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CHAPTER 15

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GRAMMATICALIZATION AND EXPLANATION

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A goal of linguistics is discovering what kinds of structure occur in languages and why. We see progress in ever-evolving theoretical models of phonology, morphology, syntax, and semantics, but intriguing puzzles remain. These can be approached from several directions. One is to refine existing models to account for them. Another is to deem them outside theoretical interest. A third is to step back from a purely synchronic viewpoint to consider additional sources of explanation, including the forces that create and shape the structures in question. This chapter illustrates the last approach.

One language notorious for theoretical puzzles is Navajo. Much of what is expressed syntactically in European languages is expressed within a Navajo word. The word in (1) corresponds to a multi-word English sentence.[1]

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[1] For assistance with the Navajo material cited here, I am grateful to speakers Jalon Begay, Dolly Hermes Soulé, and Marilyn Notah. Any mistakes are my own.

The material is cited in the standard Navajo orthography. The vowels, *a*, *e*, *i*, and *o* have nearly their IPA values. Vowel length is indicated by a doubled vowel (oo), high tone by an acute accent (ó), and nasalization by a Polish hook (ǫ). Plain stops are written *b*, *d*, *g*, and aspirated stops *t*, *k*. Fricatives *s*, *z* have their usual values. Alveopalatal fricatives are *sh*, *zh*. The voiceless fricative lateral is *ł*. The digraph *gh* is a voiced velar fricative. Voiced affricates are *dz*, *dl*, and *j*, and voiceless affricates *ts*, *tł*, and *ch* [tʃ]. Ejectives are *t, ts', tł'* and *k'*. There are nasals *m* and *n*; glides *y* [IPAj] and *w*; and laryngeals *h* [x, h] and glottal stop' [ʔ].

(1)   Navajo (Dolly Hermes Soulé, speaker, p.c.)
       Baayádiiłti'.
       b-aa-yá-d-iid-ł-ti'
       3-about-talking-DISTR-1DU.SBJ-CL-speak.CONT.IPFV
       'We were talking about a lot of things.'

Such sentences have raised the issue of whether words in polysynthetic languages should be accounted for by syntactic theory.

1. THE NAVAJO VERB

Navajo is spoken by perhaps 140,000 people in Arizona, New Mexico, Utah, and beyond. It is a member of the Athabaskan–Eyak–Tlingit family of languages, spoken over a wide area from Alaska into the Southwest. The structures of the languages are quite similar, particularly those of the Athabaskan group.

Most research on Navajo has focused on the verb. Verbs are usually described in terms of a templatic model, as a sequence of position classes or slots (e.g. Hoijer 1945; 1971; Kari 1975; 1989; Young and Morgan 1987[2]). The most frequently cited version is given in Figure 15.1. The prefixes furthest from the stem, in positions 0–III at the beginning of the verb, are referred to as 'disjunct' prefixes, and those closer to the stem, in IV–IX, as 'conjunct' prefixes. The two groups are distinguished by certain phonological characteristics.

The categories are given in (2). (Athabaskanist terminology does not always correspond to general linguistic usage.)

0	Ia	Ib	Ic	Id	Ie	II	III	IV	V	VI	VII	VIII	IX	X
PP OBJ	Ø PP	PP ADV NOM	REFL	REV	SMI	ITR	DISTR PL	OBJ	3 SBJ	THM ADV	MODE	1,2 SBJ	CLF	STEM
Disjunct prefixes								*Conjunct prefixes*						

Fig. 15.1. Navajo verb template (YM 37–8)

[2] The following abbreviations are used in this chapter: Y = Young (2000); YM = Young and Morgan (1987); YMM = Young, Morgan, and Midgette (1992).

(2)   Position classes (Y)
    0   Object of a postposition [applied objects]
    Ia   Null postposition
    Ib   Postpositions [applicatives], Adverbial-Thematic, Nominal prefixes
    Ic   Reflexive
    Id   Reversionary: 'returning back'
    Ie   Semeliterative 'once more'
    II   Iterative
    III   Distributive plural
    IV   Object pronominals
    V   Subject pronominals: 3rd person
    VI   Thematic and adverbial prefixes [three slots]
    VII   Mode [modality, aspect]
    VIII   Subject pronominals: 1st and 2nd persons
    IX   Classifiers [valency]
    X   Stem

The contents of the slots vary: YM list 171 prefixes for Ib, but just one for III. Some prefix meanings are common cross-linguistically, such as the reflexive *á-* (Ic). Some are rare, such as *da-* (Ib) 'death' (YM 38). Some are nearly impossible to define in isolation, such as *dee-* (VIa) 'a compound prefix, the components of which are not identifiable at present' (e.g. *bídééyá* 'I brushed against him', *náhidéélts'id* 'it capsized', *na'ídéélkid* 'I inquired' YM 38).

