“Defaults” and Morphological Structure

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Other authors represented in the present volume are primarily concerned with the question of how default notions in morphological structure should be expressed. The present chapter takes a somewhat different approach, attempting to characterize the notion of morphological “default” from the other direction by investigating the range of phenomena in morphology that deviate from the default and thereby introduce structural complexity.

So what do we mean by a “default”? Standard references focus on senses related to a “failure to fulfill an obligation,” which is probably not relevant to morphological structure. Wikipedia comes a bit closer with one of its senses:

**Default logic** is a non-monotonic logic [used] to formalize reasoning with default assumptions. Default logic can express facts like “by default, something is true”; by contrast, standard logic can only express that something is true or that something is false.

Intuitively, what we are trying to characterize is the notion that some state of affairs is, as one online dictionary puts it, a “situation or condition that obtains in the absence of active intervention.” Accordingly, I propose to think of a default in the following way:

1. 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 overriding or supplementing the default conditions, and thereby constitute added complexity.

Defaults are aspects of what we find that follow from the nature of things, without need for additional explanation. But of course much that we find in the morphologies of natural languages is not like that, and does need to be specified: anything that does not follow from something else contributes complexity to the system. Morphological complexity, the focus of much recent attention, is in fact simply the opposite side of the coin from structural defaults. Accordingly, if we want to understand defaults, we have to study their opposite sides, the sorts of complexity that characterize the morphologies of particular languages.

*The advice and comments of participants in the Kentucky Defaults Conference are gratefully acknowledged, along with those of participants at various conferences on the topic of morphological complexity in recent years and an anonymous reviewer of the present chapter. Many of the arguments, examples, and formulations in the present paper are quite close to those of Anderson 2015a. Given the reciprocal nature of the notions of “default” and “complexity” in morphological systems, this is virtually unavoidable, and the permission of the editors of the volume in which that paper appears (Baereman et al. 2015) to make use of that material is gratefully acknowledged. My work on Kwak’wala was supported by grants from the US National Science Foundation and the Wenner-Gren Foundation to UCLA.
1 What is True about Language "By Default"?

We can begin by asking what structural properties a language must have, simply by virtue of the kind of system it is. A natural language is a system that provides mappings between meaning, or conceptual structures, on the one hand and their expression in sound (or signs, though signed languages will be largely disregarded below) on the other. The expressive capacity of a human natural language is essentially unbounded by virtue of its character as what e.g. Pinker (1994) has called a “discrete combinatorial system”: that is, a system that employs an inventory of discrete meaningful elements (rather than continua of meaning, as for instance in the indication of distance or orientation in the dances of honeybees: von Frisch 1967) and combines these to form new meanings through a limited set of recursively applicable structural principles.

From this it follows directly that a language has to have a syntax, in the sense of the set of combinatory principles that project collections of meaningful elements as the complex meanings of sentences. It is the presence of the kind of recursive, hierarchical syntactic organization that we find in human languages that provides for their open-ended ability to express and accommodate a full range of novel meanings. The presence (though not necessarily the language-particular content) of a syntactic component thus constitutes a default, in the sense that it does not contribute complexity to the system beyond its essential character as a language.

It also follows, plausibly but less directly, that a language has to have a phonology. This is because individual meaningful elements have distinctive expressions, and when these are combined by the syntactic system, the result may be at odds with the properties of the system through which they are to be implemented — the properties of the vocal tract, or of the sign articulators. The conflict between the need to preserve the distinguishing properties of elements and the need to express them through a system with its own properties is most literally implemented as the conflict between Faithfulness and Markedness in Optimality Theory (Prince & Smolensky 2004), but other phonological theories express the same tension in other terms. Again, the presence of phonology in the grammar of a language must be seen as a default, even if the language-specific details of particular systems may not be.

If both syntax and phonology are default properties of natural languages, though, the same cannot be said for morphology, as pointed out by Carstairs-McCarthy (2010); and that makes it difficult to understand why human language should have evolved in such a way that morphological structure plays at least some role in virtually every language. By default, a language ought to combine its meaningful elements through its syntax, and map these directly and straightforwardly onto expression. Anything like morphology that imposes additional structure on that mapping is a complication that does not follow from the nature of the problem.

Morphology can be divided grossly into two aspects. One of these, morphotactics in the vocabulary of the American Structuralists whose views of word structure form the (often unexamined) basis of much current work, provides a system by which morphological material can be organized into larger wholes. This is generally construed as a matter of combining morphemes, though the essential nature of this traditional unit is rather more problematic than is sometimes acknowledged (Anderson 2015b), but whatever the mechanism and its primitives, morphotactics provides a system for combining basic meaningful elements into complex wholes. To the extent the organizational principles of this system are distinct from those of a language’s syntax, this would appear to introduce a superfluous complication: if we already have a system for combining meaningful elements (the syntax), why do we need another (the morphotactics)?

