TEMPLATIC DEPENDENCIES AND NOTIONS OF WORDHOOD IN TONKAWA

Thomas R. Wier, Free University of Tbilisi

Contemporary debates in morphological theory center around to what extent the phonological exponents of word structures reflect discrete morphological categories or are instead realized in such a way that syntactic/semantic categories may not be localized in any one phonological matrix. Evidence from Tonkawa overlapping templatic slots, mobile inflectional prosodic morphology and other templatic dependencies suggest that prominent morphemic and amorphous theories understate the complexity of the issue: there exist morphological categories between words and phrases.

Incidit in Scyllam cupiens vitare Charybdim. (Latin Proverb)

Keywords: Tonkawa, morphological templates, morphemic theory, wordhood

Among the language isolates of the North American continent, Tonkawa has perhaps received less than its fair share of attention from linguists since the first attestations about a century and a half ago. Not only is it ostensibly genetically unrelated to any known language, various aspects of its morphosyntax and the encoding of argument structure bear witness to a language as complex and sophisticated as any yet known. In this paper, I would like to examine a number of these properties, specifically focusing on what light Tonkawa can shed on morphological theory, on the relationship between the syntactic features and their phonological realization in word structure. As we will see, Tonkawa does not uniformly decide between any of the major morphological theories on offer.

I will structure the paper as follows. In §1, I will provide a little background on the language's genetic and typological affiliations, before moving on to §2 where I will discuss the debates within morphological theory about the nature of word structure and what role Tonkawa plays in traditional item-and-arrangement theories based on the idea of the morpheme. In §3, I will introduce data of different kinds of templatic dependencies from Tonkawa that pose problems for amorphous theories of morphology. Finally in §4, I will return to the question of what level of generalization linguistic theories are supposed to capture: are we really stuck between the Scylla of a totally word-based paradigmatic theory of morphology and the Charybdis where morphological compositionality goes all the way down?

§1. Genetic phylogeny and typological profile

The Tonkawa people (endonymously *Tickanwa·tic*, 'the people') probably first appear in history in the accounts of Spanish Conquistador Álvar Núñez Cabeza de Vaca during his years of wandering in early 16th century Texas, though recent research has suggested a more northerly origin in Oklahoma for this loose confederation of bands (Carlisle 2012). In any event, if their

	SUSPECTED LINGUISTIC AFFILIATION	SOURCE
1.	Hokan-Coahuiltecan	Sapir (1920)
2.	Penutian	Hymes (1987: 55-56)
3.	Algonquian	Haas (1959; 1967; 1993)
4.	Algonquian-Gulf	Haas (1958: 231, f.2)
5.	Na-Dene	Manaster-Ramer[1] (1996a)
6.	Pakawan[2]-Karankawa	Powell (1890); cf. Manaster-Ramer (1996b)
7.	Amerind	Greenberg (1987)

[1] Manaster-Ramer (1996b) posits this more as a foil to the claims of Greenberg (1987), rather than a claim to the actual origins of Tonkawa as such.

[2] Pakawan is Manaster-Ramer's term that includes Comecrudan, Cotoname, and Maratino but excludes Karankawa, Atakapan, and Tonkawa. Powell's original term was Coahuiltecan, but since has been applied to so many languages as to lose terminological focus.

ethnogeographic origins seem not entirely clear, Tonkawa's linguistic affiliations are completely obscure. Over the last century various scholars of high repute have posited no less than seven different language phyla or stocks associated with Tonkawa (see Table 1), all more or less dubious in nature. This situation has arisen partly due to the lack of widely available resources for the study both of Tonkawa and of its putative comparands, but mostly for the simple reason that Tonkawa differs radically both in its grammatical organization and its basic lexical inventory. It is safe to say that it is still preliminary to state any genetic connection the language may have with other indigenous languages in North America.

