“Defaults” and Morphological Structure

Stephen R. Anderson
Dept. of Linguistics, Yale University

Default: The default aspects of a state of affairs are those that follow from its intrinsic nature. Observed properties that do not have this character must be stipulated as over-riding or supplementing the default conditions, and thereby constitute complexity.

Complexity is the other side of the coin from defaults. So an understanding of morphological complexity illuminates our understanding of defaults.

What is true about language "by default"?

- Languages need to have syntax
  - Recursive, hierarchical combination of meaningful elements is what gives human language its expressive power
- Languages need to have phonology
  - The conflict between Faithfulness and Markedness is inherent in the need to express meaning through physical systems with their own with their own properties.
- These things follow from the nature of language.

What about Morphology?

- Surely the default ought to be that the elements combined in the syntax map directly onto those that form the input to the phonology.
- But morphology involves a system for arranging meaningful material within larger units ('morphotactics')
  - To the extent this is distinct from the way the syntax organizes meaningful elements into larger units, morphotactics ought not to be necessary.

What about Morphology?

- The ‘same’ morphological element can have a variety of overt realizations (‘allomorphy’)
  - To the extent this is distinct from the modifications required by the phonology, allomorphy lacks independent motivation.
- Specific principles of morphotactics or allomorphy – and thus any morphology at all – thus constitute overrides of the most basic defaults of the system of natural language.

Morphotactics ≠ Syntax

Kwakw'ala: Word order is rather rigid: V-S-Ox-Os-PP*
Adjectives precede Nouns, etc.

But:

(a) When "V" and "O" are part of the same word, they typically appear in the order O-V instead of V-O:
e.g. ƛ'ena-gila 'oil-make', *gila-ƛ'ena.

(b) Iff "O" is part of the same word with "V", it can precede the subject:
e.g., na'w-əm'y-ida bəg^{w}anəm 'cover-cheek-the man', *na'w-ida bəg^{w}anəm-əm'ya

(c) Exactly when they form a single word, an Adjective and its modified Noun can occur in the order N-Adj:
e.g., ƛ'aq^{w}a-dzi 'copper-large', *dzi- ƛ'aq^{w}a

Virtually every systematic property of the syntax of the language plays out quite differently in the morphotactics

Morphotactics ≠ Syntax

Morphological composition:

kʷakʷ'ala-exsd-ən
speak.Kwakw'ala-want-1SG
'I want to speak Kwakw'ala'

Syntactic composition:

aẓ-exsd-ən	q-ən	kʷakʷ'ala
∅-want-1SG	that-1SG	speak.Kwakw'ala

'I want to speak Kwakw'ala'

Allomorphy ≠ Phonology

- In Kwakw'ala (and other Wakashan languages) suffixes are of three types, not predictable from their phonological shape, in terms of their effect on the final consonant of the preceding stem:
  - Hardening (glottalizing), e.g. /qap+alud/ → [qap'alud] 'to upset on rock'
  - Softening (roughly, voicing), e.g. /qap+is/ → [qabis] 'to upset on the beach'
  - Neutral (no change), e.g. /qap+a/ → [qəpa] '(hollow thing is) upside down'
- Similar to, e.g., Celtic mutations, these changes no doubt have their origin in segmental accommodations, but in synchronic terms, they are arbitrary morphology.

Morphological Structure is Inherently 'Non-default'

- The properties of morphological structure (morphotactic organization and non-phonologically induced allomorphy) do not follow from the nature of language.
- Nonetheless, virtually all languages have at least some morphology that is not reducible to syntax and/or phonology.
- As such, any morphology is 'non-default' from the point of view of the language faculty.
- But of course, some systems are more elaborate in this respect than others...

Some Systems are More Complex than Others

Kwakw'ala:

huẓ^{w}-sanola-gil-eɬ
vomit-some-continuous-in.house
'some of them vomit in the house'

Mohawk:

Wa'koniatahron'kha'tshero'ktáhkwen.
wa'-koni-at-ahronkha-'tsher-o'kt-ahkw-en
FACTUAL-1SG/2SG-MIDDLE-speech-NMZR-run.out.of-CAUS-STATIVE
'I stumped you.' (left you speechless)

Central Alaskan Yupik:

Piyugngayaaqellrianga-wa.
pi-yugnga-yaaqe-lria-nga=wa
do-able-probably-INTR.PARTICIPIAL-1SG=suppose
'I suppose I could probably do that.'

[Thanks to Marianne Mithun for Mohawk and CAY examples]

Dimensions of Complexity

- System Complexity:
  - Number of distinct affixes (non-root meaningful elements) in the system
  - Number of meaningful elements in a single word
  - Predictability of ordering relations among the elements that make up a single word
- Complexity of exponence:
  - Deviation from the classical morpheme
  - Number of word forms corresponding to a single lexeme, and *vice versa*
  - Complexity of allomorphy

Number of Affixes in the System

- ‘Eskimo’-Aleut languages: ca. 500 derivational affixes (not counting at least as many more inflectional suffixes)
- Kwakw’ala: ca. 250 derivational affixes (Boas 1947)
- English: ca. 150 prefixes and suffixes (Marchand 1969)
- Standard Mandarin: 7 prefixes and 8 suffixes (Packard 2000)

Number of Affixes in a Word

- "[Central Siberian Yupik] postbases are most often productive and semantically transparent, and can be added one after another in sequences of usually two or three, the maximum encountered being seven. These sequences are relatively short in comparison to other Eskimo languages, such as CAY, where one can find more than six postbases in a work, and where it is possible to have more than a dozen." (deReuse, 1994)
- Kwakw'ala is similar to CSY in the degree of observed complexity.