Athabaskanists distinguish several layers of verb structure.

(3)   The Navajo verb
    Stem   Single morpheme (fused root + aspect)
    Theme   Basic lexical entry
    Base   Theme + additional derivation
    Word   Base + inflection

The layers in (1) *baayádiiłti'* 'we were talking about a lot of things' are in (4).

(4)   Navajo verb *baayádiiłti'*
    Stem   *-ti'*   speak.DURATIVE.IMPERFECTIVE
    Theme   *-yá-ł-ti'*   Stem + *yá-*'talk', *-ł-* CLASSIFIER
    Base   *-aa-yá-d-ł-ti'*   Theme + *-aa-* 'about', *d-* DISTRIBUTIVE
    Word   *baayádiiłti'*   Base + *b-* 'it', *iid-* 'we'

Navajo verb structure violates a number of generally held assumptions.

  (i)   Languages with verb-final syntactic structure are expected to be suffixing. Navajo shows strong verb-final order in clauses, but it is uniquely prefixing.
 (ii)   Mutually-dependent morphemes are often expected to be contiguous, but many Navajo lexical entries consist of parts scattered throughout the verb,

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like *yá-...łti'* 'speak...talk' in (1). Also, mode-aspect categories are ex-
pressed by combinations of non-contiguous prefixes and stem shape.

(iii) Inflectional affixes are expected to occur outside derivational affixes, but in
        Navajo, derivational and inflectional prefixes are intercalated: in *baayádiiłti'*,
        the 1st person plural subject prefix *-iid-* 'we' is in position VIII, in the middle
        of the base: *baayád-iid-ti'*.

(iv) Paradigmatically related affixes, usually mutually exclusive, typically all
        occur in the same position in a template. In Navajo, 3rd person subject
        prefixes occur in position V, while first and second occur in VIII.

Navajo presents more puzzles, but the discussion here will focus on these and the
major theoretical approaches that have been taken to solving them.

2. A SYNTACTIC APPROACH THE MIRROR PRINCIPLE

A number of authors have argued that word formation is essentially a syntactic
process. Baker links the two with his 'Mirror Principle'.

> The way in which a complex word is built up will be related to the relative embeddings of its
> parts in syntax, which in turn represents aspects of their semantic scope and interpretation
> ...It therefore follows from the theory that the order of morphemes on a verb will reflect
> aspects of the syntax of the clause that the verb is the pivot of—which is the essential
> content of the Mirror Principle. (Baker 1988: 422)

Baker locates word formation squarely within the syntax. A syntactic approach is
appealing for polysynthetic languages like Navajo, where a word can constitute a
complete sentence. But non-contiguous dependencies like those making up lexical
entries, and the fact that paradigmatically related markers occur in different
positions, present challenges to the Mirror Principle. Baker himself recognized
these problems (1985: 402).

3. A SYNTACTIC/SEMANTIC APPROACH: SCOPE

In a carefully argued book-length study of the Athabaskan template, Rice (2000)
similarly presents word formation as a syntactic process. She considers the leftmost

prefixes (Navajo 0–III), along with the rightmost elements (IX valency, X stem), all to be lexical items. Prefixes between these two (IV–VIII) are labelled functional items.

Following Baker, she proposes that in Athabaskan, 'morpheme order follows largely from scopal relations' (2000: 18). Each morpheme has within its scope everything to its left. As Rice observes, the position of the stem at the right end of the verb presents a problem for a scope analysis, since affixes are assumed to have scope over the stems they modify, but the stem is to their right. Her solution is to generate the stem at the beginning of the verb in a left-branching syntactic structure, then move it up and rightward over the prefixes.

A primary idiosyncrasy of the Athapaskan verb is that the verb stem is located in the 'wrong' place in the surface string. In the remainder of this book, I assume a movement-based account along the lines proposed in Speas 1990, 1991, Rice 1993, 1998. (Rice 2000: 78)

The position of the valency classifiers immediately before the stem at the end of the verb also presents a challenge for a scope account. These prefixes (*-ł-, -l-, -d-*) are usually lexicalized with the stem, though they can reflect transitivity. Rice proposes a syntactic solution for these as well. She considers them 'syntactically verbs that require a verb phrase complement' (2000: 126).

The stem raises to the voice/valence markers, and this unit in turn raises to the right edge of the verb phrase. This assumption is required to place the verb and voice/valence markers, a phonological constituent, in the correct position on the surface. (p. 171)

The positions of the subject prefixes pose still another challenge. As Rice notes, the formal status of these prefixes as arguments or agreement has long been a topic of discussion. The puzzle here is that 1st and 2nd person prefixes appear immediately before the valency–stem complex (VIII), but 3rd person prefixes appear several positions to their left (V), separated by three groups of adverbial and thematic prefixes, and mode–aspect prefixes. Rice's explanation is that while the 1st and 2nd person prefixes are Agreement, with features of person, number, and gender, the 3rd person prefixes are Number, with only number and gender features.