Typologically, Tonkawa exemplifies a predominantly head-marking polysynthetic language (Nichols 1986). It has large numbers of grammatical categories marked on the head verb: tense, mood, various valence changing devices, polarity, spatial directionality, as well as the person and number agreement for both subject and primary object arguments. An idealized scheme of this might be as in (1), with some textual examples in (2), in which each category (largely) receives its own dedicated verbal slot – though, as we will see, this is not exactly true in practice.

(1) OBJ-CAUS-TH-RED-**ROOT**-NEG-FUT-DU/PL-CONT-ASS-SUBJ[1]

(2) a. [kenesta·ʔa·tonoʔ]
ke-nes-ta·ʔ-a·tewa-no-we-ʔe (Hoijer 1972: 7, 1.6)
1-CAUS-marry-FUT-CONT-DECL-NONPAST.3SG
'They will force me to marry her!'

b. [hetatxanapaʔa heylapanoklaknoʔo]
he-ta-taxan-ape-aʔa h-eylapa-no-k-laknoʔo.

[1] This article follows the Leipzig Glossing Conventions. ASS = assertive mode suffix; CAUS = 'causative'; CONT = continuative aspect; DECL = declarative; FUT = future tense; DU/PL = dual or plural marking subjects; GER = gerund; MED = mediopassive; RED = 'reduplicant'; NEG = 'negative' marker of polarity; PART = a synchronic or diachronic participial suffix; PRES = present tense; SUBJ/OBJ= 'subject/object agreement'; TH = 'thematic prefix', historically probably the residue of lexical or aspectual preverbs in some ancestral form in the language but which now function either as a valence changing device or purely to alter the semantic content of the root. Not all of these affixes co-occur.

TH-RED-speak-NEG-ASS3SG TH-be.upright-CONT-PART-EVID
'He kept on standing there not speaking.' (Hoijer 1972: 7, 1.3)

Nouns likewise manifest various different kinds of categories: number, case, definiteness, as well as a suffix which Hoijer (1933) called 'aforementioned', but which in practice behaves similar to, though not identical with, the obviation phenomena in Algonquian, Salishan, Mayan and other languages (see Wier forthcoming), as with the trickster character Rabbit in (3). This kind of nominal morphology allows for a rare kind of recursion *inside the noun* by which simple relative clauses can become incorporated after the verbal root, but before any of the other inflectional categories are marked, as in (4).

(3) tanmaslak-wa·-ʔa·-la (Hoijer 1972: 7, 1.4)
Rabbit-OBV-DEF-NOM.SG
'Rabbit (definite, obviative, nominative singular)'

(4) Ka·nos-[ya-tmax-an-wa·-ʔa·-la-k]-sokano-ʔa·-la (Hoijer 1972: 7, 1.5)
Mexican-[TH-shatter-GER-OBV-DEF-SG-ACC]-own-DEF-NOM.SG
'The Mexican who owned the watermelon.'

While head verbs agree with their arguments in person and number and dependent nominals are marked according to a nominative-accusative alignment, a significant minority of predicates indicate semantic patients with object morphology despite having only one semantic argument:

(5) a. ʔac-we-ʔe-s [ʔacoʔs]
sick-DECL-PRES-1
'I sicken (on purpose)'

b. ke-ha-ʔac-we-ʔe [kaʔacoʔ] (Hoijer 1933: 70)
1OBJ-TH-sick-DECL-PRES
'I sicken' (by accident)

(6) a. he-talaw-we-ʔe-s [hetlawoʔs]
MED-refuse-DECL-PRES-1
'I refuse (on purpose)'

b. ke-he-talaw-we-ʔe [ke·tlawoʔ] (Hoijer 1933: 70)
1OBJ-MED-refuse-DECL-PRES
'I refuse (feigning ignorance)'

Thus Tonkawa manifests both head-marking and dependent marking properties with some evidence of a Fluid-S alignment[2]. Although a full excursus on the typological properties of Tonkawa is far beyond the scope of this paper, it is sufficient to point out here that such a language can provide an astonishingly rich laboratory to test theories of linguistic morphology.