The other aspect of morphology, again to employ structuralist terminology, is the description of allomorphy: the conditions under which the same meaningful element appears in more than one overt form. To the extent such variation in shape follows from the phonological modifications
required to resolve a language’s conflict between Faithfulness and Markedness, it can be seen as necessary. But when we find variation that does not have a basis in the properties of the expression system, this cannot be said to derive in a necessary way from the basic principles of language.

Nothing in morphology, then, beyond a simple system for mapping syntactically functioning meaningful elements to their correspondents in the expression system, follows by default from the nature of language. Any distinctly morphological organization at all constitutes complexity, an overriding of the default of a simple and direct meaning-to-form mapping.

1.1 Morphotactics is not Just the Syntax

The kind of complication referred to above, apparently superfluous duplication of the effects of syntax and phonology, is entirely characteristic of the morphologies of natural languages. In particular, principles of word structure provide for the combination of meaningful elements in ways that are systematically distinct from corresponding principles to be found in their syntax. Carstairs-McCarthy (2010) makes this point with regard to evidence from English; it is illustrated below on the basis of the grammar of Kwak’wala, a Wakashan language of Vancouver Island and adjacent mainland areas.¹

Kwak’wala is a language with fairly rigid surface syntax. Sentences are uniformly verb-initial, with the subject immediately following the verb². After the subject come one or both of two formal types of object, one marked with a preceding -x and the other with a preceding -s. These occur in that order, and may be followed by one or more prepositional phrases. Case markers and demonstratives appear as clitics attached to the word preceding the DP that they specify (see Anderson 2005 for discussion). Sentences with three full arguments of this sort are rare, but do occur:

(2) kʷixʔid=ída bəgʷanóma=xa qása=s-is təlwagayu
    clubbed-DEM man-OBJ otter-INSTR-POSS club
    The man clubbed the sea-otter with his club (B282)

Adjective, numbers, and other nominal modifiers precede the noun:

(3) a. ḥw̱ł(i) təminas ‘dead squirrel’ (B284)
    b. yudə-kʷe bəgʷanóm ‘three-clas man; three men’ (B284)
    c. ts’ədaq pəxəlo ‘woman shaman’ (B284)

Despite the rigidity of these ordering constraints, they are systematically violated when semantically similar elements are combined within a word. Thus, when a nominal is combined with a morphological element with verbal semantics, the latter typically appears as a suffix following the nominal stem, despite the fact that the nominal corresponds to an object:

(4) a. əbas-ənc? ‘mother-visit; to go visit mother’ (B304)
    b. sup’-aqplə ‘adze-carry.along; to carry along an adze’ (B320)
    c. əχʷəχʷəkʷ-sila ‘REDUP-canoe-take.care.of; to take care of canoe’ (B370)

¹The ethnonym corresponding to the language name Kwak’wala is Kwagu̱l (“Kwakiutl”); the people refer to themselves as the Kwəkʷələgəwəgə. Examples below are primarily taken from the posthumously published grammar of Boas (1947), re-transcribed on the basis of my understanding of the phonology the language. These are indicated as “B” with a page number. Examples not so labelled are from my own fieldwork in the late 1970s.
²In sentences with multiple verbs, a fairly common construction especially when the first verb is a semantically empty auxiliary, the subject may either follow all of these or appear after the first verb of the sequence, with all other arguments coming after all verbs.
Not only does such an ‘object’ precede the ‘verb’ in such constructions, it also precedes the subject, contrary to the rigid surface order of the language, since the entire verb (including its ‘object’) appears in sentence-initial position. It is also possible to have an ‘object’ element such as -om?ya ‘cheek’ in example (4) below that is introduced as a suffix to a verbal stem, and in this case, too, the ‘object’ precedes the subject because the former is a part of the verb word, which will be in initial position.

(5) na’w-om?y(=ida       bøg”anom)
cover.with.blanket-cheek(-DEM man)
(the man) covered his cheek with a blanket (B239)

As opposed to the modifier-head order that appear in syntactic constructions such as those in (3), word-internal structures of this type typically involve an affixal modifier suffixed to a nominal head:

(6) a. q’ødz-’ama ‘hat-old.useless’ (B315)
    b. ’way-oř ‘dog-ugly’ (B334)
    c. bøg”-oř-bidö’ ‘man-ugly-little; ugly little fellow’ (B337)

In fact, virtually every default of the syntactic system is over-ridden in the morphology, such that the morphotactics of the language bears little or no resemblance to its syntax. Since both serve the purpose of combining meaningful units in potentially novel ways, this raises the question of why a language should have two distinct systems to serve essentially similar ends.