These are not the same sorts of items, but represent two distinct functional categories, Agreement and Number. Thus, one part of the ordering problem is solved: subject inflection is in two places in the verb because subject inflection is not homogenous, but rather involves two types of functional elements. (p. 191).

Her reasoning is based on the fact that one 3rd person prefix, the generic 'one', is used on occasion to refer obliquely to the speaker or the listener, and in some of the languages (though not Navajo) it is also used for 1st person plurals.

4. A SYNTACTIC/PHONOLOGICAL APPROACH

Hale (2001) explains Navajo order by a combination of syntactic and phonological principles. He begins with the now familiar puzzle that Navajo lexical items often consist of non-contiguous parts, as in (5).

(5)   Lexical item 'jerked me outdoors' (YM 283, cited in Hale 2001: 283)
       Silao t'óó'góó ch'íshidiniłdazh.
       'The policeman jerked me outdoors.'

The verb is based on the lexical item *ch'i-* . . . *da*zh.

(6)   ch'í-   sh-   d-   n-´-   ł-   dazh
       Ib   IV   VIa   VII–VIII   IX   X
       out.horizontally- 1SG.OBJ- arm.movement-   ASP   TR   move.jerkily

Hale proposes an underlying left-branching tree structure for the verb, with the stem -*da*zh at the lowest, rightmost V node.

He accounts for the positions of the inner, conjunct prefixes phonologically, based on analyses developed by Speas (1984) and McDonough (2000) of the Navajo verb as a minimal disyllabic phonological skeleton CVC-<u>CVC</u>. The process of creating a verb consists of filling out the skeleton. The right <u>CVC</u> half of the skeleton receives the verb stem. The left CVC half, termed the 'receptor', is filled in with phonetic features of the functional heads (Qualifier, Mode/Subject, Voice, V).

The phonetic features of the functional heads are transferred successive-cyclically to the receptor within the verbal skeleton, satisfying the coda requirement first, if possible. (Hale 2001: 682)

The skeleton is filled in from right to left. The heads occupy one plane, in this example the Qualifier or thematic *d-* 'arm movement', the Mode/Subject *n -´-*, the transitivizer -*ł*-, and the stem -*da*zh 'jerk'. The non-heads occupy another plane, here the preverb *ch'í-* 'out' and object *sh-* 'me'. First the stem is inserted into the CVC-<u>CVC</u> skeleton, yielding CVC-<u>da</u>zh. Next, the transitive classifier -*ł*- assumes the coda position in the CVC receptor: CV-<u>ł</u>-dazh. Then the mode-subject is added, with an epenthetic *i* that assumes the floating tone: <u>ní</u>-łdazh. There is no position left for the prefix *d-* 'movement of arms or legs', but since the skeleton is only a minimal structure, further prefixation is allowed. The conjunct prefix *d-* is attached to the left with an epenthetic *i* added to complete the syllable: <u>di</u>-níłdazh. Finally, the two planes are collapsed, with elements ordered as in the underlying tree: *ch'í-shi-diníłdazh.*

Hale then turns to the subject prefixes. Basic 3rd person subjects are unmarked or zero. These he groups with the 1st and 2nd person prefixes. The subject prefixes

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remaining in position V are the generic *j-* 'one', the indefinite *'-* 'someone, something', and the spatial *hw-* 'area, space'. Hale notes that their position between the object and verb stem is problematic: they have scope over the object–verb complex. He addresses this problem by classifying them with lexical noun phrases.

The so-called deictic prefixes of position V belong grammatically to the same category of elements as full DP (or NP) arguments, like *ashkii* 'boy'. They are, in some fundamental sense, 'adjuncts' to the clause. (Hale 2001: 691)

They are moved into the verb by a process of infixation.

To account for the *actual* surface position of the deictic subjects, I will assume that . . . inflectional morphology, originating in positions external to the verb, is 'infixed' to the verb. (Hale 2001: 691)

5. AN APPROACH FROM GRAMMATICALIZATION

An awareness of processes of grammaticalization suggests another approach to the puzzles, one taken by Givón (2000) in his discussion of Tolowa, an Oregon Athabaskan language. With this, the Athabaskan verb can be understood as the result of successive developments over time.

The development of grammatical structures and the markers that constitute them can involve a constellation of changes, most of them gradual. Among these may be an extension of morphemes to new contexts of use, resulting in more diffuse and general or grammatical meanings; increasing abstraction; decategorialization or loss of properties characteristic of specific lexical categories; and reduction in phonetic independence and substance (Heine and Kuteva 2007: 34). The Navajo verb exhibits ample evidence of all of these effects.