§2. Morphological Compositionality and the Status of the Morpheme

Much of twentieth century linguistic theory has focused on the quest to explain exactly how semantic representations map onto morphosyntactic constituents in discourses. In morphology this meant taking semantic compositionality down below the level of the word by means of morphemic constituents analogous to those in syntax, in which ideally there is a one-to-one relationship between features and discrete morphs. Such Item-and-Arrangement theories (e.g. Hockett 1947) have a certain amount of appeal, but they were neither a necessary nor a

[2] For this reason, it may be better to refer to the agreement morphology not by reference to grammatical functions like subject and object, but simply as an A-series and B-series respectively.

traditional part of grammatical theory (XX), and in recent years many – perhaps most – scholars have begun to question this most fundamental of theoretical constructs (e.g., Aronoff 1976, Anderson 1992, Stump 2001, Spencer 2004, etc.).

Such scholars differ based on their responses to two basic aspects of linguistic morphology. First, do morphological processes have separate and discrete entries in the lexicon (**lexical** theories), or are such processes merely inferred from the morphological contexts in which they arise (**inferential** theories)? In the first kind of theory, for example, the Tonkawa first person suffix *–s* in (5a) would have a separate entry in the Lexicon in more or less the same way the root *ʔac-* 'sick' does, while in the latter *–s* would have no existence separate from the set of rules used to build first person paradigms of fully inflected word forms. Orthogonal to this, theorists also differ on the information-theoretical properties of morphological processes. Theories such as classical morphemic theory assume that morphemes are always informationally additive; such theories are called **incremental** theories. In contrast, theories which reject such a one-to-one mapping of grammatical features and morphs (**realizational** theories) treat morphs as merely being licensed by or allowing for, rather than determining, the grammatical content of inflectional forms. On this metatheoretical axis, the same Tonkawa first person suffix *–s* would be treated as the sole marker of first person by incremental accounts, while on the latter realizational understanding *–s* would only realize that feature, allowing for the possibility that other markers of first person could also exist simultaneously.

2.1 Zero-morphs

According to its critics, the classical lexical incremental morpheme has six or so main problems, and Tonkawa provides interesting examples of each kind of problem. First, for classical morphemes, in many languages the difference between two features involves not how they are overtly specified, but the overt specification of one feature and the covert specification of the other in the form of *zero-morphs*. Thus, in Tonkawa, the contrast between nominative and accusative case lies in the addition of a *–k* for accusative forms, as in (7); nominative forms are simply the absence of any overt accusative marker.

(7) (Hoijer 1933: 112)

	SINGULAR	PLURAL
Nominative	-la	-ka
Accusative	-la-k	-ka-k

What is true of nominal paradigms is also true of verbal forms, in that some paradigms manifest overt marking for third person, while others lack it, as in (8), where potential paradigms have separate identifiable third person suffixes, while present paradigms lack a distinct third person affix:

(8) a. yakapa-ʔa-ilʔa [yakp'ail'a]
strike-POT-POT3SG
'he might strike him'

b. yakapa-we-ʔe [yakpoʔ]
strike-DECL-PRES
'he strikes him'

2.2 Meaningless morphs

If 'zero' morphemes like this pose a problem by relying on word structures which one cannot see, the inverse phenomenon of overt morphological contrasts without any clear synchronic semantic content also exists in the form of so-called thematic prefixes[3]. About half a dozen such *meaningless morphs* exist in Tonkawa, as in (9), and although some of them are clearly productively used in various kinds of valence-changing functions (causativization, reflexivization, reciprocalization, etc.), most of them have no consistent semantic content and do not take part in systematic alternations.