Given the existence of two separate combinatory systems, a new complex meaning can often be constructed either on the basis of the morphology or on that of the syntax. For instance, Kwak’ala has a suffix -esd that adds the notion ‘want (to)’ to the meaning of a verbal stem, as in (7):

(7) k”akw’ala-exsd-on
    speak.Kwak’ala-want-1SG
    I want to speak Kwakw’ala

    The language also has a semantically empty stem ax- which exists for the purpose of allowing suffixal elements to serve as independent words. In this way, -esd can be converted to an autonomous verb ‘to want’, and this in turn can take another verb as its complement, yielding a sentence with essentially the same meaning as (7) but constructed in the syntax rather than the morphology:

(8) ax-exsd-on q-on       k”akw’ala-X
    Ø-want-1SG COMP-1SG speak.Kwakwala-FUT
    I want to speak Kwakwala

It appears, in fact, that there has been an interesting shift in the language between Boas’ time and the present: where traditional speakers relied heavily on the morphology for the composition of novel expressions, modern speakers are much more likely to put things together in the syntax. Importantly, neither the morphology nor the syntax has actually changed in any relevant way: it is only that the expressive burden has shifted substantially from one combinatory system to the other, with the syntactic defaults taking precedence over the morphological. This is presumably related to the increasing dominance in the speech community of English, a language with no comparable expressive capacity in its morphology. It may well be (Marianne Mithun, p.c.) that similar developments have occurred in other languages with complex morphology of this sort, as a function of declining active command of that system (though without loss of the ability to interpret morphologically complex words).
1.2 Allomorphy is not Just the Phonology

Just as both syntax and morphotactics provide (disparate) accounts of the combination of basic meaningful elements, so do phonology and allomorphy provide distinct mechanisms for the characterization of alterations of the formal expression of those elements. More specifically, some variations in shape are governed not by the phonology, and the need to balance considerations of Faithfulness and Markedness (a default characteristic of languages, as noted above), but rather by phonologically arbitrary conditions.

In Kwak’ala, affixes can be divided into three major classes, in terms of their effect on the final consonant of a stem to which they are attached.

(9) **Hardening** (roughly, glottalizing): e.g. sixʷ+ala → si’wala ‘noise of paddling’ (B227)

**Softening** (roughly, voicing): e.g. sixʷ+ayu → siwayu ‘paddle (n.)’ (B227)

**Neutral** (no change): sixʷ+alas → sixʷalas ‘material for paddles’ (B242)

There is little doubt that at some point in the history of the Wakashan family, the ancestors of these suffixal types differed in phonological form; the changes involved are surely the modern reflexes of what were originally purely phonological accommodations. But the important thing is that in the modern languages (that is, everything for which we have documentary evidence since the late nineteenth century), this motivation is no longer present, but the allomorphic variation persists. Languages are perfectly content, that is, to employ principles of variation whose properties do not follow from the resolution of conflicts between Faithfulness and Markedness.

A common approach to such phenomena, as typified by some analyses of the mutation systems of Celtic languages, is to posit segmental content corresponding to the difference among mutation classes, and attribute the changes to the phonology. That seems quite difficult in this case. For one thing, there is no independent phonology to appeal to: that is, there are no comparable phonological alternations in the language that would provide an observable precedent for the changes induced by hardening and softening suffixes, so any phonological solution would have to be quite abstract. Furthermore, the changes involved are not as a whole phonologically coherent. Thus, ‘hardened’ stops become glottalized, but ‘hardened’ [s, x, xʷ] become [ts’ or ‘y, ‘n, ‘w] while ‘softened’ [s, x, xʷ] become [dz or y, n, w].

In their observable form, the suffixes themselves do not differ systematically in their phonological shape, so there is no good candidate for phonological material that might trigger the relevant changes. For instance, both neutral and softening suffixes may (but need not) begin with [ʔ]. Suffixes of all types begin with vowels, or identical consonants, etc. In general it is a phonologically arbitrary property of a given suffix whether it is ‘hardening’, ‘softening’, or ‘neutral’. Indeed, in some cases the same suffix may show different behavior in different forms; some suffixes ‘soften’ stops but not other consonants, etc.