Phonologically, the picture is striking. The outer (leftmost) prefixes (0–III) have the most phonological substance. They show a variety of shapes. Their onsets are drawn from the full consonant inventory of the language, and their nuclei represent nearly all the vowels: *tsístł'a-* 'cornered, trapped, blocked, baffled', *hasht'e-* 'in order, ready, prepared', *k'eh-* 'overcome'. Most of the inner prefixes (IV–IX) consist of a single consonant, drawn from just a subset of the Navajo inventory (plain coronals, glides, laryngeals), augmented in some contexts by the epenthetic vowel *i* descended from Proto-Athabaskan schwa: *n-/ni-* terminative, *sh-/s-* 'I'. The prefixes closest to the stem, the valency classifiers, consist of at most a single consonant, or only a phonetic effect on the following consonant, or nothing at all. Phonological substance thus shows increasing reduction with proximity to the stem.

There is similar semantic progression. Outer prefixes often show quite specific meanings, many typical of lexical items in other languages: *-chá:-* 'bunched, huddled', *chą́-* 'crave, be addicted to', *-ch'o-* 'support, help', *cha-* 'darkness', *di-* 'into or near fire', *ka-* 'chronically ill, invalid', *k'e-* 'loosen, untie, take down (loom or hair)', *łi-* 'flattery, cajolery, cheating', *tso-* 'prayer', *soh-* 'hardship', *tii-* 'tackle, attack', *tsi-* 'startle, fright'. Many of the inner prefixes serve more grammatical functions, such as the subject and object pronominals and the various mode/aspect markers. The valency prefixes adjacent to the stem are highly grammatical, sometimes with barely identifiable functions.

While many outer prefixes have clear concrete meanings, such as *-níká-* 'through an opening' (Ib), many inner prefixes show effects of extension in their diffuse meanings. Young and Morgan distinguish 14 prefixes in position VIa of the shape *d-/di-* on the basis of their meanings (YM 38). Most definitions begin: 'occurs as a component of some verb bases that involve . . .'. The definitions continue 'movement of the arms or legs', 'relinquishment, relaxation, opening or closing and addition or reduction', 'an elongated object', 'refuge, relief, succor', 'fire or light', 'the mouth, stomach, throat, oral action, food, smell, noise', 'pain, hurt', 'holiness, faith, respect, immunity from the effects of a ceremony, prayer', tilting, slanting, placing on edge, leaning, dangling', 'sound, hearing'. Some have more grammatical definitions: 'occurs in combination with *ni-* (VIb) in certain Neuter Imperfective Adjectivals', 'occurs in certain Active and Neuter verb bases that are concerned with color', 'the Inceptive marker that, in combination with *yi-* (VII) Progressive mode marker produces the future paradigms'. One is defined as 'a catch-all for *di-* prefixes that, even speculatively, cannot be assigned to one of the foregoing categories'. They mention possible associations between some of the prefixes: the *d-/di-* prefix used with verbs of 'refuge, relieve, succor' is said to probably be cognate with the *d-/di-* prefix in verbs of 'relinquishment, relaxation, opening or closing and addition or reduction' and with the *d-/di-* prefix in verbs 'concerned with the mouth, stomach, throat, oral action, food, smell, noise, speech', and perhaps with that in verbs of 'sound, hearing'. Some of the homophony could be the result of phonological erosion, but some appears to be the result of semantic extension.

The coincidence of increasing phonological reduction, generality, abstraction, and diffuse meaning with increasing proximity to the stem suggests that the positions of prefixes in the verb correlate with their age: those closest to the stem are the oldest, and those furthest the youngest.

5.1. Comparative evidence

A comparison of verb structures across the family corroborates this scenario. Relations within the Athabaskan–Eyak–Tlingit family are illustrated in Fig. 15.2.
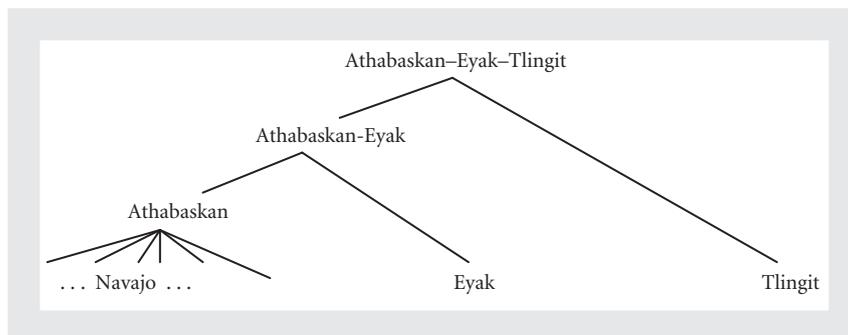
Fig. 15.2. The Athabaskan–Eyak–Tlingit family (Krauss 1973)