(9) Thematic prefixes (Hoijer 1933: 33-46)

a. *na-, ne-, ya-, ha-, nen-,*

b. NA-: *k'am'e-* 'bend (into a circle)' vs. ***na****-k'am'e-* 'bend (at a joint), gnaw', etc. Many with no contrast: ***na****-paka-* 'several lie down', ***na****-xace-* 'make a fire', ***na****-wel-* 'roast', ***na****-poxa-* 'blow at', ***na****-s'oka-* 'squeeze', etc.)

c. NE-: *noko-* 'pick up several objects' vs. ***ne****-nko·-na-* 'braid'; ***ne****-tis'e-* 'press, jab' vs. ***ya****-tisxe-* '[for a bull to] butt, strike on the head', etc. Many with no contrast: ***ne****-tal-* 'lick', ***ne****-paxke-* 'smoke', ***ne****-kaw'e-* 'yawn', ***ne****-l'aye*, 'spit out')

d. YA-: ***ya****-tike-* 'be frozen stiff' vs. *nes-tike-* 'be cold, freezing', etc. Many with no contrast: ***ya****-paxa-* 'slap', ***ya****-maka-* 'call', ***ya****-maxa-* 'paint the body', ***ya****-tasa-* 'stab', ***ya****-nawa-* 'defeat in gambling', ***ya****-kawa-* 'dance', ***ya****-koca-* 'scream', ***ya****-kosa-* 'whistle', ***ya****-xoya-* 'hunt', ***ya****-tal'a-* 'indulge in sapphism' [sic], ***ya****-kewna-* 'make a war-bonnet', etc.

e. HA-: ***ha****-pil-* 'several persons attack', ***ha****-yox-* 'mount, ride', ***ha****-yaw-* 'buy', ***ha****-waun-* 'carry, pack', ***ha****-paxa-* 'look up', ***ha****-tol-* 'not want, reject', etc.

Historically these prefixes may have functioned as directional or locational adverbial modifiers which became grammaticalized onto the root, and in this sense resemble the more familiar prefixes seen in Indo-European languages like German separable prefix verbs, Russian perfective/imperfective stem alternations, and English phrasal verbs. Whatever their origin, and despite their semantic vacuity, such prefixes can be still be shown to be formally distinct in roots with different prefixes as above as well as forms with morphological pluractional reduplication, as seen in (10) , in which the thematic prefix is separated from the verbal root by the reduplicant (note that Hoijer lists no *ha*-reduplicants)[4]:

		BASE FORM	REDUPLICATED FORM	GLOSS
(10)	a.	*na-kʔamʔe-*	*na-kʔa-kʔamʔe-*	'gnaw'

[3] The term 'thematic prefix' here is based on Hoijer (1933)'s idiosyncratic and sometimes quite radical terminology which rejects any formal contrastive specifications for roots (his 'themes') including parts of speech and transitivity. As will be clear, however, their synchronic semantic opacity precludes a more specific term; my use of 'thematic prefix' should not be taken as an endorsement of the more radical views which gave it birth.

[4] Note that in his later work (Hoijer 1949, 1972), Hoijer treats all glottalized consonants as a consonant followed by a glottal stop. These data, especially (10a), (10c) and (10m), actually argue for his earlier analysis, since otherwise the reduplicative template is strictly CV-. See Noske (1993) for more details.

b.	*na-poxa-*		*na-po-poxa-*	‘blow at’
c.	*na-sʔoka-*		*na-sʔo-sʔoka-*	‘squeeze’
d.	*ne-tal-*		*ne-ta-tale-*	‘lick’
e.	*ne-xale-*		*ne-xa-xale-*	‘snore’
f.	*ne-tisʔe-*		*ne-ti-tisʔe-*	‘poke, jab’
g.	*ya-tasa-*		*ya-ya-tasa*	‘stab’
h.	*ya-xwoy-*		*ya-x^{w}o-x^{w}oy-*	‘hunt, look for’
i.	*ya-xwec-*		*ya-ya-xwec-*	‘hit with club’
j.	*ya-lapa-*		*ya-la-lapa-*	‘stand upright’
k.	*ya-weye-*		*ya-we-weye-*	‘tie, bind’
l.	*ya-kelʔe-*		*ya-ya-kelʔe-*	‘jab with elbow’
		also:	*ya-ke-kelʔe-*	
m.	*ya-wʔeca-*		*ya-ya-wʔeca-*	‘look for’
		also:	*ya-wʔe-wʔeca-*	