Overall, the different changes in shape of the same stem final consonant cannot be seen as accommodations to the requirements of Markedness. What we have is a system of alternation in shape that is entirely an aspect of the morphology, and whose presence in the language is a complication rather than a default. As in the Kwak’ala case, such non-phonological allomorphy is often the residue of adjustments that were once phonological. When historical change results in the loss of that phonological conditioning, however, languages do not automatically abandon the alternations, but rather tend to retain them as conditioned by non-phonological factors.
2 Dimensions of Morphological Complexity

It is apparent that the properties of morphological structure (morphotactic organization and non-phonologically induced allomorphy) do not follow from the nature of language: indeed, it seems that the presence of any morphology at all (beyond a simple list of meaningful elements) is not a default that follows from the essential character of a human language. It is quite surprising, then, and a fact in need of an explanation, that virtually all languages — even Chinese languages — do indeed display at least some morphology that is not reducible to syntax and/or phonology. Of course just how much of this added complexity there is and where it is located can vary enormously from one language to another, and the sections below attempt to characterize the space of morphologically non-default behavior.

Wakashan languages including Kwakw’ala present us with many word forms that encode considerably more information than what we are accustomed to find in English words. This added complexity is fairly transparent, in that separable elements of form can typically be identified with distinct components of the word’s content. An example from the related language Nuuchahnulth (“Nootka”: Nakayama 2001: 58) is given in (10).

(10) hiysimyi\h a\q w \i n = hi\ h -is -im\ h -a\h -q\w \i m
be.there on.the.beach in.a.group in.the.house TEL.COND.IPL
We used to get together in a house on the beach

Commonly cited as the extreme of this sort of word-internal complicatedness are the languages of the Eskimo-Aleut family, which make use of combinations of meaningful elements that are in principle unbounded in order to construct single-word expressions of arbitrary complexity. An example from West Greenlandic (Fortescue 1984: 315) will illustrate this.

(11) tusaa -ngit -su -usaar -tauannar -sinnaa -ngi -vip -putit
hear not INTR-PART pretend all.the.time can not really 2S.INDIC
You simply cannot pretend not to be hearing all the time

The Iroquoian languages provide a slightly different model of internal organization. They too combine large number of discrete formal pieces to make complex meanings, but while the results are often very elaborate, an upper bound is imposed by the fact that, similar to the Athabaskan languages, their morphology is based on a word structure template with a limited (if large) number of slots. An example from Mohawk (Mithun 1996: 170) is given in (12); see also Koenig & Michelson (2015) for the related language Oneida.

(12) iah th-a-si-te-w-ate-wistohsera-’tarih-a:t-ha-k-e’
no NOT-WOULD-AGAIN-WE-ALL-OWN-butter-HOT-CAUSE-HABITUAL-CONTINUATIVE-PERFECTIVE
We will no longer keep heating up our butter

The sections below survey what seem to be the major dimensions along which languages elaborate their morphology in ways that deviate from the minimal default of no morphological structure: properties of the system that do not derive transparently from the essential nature of its elements. These fall into three broad classes: the overall degree of internal elaboration of words, the predictability of ordering relations among the elements of word form, and the complexity of the relation between units of content and units of form.
2.1 System Complexity

A basic way in which languages can deviate from the default is the extent to which they make it possible to express complex meanings by modifications of word form: the sheer amount of morphological elaboration they provide. At more or less one extreme in this regard are the Eskimo-Aleut languages, whose grammar typically includes around 500 or more distinct derivational suffixes that can be added to a basic stem, and at least as many more inflectional suffixes. Wakashan languages such as Kwak'wala and Nuu-chah-nulth, as well as the neighboring (and typologically similar) languages of the Salish family are also quite rich in this regard, though not to the same degree. Boas (1947) lists around 250 derivational suffixes for Kwak'wala, a language in which inflectional distinctions are carried by a set of clitic elements rather than word-level morphology.\(^3\)

English plays in a lower league, but its morphology is still not trivial. Marchand (1969) lists around 150 derivational prefixes and suffixes, and this by no means exhausts the morphological resources of the language (Bauer et al. 2013). Even Chinese languages, which are sometimes claimed to exhibit no morphology (and thus to instantiate the default in this regard) do in fact display some. Packard (2000) justifies the inclusion of seven prefixes and eight suffixes in the grammar of standard Mandarin, and comparable inventories can be justified for other Chinese languages. Perhaps Vietnamese comes closer to the default of “no morphology,” but this language makes extensive use of compound formation, a type of morphological structure, and so cannot be said to be entirely at this end of the theoretical spectrum. If indeed there are languages with no morphology at all, it is certainly an extremely rare situation.

