest levels of complexity.

These developmental clines reflect not only temporal differences but also social differences and power inequalities. For instance, Meir et al. (2012) explain structural differences in verb directionality in three sign languages of the same age used in Israel (Israeli Sign Language, Al-Sayyid Bedouin Sign Language, Kufr Qassem Sign Language) by differences in socio-demographic background. They argue that Israeli Sign Language is more complex due to its exoteric (as opposed to esoteric) nature. In this case, we risk making Israeli Sign Language and American Sign Language baselines for what verb directionality should be in Kufr Qassem Sign Language and Al-Sayyid Bedouin Sign Language; however, as Israeli Sign Language and American Sign Language exist in different ecological contexts, there is no principled reason to use them as a joint reference point. What Israeli Sign Language and American Sign Language do share is that they are better-researched compared to Al-Sayyid Bedouin Sign Language and Kufr Qassem Sign Language, so their use as a reference point is more reflective of power differentials (see Bisnath 2024 on de facto prototypes). There is no a priori reason to think (i) that a village sign language should eventually begin to show properties of a deaf community sign language without an accompanying change in social properties or (ii) that a change in social properties would be one that progresses from village to deaf sign language.[11]

Based on these issues, we recommend that researchers avoid assuming that complexity (structure), time depth, and sociolinguistic typology are straightforwardly related. For sign

[11] As pointed out by an anonymous reviewer, the problem is intrinsic to conceptualisations of language change and language emergence: while there may be a general pathway of grammaticalisation for specific morphological features (see Jespersen 1917 on negation; Kwok, Berk & Lillo-Martin 2020 on verb directionality), there is in no way any guarantee for any language to embark on this pathway.

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languages, this means that village sign languages should not be assumed to develop into deaf community sign languages (Kusters & Hou 2020) and that specific comparisons between languages assigned to those categories that invoke complexity should be well-motivated. This aligns with Pallotti's (2015: 119) recommendation to adopt 'a simple view of complexity, treating it as a purely descriptive category, limiting its use to structural complexity' and importantly excluding '….from its definition any theoretical assumption about when, how and why it increases or remains constant' (also Andrason 2014). For those researchers committed to associating complexity with language type, we suggest that they explain and motivate the usefulness of complexity, due to its contentious nature (Sections 3.2, 4.3, 5.2). Researchers should also actively avoid reductive, provocative rhetoric, like referring to creole languages as having 'the world's simplest grammars' (McWhorter 2001). This framing masks the complexity metric in use and the data and may instead evoke non-technical denotations and connotations of simplicity (see Raviv, Peckre & Boeckx 2022 for discussion). This is also relevant to Section 5.1 about limited evidence to make claims about global complexity – claims should be tempered due to the current data available for sign languages and the methods that are possible. An example of a more measured, alternate title to 'The world's simplest grammars are creole grammars' (McWhorter 2001) could be 'A study of three creoles and three non-creoles shows differences in one measure of complexity'. The latter phrasing is preferable as it identifies the domain of investigation and specifies the direct comparison between specific languages. Rhetorically foregrounding the use of a complexity metric does additional work in making it clear that complexity measures are a product of linguistic analysis and not a natural property of linguistic forms.

5.4. Flaw 4: Extrapolating from creole complexity to sign language complexity

The literature on morphological complexity in creoles and sign languages diverges in how complexity is formulated, making analogies between the two groups weak. In creole metrics, inflectional morphology and formal complexity are targeted, while in sign languages, no metric has yet been developed or applied (cf. Schembri et al. 2018) (Sections 3 and 4). Rather, there is a division between sequential and simultaneous morphology, in which the latter is considered 'complex' (Brentari, Horton & Goldin-Meadow 2020). Despite this divergence, predictions about sign language morphology make analogies with creoles because of their shared youth (Section 5.3). Instead of applying creole metrics, or metrics applied to spoken languages (Schembri et al. 2018), new metrics are created, or absolute terms are used, e.g. framing sign language structure in a non-technical way as having 'amazing complexity' (Lackner 2017). These formulations are not comparable as the specific type and degree of simultaneous morphology (i) may be modality specific to sign languages, making it unclear if they can be found in creoles (however, Section 4.1), and (ii) may be inflectional OR derivational. This suggests that researchers avoid transferring ideas from one field to another uncritically. Specifically, ideas about creole complexity should not be uncritically applied to sign languages.

6. Conclusion

This paper shows that the theoretical and empirical foundations of claims that sign language morphology is paradoxical are flawed and develops concrete theoretical and practical

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recommendations for working with morphological complexity. Recall that the so-called complexity of sign language morphology has been viewed as paradoxical due to analogies that have been made between creoles and sign languages. We show that the argumentation and evidence behind this claim adopts theoretically contested and ideologically driven assumptions about creoles and applies them to sign languages. We identified four flaws in the uncritical transfer of ideas about creole complexity to sign languages: (i) use of limited morphological data to generate claims about global complexity, (ii) association of binary language categories with categorical complexity differences, (iii) use of language age to motivate predictions about morphological complexity, and (iv) extrapolating from creole complexity to sign language complexity.

We presented and motivated a set of recommendations based on discussing the identified flaws (Section 5). Our discussion notably does not have a processing dimension, as we restricted ourselves to descriptive complexity that has been the primary thrust in creole and sign language morphology research. Processing is alluded to in McWhorter (2001: 137–138), where complexification is meant to mark processing and learning difficulty, and much of sign language and creole literature is linked to cognition given its focus on child language acquisition and cognitive universals. We believe that researchers should avoid conflating descriptive and psycholinguistic complexity, avoid propagating work that does so in research and teaching, and question for whom their metrics differ, as Mithun (2020) does (also Duffield & Menn 2014). We leave more detailed discussion of this issue to future work. Second, it has been suggested that 'complexity' be abandoned for more specific terminology like 'compositionality', 'redundancy', 'irregularity', and 'opacity' (Raviv, Peckre & Boeckx 2022). While we agree that more specific terminology is necessary, a reviewer points out that a more immediate question to be addressed is if global complexity can be associated with a metric at all. Again, approaches that provide proxies for processing costs could be useful as well as artificial language learning and agent-based modelling (Jansson, Parkvall & Strimling 2015). Language users are argued to use more processing resources for some structures compared to others (Hyönä & Vainio 2009), and morphological processing differs in languages with different levels of morphological productivity (Beyersmann, Mousikou, Javourey-Drevet, Schroeder, Ziegler & Grainger 2020), but questions relevant to this paper include: How can processing of an entire language be characterised? What would a meaningful comparison of processing of structures in one language to processing of the absence of that structure in another language look like? How does processing interact with frequency? Note that studies of processing typical suffer from relying on decontextualised linguistic behaviour and thus should be combined with studies of naturalistic communication, like those found in ethnography (Kusters, Spotti, Swanwick & Tapio 2017; German 2024).

This paper shows that it is necessary not only to engage with the literature of diverse fields but also to actively contribute to change by adding critical reflection to the process of cross-disciplinary transfer of ideas. The recommendations we present are a first step; given the dynamic nature of communities, languages, and science, these should be seen as beginning points that should be re-evaluated, updated, and adapted as needed.

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