Although in some cases a thematic prefix with *ya-* appears to have been reanalyzed as part of the root, and thus is itself reduplicated in pluractional forms either obligatorily (10g, i) or optionally (10l, m), it is clear that the system as a whole still largely treats these meaningless prefixes as real entities.

2.3 Cumulation

The third and fourth kinds of problem are both related, and they both concern the fact that often the relationship between form and meaning is not one-to-one at all, but many-to-one, one-to-many, or many-to-many. In the former type of problem, too many features accumulate into a single overt morph – *cumulation*. This is really a wide-spread phenomenon, occurring in many if not all languages of the world with complicated morphological systems, so it is not surprising that it also occurs in many different Tonkawa paradigms, as in Table 2:

Table 2. Three Tonkawa verb paradigms: Deontic, Declarative Present & Past

		DEONTIC[5] (*-nwa· / -nwaʔa*)	**PRESENT** (*-ʔe*)	**PAST** (*-ʔe·/ʔei/ʔe*)
SG	1	/yakapa-nwa·-s’/ [yakpanwa·s’]	/yakapa-we-ʔe-s/ [yakpoʔs]	/yakapa-we-ʔe·-ʔ/ [yakpoʔo·ʔ]
	2	/yakapa-nwa·-nʔei/ [yakpanwa·nʔei]	/yakapa-we-·-ka/ [yakpo·ka]	/yakapa-we-ʔei-no/ [yakpoʔoino]
	3	/yakapa-nwa·-ʔe/ [yakpanwaʔ]	/yakapa-we-ʔe/ [yakpoʔ]	/yakapa-we-ʔe/ [yakpoʔo]
DU	1	/yakapa-nes’e-nwa·-s’/ [yakpanes’enwa·s’]	/yakapa-nes’a-we-ʔe-s/ [yakpanes’oʔs]	/yakapa-nes’a-we-ʔe·-ʔ/ [yakpanes’oʔo·ʔ]
	2	/yakapa-nes’e-nwa·-nʔei/ [yakpanes’enwa·nʔei]	/yakapa-nes’a-we-·-ka/ [yakpanes’o·ka]	/yakapa-nes’a-we-ʔei-no/ [yakpanes’oʔoino]
	3	/yakapa-nes’e-nwa·-ʔe/ [yakpanes’enwaʔ]	/yakapa-nes’a-we-ʔe/ [yakpanes’oʔ]	/yakapa-nes’a-we-ʔe/ [yakpanes’oʔo]
PL	1	/yakapa-we·s’e-nwa·-s’/ [yakpo·s’enwa·s’]	/yakapa-wes’a-we-ʔe-s/ [yakpo·s’oʔs]	/yakapa-wes’a-we-ʔe·-ʔ/ [yakpo·s’oʔo·ʔ]
	2	/yakapa-we·s’e-nwa·-nʔei/	/yakapa-wes’a-we-·-ka/	/yakapa-wes’a-we-ʔei-no/

[5] Hoijer (1933: 88) calls this the ‘Declarative-Assertive Mode’, but it is in fact a modal form expressing deontic modality.