Orthogonal to the question of the sheer number of morphological elaborations made available in a language is the extent to which the language makes full use of them within individual words. Eskimo-Aleut languages all have quite comparable inventories of morphological possibilities, but some of them seem to make more extensive use than others of this aspect of their grammar in composing complex meanings. de Reuse (1994), for instance, says that “[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 [Central Alaskan Yupik], where one can find more than six postbases in a work, and where it is possible to have more than a dozen.” Example (11) above, with eight suffixes including the final inflectional marker, would seem to put West Greenlandic toward the more extended end of this spectrum. Wakashan languages like Kwak'wala have more limited systems than Eskimo-Aleut, but the degree of observed complexity is roughly similar to that of Central Siberian Yupik, and notably greater than that of English.

2.2 Default vs. Non-default Arrangement of Exponents\(^4\)

When words are constructed so as to contain multiple morphological elements in addition to a basic stem, it is typically reasonable to regard them as built up sequentially through combination with one such element at a time: this is surely the default kind of organization. Assuming that each such stage of morphological development involves on the one hand a modification of the word’s form, and on the other a modification of its content, the natural result should be that each element should take all of the material built in prior stages as its scope. Thus, the order of affixes in a word

\(^3\)Since these clitics form prosodic words with adjacent material, the fact that inflection is not a matter of word-level morphology is not immediately apparent: see Anderson 2005 for discussion.

\(^4\)A much more extensive discussion of the issues addressed in this section, with attention to the balance between diachronic and synchronic accounts of the emergence of default vs. non-default behavior, is provided by Mithun 2016.
should correspond to relations of semantic scope.¹ We can see this in Kwakw’ala for instance in pairs such as (13), where differences in the linear order of elements meaning ‘want’ and ‘cause’ are reflected in the semantics as corresponding differences of scope.

(13)  
a. cause to want:
  ne’nak”'-exsd-mas-ux” John gax-ən
  go.home-want-CAUS-3SG John to-1SG
  John made me want to go home

b. want to cause:
  q’aq’o.Av-madz-exsd-ux” John gax-ən q-ən guk”ile
  learn-CAUS-want-3SG John to-1SG COMP-1SG build.house
  John wants to teach me to build a house

This parallel between the ordering of affixes and their syntactic or semantic correlates is essentially what Baker (1985) referred to as the “Mirror Principle,” and it is surely a default for it to obtain.

However, like other ordering relations in grammar, the relative order of morphological operations — commonly, but not exclusively, implemented in the sequential order of affixal material — is governed by more than one principle, and these do not always agree. There is, that is to say, more than one sense of a default ordering. Basic, of course, is the notion of semantic scope just appealed to, and its syntactic analog of correspondence between morphological and syntactic structure. On this basis, it is a default for each morphological operation to take as its scope all of the material represented in the base to which it applies. But this is not the only ordering principle we can discern in morphological systems.

Another factor is the general relation between derivational and inflectional material, with the latter coming “outside” the former, in general. A large and contentious literature testifies to the fact that this may need to be qualified in various ways, but in the present context it is only the general effect that matters. On the view of e.g. Anderson 1992, this effect follows as a theorem from the architecture of grammar, and thus reduces to an instance of the Mirror Principle, but to the extent that picture is rejected, the prevalence of “inflection outside of derivation” orderings constitutes an independent ordering default.

There may also be rather finer grained effects of a similar sort, as suggested in various work of Bybee and others (1994 and elsewhere), such as the tendency of marking for mood to appear inside of tense, which in turn appears inside of agreement material, etc. To some extent these can be argued to follow from scope considerations, but not entirely, and furthermore they tend to have rather a lot of exceptions. Linguistic theory needs to clarify the issue of which of these effects, if any, follow from the architecture of grammar as theorems, and which are simply strong tendencies.

Somewhat surprisingly, phonological effects also determine another sort of default, as argued by Rice (2000) for various Athabaskan systems. These include the relative size of morphological elements, their prosodic status, and other phonologically based asymmetries. This is an effect known from clitic systems: Stanley Insler, in unpublished work, has argued that Sanskrit second position clitics are ordered so that elements containing high vowels precede ones with low vowels, vowel-initial elements precede consonant-initial ones, etc. Perhaps the appearance of similar tendencies in morphology is another example of how at least special clitics should be seen as the morphology of phrases (Anderson 2005).

The ordering of morphological material thus displays a range of defaults anchored in other areas of grammar, not always entirely consistent with one another. However, these can be overridden,

¹Note that the notion of “order” that is relevant here is not simple linear order in the word form: prefixes will precede suffixes consistently, but a prefix added to a word already containing a suffix should take scope over it, and vice versa.
and in some instances, a language may specify the order of certain formal elements within a word in a way that disregards the default relations between them. For example, Hyman (2003) shows that in some Bantu languages, certain affixes appear in a fixed order, regardless of the relative scope of the material they signal. An example is the order of Causative and Applicative affixes in Chichewa, which appear in that order regardless of the semantic relation between them.