17	16	15	14	13	12	11	10-9	8	7-4	3	2	1	0	
PREVB	DST	PL	OBJ	AREA	NOUN		LOC	BEN	MODE/ASP	DST	**SBJ**	**CLF**	**STEM**	SUF

Fig. 15.3. Tlingit verb template (Crippen 2010: 105)

I	II	III	IV	V	VI	**VII**	VIII	**IX**	**X**	
OBJECT	MODE/ASP		PL	CLF	MODE/ASP	**SUBJECT**	MODE/ASP	**CLF**	**STEM**	SUFFIXES

Fig. 15.4. Eyak verb template (Krauss 1965: 171)

0	Ia	Ib	Ic	Id	Ie	II	III	IV	V	VI	VII	**VIII**	**IX**	**X**
PP OBJ	0 PP	NOM	REFL	REV	SMI	ITR	DISTR PL	OBJ	3 SBJ	THM	MODE	**1,2 SBJ**	**CLF**	**STEM**
		ADV								ADV				
		PP												

Fig. 15.5. Navajo verb template (Young and Morgan 1987)

All of the languages share a core: SUBJECT–VALENCY–STEM. Templates for Tlingit and Eyak are in Figs 15.3 and 15.4. Those for the Athabaskan languages are largely as in Navajo, treated in Fig. 15.5, with some differences particularly in the leftmost sections.

Valency classifier (CLF) and subject prefixes are cognate across the three branches, suggesting that the SUBJECT–VALENCY–STEM core was already in place in their common parent.

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5.2. Navajo-internal evidence

It is no longer possible to trace the origins of the oldest prefixes, such as the valency classifiers. Likely sources of some younger prefixes, however, can still be identified even within Navajo. Position Ib contains three types of prefixes, grouped by Young (2000) as 'nominal', 'adverbial', and 'postpositional'.

In the nominal prefix category, twenty-five forms are listed, many with lexical counterparts: *a'ą́-* 'into a hole or burrow', *a'áán* 'hole, burrow'; *dá'ák'e-*'into the field', *dá'ák'eh* 'cornfield, field'; *dį́-* 'foursome', *dį́į́'* 'four'; *jé-* 'carefully'; *jéí* 'pleura, heart'; *łe-* 'into the ashes (to cook)', *łeezh* 'dirt, soil'; *naa-* 'war, enemy', *'anaa'* 'war'; *n-/ni-* 'pair, couple, by two's', *naaki* 'two'; *tá-* 'threesome', *táá'* 'three'; *tó-* 'water, fluid', *tó* 'water'; *t'á-* 'wing(s)', *t'á'* 'wing'. A number are based on body parts or object parts, inalienable possessions that require a possessive prefix when used as independent nouns: *-'lák'ee-* 'into hand', *-'ák'ee* 'hand'; *-láta-* at the tip', *-látah* 'tip, end, extremity'; *-nák'ee-* 'in(to), on the eye', *-nák'ee* 'ocular area, eye place' (*-k'ee* 'place'); *-niik'i-* 'on the face', *-nii'* 'face' with *-k'i-* 'on'); *-tsá-* 'belly, in the belly, food', *-tsá* 'belly'; *-zá-/-zé-* 'neck, throat', *-zéé'* 'mouth, neck'; *alkéłk'e-* 'in agreement, in each other's footsteps', *á-* REFLEXIVE + *-k'eh* 'footprint, footstep'.

These prefixes appear to be descendants of incorporated nouns. Incorporation is no longer productive in Navajo, but it persists in some Northern Athabaskan relatives and Tlingit. The prevalence of prefixes pertaining to body parts is not surprising: body part terms are among the first to be incorporated when such constructions develop in languages. The prefixes already differ from their lexical counterparts. They have been decategorialized, no longer appearing with possessive prefixes. They are often slightly reduced phonologically. They occur as elements of lexicalized verb themes. Uses of the lexical noun *tó* 'water' and the prefix *tó-* can be compared in (7) and (8). (The 'water' prefix often appears as *ta-*.)

(7)   Noun *tó* 'water' (Dolly Soulé, speaker, p.c.)
       <u>Tó</u> bíká níyá.
       'I've come after <u>water</u>.'

(8)   Prefix *tó-* 'water' (YM 707)
       Shikee'   bąąh   <u>tó'diisóół</u>
       shi-kee'   bąąh   <u>tó-</u>'-di-yi-ł-yóół
       1SG.POSS-foot on   <u>water</u>-something-pain-y.PFV-TR-cause.to.inflate.PFV
       'A water blister formed on my foot.'

The prefixes do not specify a grammatical relation. Role is simply inferred from the situation.