Element Order

Compositional (scope-based) order in Kwakw'ala:

a. cause to want

ne'nak^{w}'-exsda-mas-uẓ^{w}	John	gax-ən
go.home-want-cause-3SG	John	to-1SG

'John made me want to go home'

b. want to cause

q'aq'oƛa-madz-exsd-uẓ^{w}	John	gax-ən	q-ən	guk^{w}ile
learn-cause-want-3SG	John	to-1SG	that-1SG	build.house

'John wants to teach me to build a house'

Here the order follows from the content properties of the elements involved, a situation we can think of as the default.

Element Order

- Templatic order in Athabaskan : Babine-Witsuwit'en verb (Hargus 1997, *apud* Rice 2000):
  - Preverb + iterative + multiple + negative + incorporate + inceptive + distributive # pronominal + qualifier + conjugation/negative + tense + subject + classifier + stem
  - The ordering of these element classes is partly based on semantics, partly on phonology (prosodically weaker elements closer to the stem) and partly arbitrary.
- Because the templatic aspect of this ordering does not follow from the properties of the elements, it adds complexity.
- Such templates tend to be very stable over long periods.

Default Element Order

- What factors are 'default' predictors of element order?
  - Semantic scope
  - Grammatical function (e.g. derivation is 'inside of' inflection)
    - More detailed "Bybee effects" (mood inside of tense inside of agreement, etc.)
    - Is some version of this a theorem rather than a tendency?
  - Phonological shape (element size and prosodic status; high vowel before low, V-initial before C-initial as in Sanskrit 2P clitics)

Complexity of Exponence

- The ‘default’ morphological element, corresponding to the classical structuralist morpheme, is a discrete, indivisible unit of form linked to exactly one discrete unit of content.
- Real morphology is not like that.
  - Circumfixes (e.g. Slavey ***ya---tı̨*** ‘preach, bark, say’; cf. ***ya**h**tı̨*** ‘s/he preaches, barks, says’, *xa**ya**da**tı̨*** ‘s/he prayed’, *ná**ya**’ewí**tı̨*** ‘we will discuss’; Rice 2012)
  - Infixes (e.g., Mẽbengokre [Je] *fã**g**nãn* ‘to spend almost all (pl.)’, sg. *fãnãn*; Salanova 2012)
  - Multiple exponence (e.g. Choctaw *akíiyokiittook* ‘I didn’t go’; cf. *iyalittook* ‘I went’; Broadwell 2006)

Complexity of Exponence

- Empty or superfluous morphs (e.g. Cree *o-**ᒪ**-ōspwākan* ‘his pipe’, cf. *ospwākan* ‘pipe’ Wolfart 1973; English *crime/criminal*, *long/lengthen* etc.)
- Zero morphs (e.g. Russian genitive plural дам from дама ‘lady’)
- Cumulative morphs (e.g. Latin *am**ō*** ‘I love’, cf. *amābam* ‘I loved, was loving’)
- Subtractive morphs (e.g. Alabama *bal-ka* ‘lie down(pl)’, cf. *balaa-ka* ‘lie down (sg.)’ Broadwell 1993)
- Non-concatenative morphs (Umlaut, Ablaut, other apophony; consonant mutation; metathesis; etc.)
- Exchange relations (e.g. long vowels shorten but short vowels lengthen to form plurals in Diegueño)

Complexity of Exponence

- Complexity of paradigms (mapping from lexemes to word forms)
- Relations between morphosyntactic words (pairings of a lexeme and a morphosyntactic representation) and overt word forms that are not one-to-one
  - Syncretisms (e.g. [hɪt] as both present and past of {HIT})
  - Variation (e.g. either [dajvd] or [dowv] as past of {DIVE})

Complexity of Allomorphy

- A range of degrees to which the behavior of an element can follow by default from its other properties:
  - Phonological variation under phonological conditions
  - Lexically specified variation ("allomorphy") under phonologically specified conditions (e.g. Warlpiri ergative -rlu/-ngku; Surmiran stems)
  - Allomorphy conditioned by specific morphological categories or semantically/grammatically coherent sets of categories
  - Allomorphy conditioned by semantically/grammatically arbitrary sets of categories ("morphomes")

Complexity of Allomorphy

- Diverse behavior of formally parallel elements
  - Distinct conjugation classes of phonologically and grammatically similar stems
  - Distinct effects of phonologically similar affixes on stems (e.g. three types of Kwakw'ala suffix)
  - Boundary type effects: distinct phonological behavior of clitics, Level I *vs.* Level II affixes, etc.

Where does Morphological Complexity Come From?

- Overwhelmingly, from historical change
- "Grammaticalization"
  - words > clitics > affixes
  - phonological conditioning reinterpreted as conditioning by an associated morphological category (e.g. Germanic Umlaut)
- Lexicalization: Material learned and stored as chunks loses its analysis
- Change produces complexity, but complexity results in change

Where does Morphological Complexity Come From?

- Not all structure can be explained by "grammaticalization": not all of today's morphology is yesterday's syntax.
- Al Sayyid Bedouin Sign Language: new sign language with emerging grammatical structure
- 3rd generation speakers have developed conventionalized compounds
- Endocentric compounds have modifier-head order (e.g. PRAY^HOUSE 'mosque') – the opposite of the head-modifier order found in syntactic constructions (Meir et al. 2010)

Conclusions

- Any morphological structure constitutes complexity that goes beyond what we might expect in language by default.
- But languages are quite happy to produce, maintain and expand this complexity.
- Language learners seem to acquire remarkably complex systems with little special effort.
- It is a profound mystery why evolution should have endowed us with a capacity of this sort, especially if you think language is in some sense an ‘optimal’ solution to the computational problem of relating conceptual structure to expression.

Thank you for your attention.

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