(14) a. Applicativized Causative: -lil-its-il- [with [cause cry]]
   alenjé a-ku-lil-its-il-a mwaná ndodo
   hunters 3PL-PROG-CRY-CAUS-APPL-FV child sticks
   The hunters are making the child cry with sticks

b. Causativized applicative: -takas-its-il [cause [stir with]]
   alenjé a-ku-takás-its-il-a mkází mthíko
   hunters 3PL-PROG-stir-CAUS-APPL-FV woman spoon
   The hunters are making the woman stir with a spoon

The stipulated order of these suffixes overrides the default provided by the Mirror Principle, and does not seem to follow on any other general basis.

A sort of limiting case of this is a situation in which all of the relative ordering of morphological material is stipulated in the morphology itself, as is characteristic of position class or template morphology, rather than following on other grounds from the properties of the material itself. Stump (1993, 1997) has examined the occurrence of this kind of structure in the well-known verbal morphology of Bantu languages such as Swahili, and concluded that it is irreducibly necessary there.

The Athabaskan languages are also widely cited as evidencing such templatic structure. Rice (2000) argues that this is in fact unnecessary, and that all of the required orderings can be derived from default conditions such as semantic scope. Hargus (2007: chap. 14), however, argues that in Babine-Witsuwit’en, a language whose verb displays one of the more straightforward templates found in the family, at least some stipulation of the position class variety is required. The template she posits for this language is as in (15) below.

(15) Preverb (postposition/adverbial) < iterative /ne/ < multiple /ye/ < negative /we/ <
inceptive /ho/ < incorporated root < distributive /n/ < pronominals < qualifier <
tense/conjugation/negative < inner subject < voice/valence < verb stem

The need for template structure which is not reducible to some other default is also argued for the Australian language Murrinh-Patha by Nordlinger (2010), and this kind of morphology has been posited for a wide variety of the world’s languages.

If morphological templates are really arbitrary, non-default aspects of a language’s structure from a synchronic point of view, we might expect them to be somewhat resistant to diachronic change, in the other exceptional properties tend to persist in a language even when more systematic components of its grammar are altered. The templates found across the Athabaskan languages are all quite comparable, leading to the possibility of reconstructing this aspect of the grammar of proto Tlingit-Athabaskan-Eyak. On that basis, the similarity between this and the template structure reconstructable for the Yeniseian languages of Siberia has been cited (Vajda 2010) as an important component of evidence for a genetic relation between these families across the Bering Strait.

2.3 Violations of Default Exponence

We turn now to the formal properties of the relation between form and content in morphological elements. The default in this regard, the “ideal” morphological element or the canonical state
of affairs (in the sense of Corbett 2005), corresponds to the classical American Structuralist morpheme: a distinct, discrete, indivisible unit of form linked uniquely to exactly one discrete element of content.

As is well known, however, real morphology is often not like that. Units of content may map onto one or several components of form, or onto none, and the units they map to may not be uniquely associated with this content; and units of form may constitute the exponents of one or several components of content, or none at all. Overall, the function between constituents of the two representations is not in the general case one to one, as the morphemic model would have it, but rather many to many and not surjective (“onto”) in either direction.\(^6\) Furthermore, some aspects of content are signalled in the form not by a discrete, overt piece, but rather by some other manipulation of the form that establishes a relation between it and a form expressing some other, opposed category.

Situations in natural languages that override the morphemic default have been described in detail since the early days of Structuralist morphology, beginning with the catalog provided by Hockett (1947). These are reviewed in Anderson 2015b, and need not be extensively rehearsed again here. They begin with violations of the continuous nature of morphological exponents, in the form of circumfixes and their doppelgängers, infixed stems. While some linguists have denied that a single element of content can be represented simultaneously by more than one distinct element of form (“multiple exponence”), the existence of such violations of morphemic unity is clear (Anderson 2001; Caballero & Harris 2012), and is illustrated by example (16) from the Kiranti language Chintang.

\(16\) Kina hun-ce cind-u-ŋ-yuŋs-u-ŋs-u-ŋcu-h-ē
     SEQ      DIST-NS      teach-30-ISA-CONT-30-PRF-30-ISA-3NSO-ISA-IND.PST
     And I have been teaching them (Schikowsky 2014: 53)

The inverse of such problems is represented by single elements of form that cumulate several elements of content that are otherwise represented separately, as in the standard example of Latin am-ō where the final ē signals first person singular present indicative active.