(9)   Navajo nouns and nominal prefixes (YM 488, 516, 517, 302, 84)
       a. jéi   'pleura, heart'
           Baa jé'ííníshná   'I handle it carefully'   *-l-ná* 'do right.handedly'

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b. łeezh   'soil, ground, earth, dust, dirt, land'
    Łe-'doolch'il 'It struck the ground (a bolt of lightning)'   *-l-ch'ííł*   'flash'
    Łe-'ashgééd   'I'm digging a cellar, pit'   *-Ø-gééd*   'dig'

In the adverbial category, Young lists 101 prefixes (Y 21–2). Lexical sources of many of these are also identifiable. Some directionals have sources in adverbs: *a-* 'away out of sight', *áá* 'there, remote'; *ada-* 'downward from a height', *adah* 'down'; *da-* 'up at an elevation, off', *dah* 'up'; *na-/n-/ni-* 'across, crosswise', *naa, naanii* 'crosswise, across, over'. Some were nouns: *yá-* 'up into the air', *yá* 'sky'. It is easy to see how these prefixes could develop. Lexical adverbs often appear immediately before the verb. When particular adverb–verb combinations co-occur frequently, speakers can process them as chunks, and the adverbial constituent can lose its individual salience.

(10) Adverb *adáh* 'down' (Dolly Soulé, speaker, p.c.)
      Adáh   náánádá
      down   he sat again
      'He came back <u>down</u>.'

(11) Prefix *ada-* 'down' (Dolly Soulé, speaker, p.c.)
      Adanáátsaad   ndę́ę́'
      <u>ada</u>-náá-tsaad   ni=dę́ę́'
      <u>down</u>-again-scoot.MOMENTANEOUS.PFV   that=from
      'When he came <u>down</u> again . . .'

The adverb and prefix coexist in the modern language, serving subtly different functions. (10) and (11) were from a Pear Film narrative. The story opened with a man picking pears in a tree. When he climbed down, the speaker used the adverb *adáh* 'down'. He emptied the pears into a basket and climbed back up. After a while, he climbed back down with more pears. This time the routine was familiar, and the speaker expressed it in a single word with prefix *ada-*.

Other adverbial prefixes in position Ib simply occur as parts of particular lexical items, thematically. Sources for a number of these are identifiable as well, some adverbs, some verbs, some nouns: *cha-* 'crying', *-cha-* 'cry' (verb stem)'; *k'a-* 'wound, blemish'; *k'aa'* 'arrow'; *k'é-* 'peace, friendliness, amicable relations', *-k'éí* 'kinsman, *literally* friendly one'.

(12) Thematic prefix *kéé* 'living, residing' (YM 493)
      kéyah   'land, country, nation'
      K'ad   dził   ghą́ą́'di   <u>kéé</u>hasht'į́.
      k'ad   dził   ghą́ą́'=di   <u>kéé</u>-ha-sh-t'į́
      now   mountain   top=at   <u>residing</u>-area-1SG.SBJ-animate.at.rest.NEU-
                                     TER.IMPV
      'I live on top of the mountain now.'

Prefixes in the third group are applicatives, derivational prefixes which add an argument to the verb. Many have surprisingly grammatical meanings for recent additions: -á'- 'for, on behalf of', -aa- 'to, about, concerning, on, off, by', -í-/-é- 'against', -gha- 'away from', -ghá- 'through', -´ká- 'for, after', -k'i- 'on, on top of, off of', -ná' 'beside', -ta- 'among', -ts'á- 'away from', -ya- 'under, beneath'. The applicative ká- 'after' can be seen in (13). Prefixed to the intransitive verb -'íí' 'look', it derives transitive verbs meaning 'look for'.

(13)   Applicative prefix—ká- (Dolly Soulé, speaker, p.c.)
       Shiyostsah   bíkádésh'íí'
       shi-yostsah   bi-ká-dé-sh-'íí'
       my-ring   3-after-thematic-1SG.SBJ-look.IMPV
       'I'm looking for my ring.'

The applicative prefixes are referred to as 'postpositions' by Young and Morgan. The sources of many of them still survive as genuine postpositions, independent forms inflected for their objects with prefixes. The postposition -ká 'after' occurred in (7) above.

(7)   Postposition -ká 'after' (Dolly Soulé, speaker, p.c.)
      Tó   bíká   níyá.
      tó   bi-ká   ni-yá
      water   it-after TERMINATIVE.1SG.SBJ-one.walk.PFV
      'I've come after water.'

When the postpositions fused with a following verb, they brought their pronominal objects with them. The relatively grammatical meanings of these prefixes now make sense. They had already undergone some grammaticalization as postpositions, before attaching to the verb.

The Navajo postposition > applicative development provides a snapshot of a construction in the process of grammaticalization. There is a large set of forms that serve only as postpositions: forty-seven are listed in YM. A smaller set occur both as postpositions and as applicative prefixes: YM list twelve. For many of these new prefixes, the bond to the verb is still loose; speakers generally feel they form a single word together, but are sometimes somewhat unsure. The speaker cited above, Mrs Soulé, felt confident that bíká- in (13) was part of the verb, but there is a convention in the practical orthography for writing them separately. Some of the applicatives have begun to lose phonological substance in their new prefix positions. The postposition -'ąą 'over', for example, is the source of the applicative prefix -'ą´-. The postposition -lááh 'beyond' is the source of the prefix -lá- (YM 27). Finally, some forms now occur only as prefixes, though they can be seen to be descended from earlier postpositions: YM list twenty-seven. This process of reanalysis,

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described for a number of genetically unrelated languages in Craig and Hale (1988), is not very different from that behind English verbs like *oversee* and *overlook*.

Though the applicative prefixes are historically related to postpositions, they are not equivalent. Postpositions can in principle follow any noun which could designate a potential object. The applicative prefixes are derivational: they create new lexical verbs. They develop through the repeated use of certain postposition–verb collocations that ultimately become routinized, so that the boundaries between the parts are dimmed. The reanalysis occurs postposition by postposition, and lexical item by lexical item. On occasion, speakers innovate, but for the most part, derived expressions containing postpositions are learned, stored, and retrieved as lexical units. Speakers know which ones exist and which do not, and know their particular, often idiosyncratic meanings.

5.3. Converging evidence

These facts taken together provide evidence that Navajo verb structure was built up in stages over time, beginning with the verb stem, with successive prefixation of what are now the valence classifiers, then the subject prefixes, etc. This understanding of the development of the system provides explanations for the issues raised at the outset.

Discontinuous lexical entries are no longer baffling. Languages are full of lexicalized idiomatic expressions formed from a noun, adverb, or adpositional phrase plus an inflected verb. The marking of mode–aspect categories with combinations of morphemes in different positions is understandable. Finer distinctions may be added to existing systems with additional adverbs or auxiliaries, which again may fuse to full inflected forms.

The verb stem is no longer in the 'wrong' place. The positions of affixes depend on their individual source constructions. The Navajo prefixes whose sources are still identifiable developed from words that still occur syntactically before the verb: subject and object pronouns, nouns, adverbs, and postpositions.

It is not surprising that 1st and 2nd person subjects should appear in one position and 3rd in another. The original pronominal paradigm apparently consisted of independent pronouns for 1st and 2nd persons, singular and plural. Basic 3rd persons might have been unmarked, a common pattern cross-linguistically, or marked with a pronoun that subsequently eroded to almost nothing, mentioned by Hale. The generic, indefinite, and spatial categories were added later. It is no surprise that the subject prefixes occur closer to the verb stem than the objects. As highly topical, frequent, unstressed morphemes in a relatively fixed position before the verb, they were likely candidates for grammaticalization, more likely than objects. Studies of English spontaneous speech show that subjects are

overwhelmingly given (so pronominal), while objects are given only around 50 per cent of the time (Chafe 1994: 85–6).

It is no longer necessary to decide whether morphemes are actually 'lexical' or 'grammatical', or whether subject and objects prefixes are 'really agreement' or 'really pronouns'. There are Navajo morphemes that are highly lexical, separate words, such as *ashkíí* 'boy', and prefixes that are highly grammatical, such as the detransitiver *d-*. But grammaticalization involves gradual processes, and there are many morphemes at stages of development between these two extremes. Recognizing the clines allows us to ask more interesting questions about the sequences in which individual pragmatic, semantic, syntactic, and phonological changes occur.

The view of the Navajo verb as the product of successive layers of development over time also explains some puzzles not addressed in the synchronic treatments. One is the surprising number of prefixes with similar forms. Such similarities are discussed by Givón (2000) for Tolowa. One Navajo set includes the Iterative *ná-/né-/ní-/ń-* (Position II in the template in Fig. 15.1); the Reversionary *ná-/né-/ní-/ń-* 'returning back, reverting to a previous location, state or condition' (Position Id); the Continuative *na-/naa-/ni-/n-* (Position Ib2), the thematic *ná-/ní-/ń-* 'sewing' (Position Ib2); the adverbials *na-/naa-/ni-/n-* 'around about, without defined direction' (Position Ib2), *ná-/ní-/ń-* 'around encircling, embracing' (Position Ib2), and *ná-/né-/ní-/ń-* 'repetition' (Position Ib2); and the applicatives *-na-/-naa-/-ni-/-n-*, 'around, around about, surrounding (it)' (Position Ib1), and *-ná-/-ní-/-ń-* 'around encircling, embracing (it)' (Position Ib1). For all of these prefixes, allomorphy is conditioned by the same phonological contexts. With thirty-four consonants in the language, the similarities are unlikely to be the result of chance.