Another relevant set of problems is raised by formal markers that correspond to no element of content (“empty morphs”), as with the connective in German compounds like Schwannen

gesang

‘swan song’, or superfluous morphs such as the nominalizing morphology in English lengthen ‘to make long(er)’. Conversely, examples abound in which some element of the content of a word is not signalled overtly at all; these are usually described by means of “zero morphs,” but it must be recognized that this is merely a name for such violations of the morphemic default and not a genuine resolution.

The notion of morphemic structure is also violated by instances in which a single unit of form, identifiable across words and word types, corresponds not to similarly unitary element of content but rather to a heterogeneous collection of disparate categories. Such a unit, called a morphome since examples were discussed in these terms by Aronoff (1994: with the concept further extended in Round 2015), has been shown to figure in the morphology of a number of languages where its nature is quite contrary to the default form of structure corresponding to the traditional morpheme.

The default form in which morphologically significant content is signalled is by a distinguishable sub-string of the phonological form (ignoring the nature of signed languages, and subject to the various deviations just discussed). In many instances, however, this is effected not by the presence of an affix but rather by a change in the shape of the form: morphological processes, variously known as Ablaut, Umlaut and other forms of apophony; consonant gradation, “exchange rules,” metathesis, etc. Most dramatically, perhaps, in some instances the presence of some element of

\(^6\) That is, it is not the case that every element of content corresponds to some element of form, or that every element of form corresponds to some element of content.
content is signalled precisely by a reduction in the form of the base: morphological subtraction. Interestingly, the inverse of this phenomenon also exists: cases where the addition of an overt affix corresponds to the loss, rather than the addition of some of the content of the base (Anderson 2013).

Another class of cases in which default morphological structure is not observed involves the range of forms built on a given base: the paradigm of a lexical item. For an item belonging to a given word class, there is a specifiable set of dimensions that are relevant in the inflection of that word. Nouns, for instance, might be inflected in a given language (say, German) for one of two numbers and one of four cases. We expect to find that each combination of specifications will correspond to exactly one surface word form, and on the other hand, that each word form in the paradigm will correspond to exactly one combination of properties. As other papers in the present volume make clear, this is certainly not true in all cases.

In real paradigms in real languages, we find numerous syncretisms (e.g., the appearance of the word form [hit] as both the present and the past of the verb hit). We also find a certain amount of variation (as illustrated for example in the free use for some speakers of American English of either [dajvd] or [dowv] as the past tense form of dive). Some parts of the paradigm of some lexical items may be deponent, in the sense that the word forms corresponding to some combinations of content may be ones that, on the basis of the morphological regularities of the language, would be expected to correspond to quite different content (Baerman et al. 2007). Finally, the paradigm of a specific lexical item may be defective, in the sense that some expected combination of specifications may correspond to no surface word form at all for that lexeme (Baerman et al. 2010).

### 2.4 Allomorphy and Default Realization

One of the problems noted from the outset with Bloomfield’s (1933: 161) definition of the morpheme as “a linguistic form which bears no partial phonetic-semantic resemblance to any other form” was the fact that allomorphy exists: that is, what is structurally the same morphological unit may be realized in multiple phonetic forms. If we take his definition as a default, it is regularly over-ridden by the requirements of the phonology, which result in adjustments in shape of a form in consequence of the phonological context in which it appears. We need hardly be concerned with that, however, since (as already noted in section 1.2), such variation is attributable to independently justified principles.

More problematic, however, are instances in which allomorphic variation is determined by phonological context but not in a way predicted by the overall phonology of the language. In Warlpiri, for example, the ergative case marker on nominals is -ngku for disyllabic stems, but -rlu if the stem is longer; but no rule of the language relates /ŋ/ and /l/ under such prosodic conditions. In some languages, such phonologically conditioned (but not literally phonological) allomorphy may be quite pervasive. In the Rumantsch language Surmiran (Anderson 2011) essentially every stem has two distinct and non-predictable allomorphs, with the choice determined by whether the stress in a word falls on the stem or on an ending.

Members of a given word class within a language can show inflectional markers corresponding to variation along the various paradigmatic dimensions of that class, as noted in section 2.3. The default behavior we expect is for formally parallel words to be inflected in the same way, but this default behavior is overridden when distinct conjugation or declension classes exist for similar lexemes: e.g., when the language has more than one declensional type for neuter nouns, or more than one conjugation type for transitive verbs. In such instances, although all of the members of the given word class project into the same paradigm space, they may nonetheless differ in the ways in which the cells of their paradigms are filled.

A similar situation in reverse obtains when affixes induce changes in the stems to which they
are attached; we expect formally similar affixes to produce similar changes. In some instances, however, this default is overridden and individual affixes must be characterized for the changes they induce, as in the case of the three types of Kwakw’ala affix mentioned in section 1.2. Many cases of this sort, where formally similar morphological elements may display one of several sorts of phonological behavior, were represented in theories such as that of Chomsky & Halle 1968 as a difference in the type of boundary associated with the element. Lexical Phonology (Kaisse & Shaw 1983; Kiparsky 1982) incorporated such distinctions into the architecture of the grammar, although specific elements still needed to be characterized by level, distinguished from clitics (perhaps clitics attached at various prosodic levels), etc.

3 The Source of Non-default Morphological Behavior

If languages abound with non-default morphological structure — indeed, if the very presence of morphology in a language is essentially a non-default phenomenon — it is natural to ask about the origins of these phenomena. As argued throughout this chapter, these are not facts that follow from the essential nature of human language in establishing mappings between content and form, so how do they arise, and why do they persist?

It seems clear that in the great majority of cases, the answer is to be sought in diachrony, in ways in which linguistic structures are remade over time. While the slogan of Givón (1971) that “today’s morphology is yesterday’s syntax” is a serious oversimplification, it has nonetheless been presumed since the time of Schleicher (1861-62), the coiner of the term “morphology,” that most morphological elements have their origins in independent words, which become reduced in form and lose their autonomy through historical change.

In fact, not all morphological organization can be argued to arise through reinterpretation of originally syntactic structures. This is illustrated nicely in the signed language of Al Sayyid Bedouins studied by Meir et al. (2010), a language of sufficiently recent origin that essentially its entire history is known. By the third generation of that history, the language had developed at least some morphology, in the form of principles of compound formation. One such principle is that in endocentric compounds, modifiers precede their heads: thus, pray’house ‘mosque’. But these cannot have arisen directly from earlier syntactic formations, because in the syntax of the language, heads precede their modifiers. The morphology here must have some other basis.

Many historical developments underlying the synchronic morphologies of individual languages fall under the general heading of morphologization, although this should not be seen as an independent force in its own right, but rather a cover term for a number of individual tendencies in historical change, each with its own properties and motivation (Anderson 2015c). The canonical instance of this sort is the development of phonologically and semantically reduced forms of originally independent words, with full words reduced to clitics and further to affixes, leading eventually to grammatical structure. Other instances of “grammaticalization” include developments when phonological alternations become opaque in some way, and are then reinterpreted as grounded in the morphology instead (e.g. Germanic Umlaut, originating as phonetic assimilation of vowel quality and subsequently re-interpreted when many of the conditioning vowels were reduced).

The historical evolution of languages thus leads fairly naturally to circumstances in which expected defaults come to be overridden and morphological structure emerges despite its non-inevitability from the point of view of expressiveness alone. The other side of this emergence of complexity is the fact that when systems become too complex, they may in consequence be restructured, which itself can simplify the phonology or the syntax at the expense of more morphology. To paraphrase Sturtevant’s (1947) aphorism about the relation between sound change and analogy, change produces complexity, but complexity itself can result in change.
4 Conclusion

We began from the proposition that if language is essentially a system that pairs meaning with expression, the default form of morphology would be none at all. And yet we find that morphology is a fact of life in virtually every language, and such structure is elaborated robustly in opposition to all of our expectations. Words are not simple Saussurian signs, combined in the syntax to express complex meanings, but can include a wealth of internal content structured by elaborate systems that replicate much of the function, though little of the form, of syntactic combination. Individual content-signalling elements are not themselves unitary, atomic elements of form linked to similarly unitary, atomic elements of content: the relation between forma and content is much more elaborate than required for mere expressiveness.

Language learners seem to acquire systems that violate the expected defaults with no special extra effort, and along the same time course as any others. Furthermore, morphological structure shows no particular tendency to be eliminated through diachronic change as useless complication. Independently motivated phonological change may impact morphology, as when for example the reduction of unstressed word final syllables played an important role in the decay of early inflectional complexity in the history of English, but there is no reason to think that the phonological development was in the service of morphological simplification, rather than the other way around. Languages just seem to be perfectly happy to keep, and indeed to extend, their morphological components, in apparent violation of what might be expected if they constituted ‘optimal’ solutions to the problem of associating content with its expression.

From this we have to assume that over the course of its development in our species, the Language Faculty has evolved so as to incorporate expectations about the structure of words, as well that of phrases and sounds. How and why such evolution might have taken place is the question indicated by Carstairs-McCarthy (2010), and the exploration of the structure of defaults in this domain should make it clear that the quest for an answer should be taken more seriously than it generally has been.
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