Such constellations appear to be the result of multiple developments, at different times, from a single source. Perhaps the oldest prefix is the Iterative, part of the mode–aspect system. It is added to Usitative verbs to form a kind of Frequentative: Usitative *'ahbínígo gohwééh yishdlįįh łeh* 'I usually drink coffee in the morning'; Iterative *'ahbínígo gohwééh ná-shglįįh* 'I drink coffee in the morning (repeatedly and customarily)' (Y 67–8). It is the closest of the *na-* prefixes to the stem, and has the most grammatical function. It is easy to see a semantic relationship among the somewhat abstract Reversionary prefix in Id 'returning to a previous location, state, or condition' (*ná-dzá* 'he returned' Y 43), the thematic prefix 'sewing' (*ná-shkad* 'I am sewing' YMM 285), and the somewhat more concrete adverbial prefix of Ib2 'around encircling, surrounding, embracing' (*ná-bał* 'to whirl around, gyrate, spin around' YM 521, *ná-zt'i'* 'it extends around in a circle, as a fence' Y 44). Also similar is the adverbial prefix 'around about, without defined direction' (*naa-gh'a* 'he's walking around here and there' Y 44), and applicatives 'around' (*bi-ná-sháah* 'I walk around it' YMM 665). It is likely that the various prefixes developed through extensions of existing markers to new contexts. Closer proximity to the stem can indicate earlier grammaticalization and longer opportunity for

abstraction. But younger prefixes can also be exploited for new grammatical functions. The continuative aspect is formed by adding the Ib prefix *na-* to Imperfective verbs: *Dah naa-kaad* 'it hangs flapping or waving, as a flag on a flagpole' (*dah* 'up, at an elevation', *-kaad* 'be spread out') (YMM 306).

The story does not stop here. Navajo also contains a postposition *-naa* 'around about, in the vicinity of, surrounding': *Shighan bi-naa=góó hózhóní* 'it's pretty around my place' (*bi-naa-góó* 'it-around=along') (YMM 418). This postposition is a likely source of the applicative. Its own source persists in the lexical verb *na'/naad* 'move, stir, live', reconstructed for Pre-Proto-Athabaskan as *⋆na* 'move, stir, live, work' (YMM 407). The tone variation seen among the prefixes is now explained by the array of aspectual forms of this stem: modern Navajo 'live, work', 'move' verbs appear as *-ná, -na', -náá', -naah*, etc.

6. CONCLUSION

The various theoretical approaches to the issues discussed here have been based on many of the same observations—about Navajo, about Athabaskan languages, and about language in general. They differ in how they relate these observations to each other.

Similarities between syntactic and morphological structure have been observed in many languages, but the resemblances are not evidence that the two are the same. The structures can be related diachronically: some syntactic constructions evolve into morphological structures over time. The Navajo verb did not develop instantaneously from a parallel syntactic structure: it evolved step by step, each time from a syntactic construction in frequent use at that moment. Once attached, morphemes continued to evolve, so that their modern forms and functions no longer necessarily match those of their lexical sources.

Relations between semantic scope and ~~certain~~ morpheme orders are certainly observable cross-linguistically, but this need not mean that speakers order their morphemes online by scope. Scope can be an effect of sequences of grammatica-lization processes. When words evolve into affixes, they generally attach not just to a part of their host, but to the whole. Understanding the resulting structure as a historical product solves another problem encountered by synchronic scope ana-lyses: the fact that corresponding markers may exhibit different relative orders cross-linguistically. Both Athabaskan and Eskimo–Aleut languages show clear SOV clause structure, but in the first, pronominal affixes precede the stem, and in the second, they follow. The two morphological structures apparently developed from different syntactic structures. The first continues earlier SOV clause order. The

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second developed from nominalized clauses with suffixed possessive pronominals
(Mithun 2008).

Prefixes closer to the Navajo verb stem show more phonological erosion than
those further from the stem, but their phonology need not be the cause of their
relative order. Both phonological reduction and prefix sequence are the result of
the histories of the morphemes.

Recognition of the processes involved in grammaticalization can provide valu-
able tools as we seek to explain the patterns that occur in languages, but of course it
does not replace synchronic considerations. Each small change is a motivated
synchronic event, stimulated and constrained by cognitive and communicative
factors. Understanding how the system was built up does not tell us exactly how
speakers produce Navajo words in speech. It does suggest that they do not generally
order morphemes spontaneously online according to abstract syntactic, semantic,
or phonological principles. If each word were created anew, the template could not
have remained as stable as it has. An understanding of grammaticalization simply
provides us with an additional tool for understanding and allows us to move on to
yet more interesting questions.