		[yakpo·s'enwa·nʔei]	[yakpo·s'o·ka]	[yakpo·s'oʔoino]
	3	/yakapa-nwaʔa-nik/ [yakpanwaʔanik]	/yakapa-we-ʔe-yuk/ [yakpoʔoyuk]	/yakapa-we-ʔe-lok/ [yakpoʔolok]

Various aspects of these paradigms show cumulation. The deontic forms have consistent person and number suffixes in the singular and dual, but in the plural an exceptional form *–nik* is used in the third person plural instead of a combination of the plural *-we·s'e* plus *-ʔe* analogous to the third person dual - *nes'e-…-ʔe*. This fact has the side effect of turning *-we·s'e* into a cumulating suffix bearing both person and number features; also, a distinct form of the deontic modal suffix is used, *-nwaʔa*, instead of the regular *-nwa·*. Likewise, across tenses, forms are typically marked for person, number and tense/modality: vowel length plus *–ka* for second person singular present tense, but *-ʔei-no* for second person singular past tense.

2.4 Morphophonological Excursus

But to understand this chart fully it is first necessary to make a brief excursus into Tonkawa morphophonology to unpack the rather complicated forms involved. Although a full analysis is far beyond the scope of this article, suffice it to say that Tonkawa has been said to undergo three main rules which alter the underlying representation (Kisseberth 1970; Phelps 1973, 1975; Noske XX): word-final deletion, vowel elision, and vowel-truncation. Each of these targets vowels in different parts of the word, depending on different patterns of syllable structure, as in (11).

(11) a. Word-final vowel deletion: (Kisseberth 1970: XX)
V → Ø / ___#
b. Vowel Elision:
V → Ø / #CVC_C [V_{STEM}]
c. Vowel truncation:
V → Ø / ___V

In illustration, consider the root *picena-* 'cut', which in Kisseberth's analysis underwent these generative rules synchronically in the order shown:

(12)

	/picena-oʔ/	/we-picena-oʔ/
	cut-3PRES	OBJPL-cut-3SGPRESSUBJ
	'He cuts it'	'He cuts them'
a. Deletion (11a)		
b. Elision (11b)	picna-oʔ	we-pcena-oʔ
c. Truncation (11c)	picn-oʔ	we-pcen-oʔ
Surface realization:	[picnoʔ]	[wepceno?]

(Kisseberth 1970: XX; Noske XX:yy)

Here, Kisseberth assumes a cumulative present tense suffix *-oʔ* and a plural object prefix *we-*. By applying the rules in the stated order, we do indeed achieve the surface realizations *picnoʔ* 'he cuts it' and *wepcenoʔ* 'he cuts them'. But in point of fact there are a number of paradigms that Kisseberth and his successors left out that greatly alter the underlying morphological analysis that feeds this phonological analysis. As pointed out in Hoijer (1933: 68-

9), while third person objects are represented by nothing, as in the above paradigms, second person objects are represented by a floating mora that in positive paradigms attaches immediately after the future tense affix, if any. Furthermore, as suggested in the paradigms in Table 2, declarative modality and present tense are actually marked separately by suffixes *we-* and *-ʔe*, respectively, and not *-oʔ*, as in (13).

(13)		/picena-·-we-ʔe/	/we-picena-·-we-ʔe/
		cut-2OBJ-DECL-PRES	OBJPL-cut-2OBJ-DECL-PRES
		'He cuts you'	'He cuts y'all'
	a. Deletion (11a)	picena-·-we-ʔ	we-picena-·-we-ʔ
	b. Elision (11b)	picna-·-we-ʔ	we-pcena-·-we-ʔ
	c. Truncation (11c)		
	d. *Surface realization*:	[picna·weʔ]	[wepcena·weʔ]

(14)		/picena-a·tewa-·-we-ʔe/[6]	/we-picena-a·tewa-·-we-ʔe/
		cut-2OBJ-FUT-DECL-PRES	OBJPL-cut-FUT-2OBJ-DECL-PRES
		'He will cut you'	'He will cut y'all'
	a. Deletion (11a)	picena-a·tewa-·-we-ʔ	we-picena-a·tewa-·-we-ʔ
	b. Elision (11b)	picna-a·tewa-·-we-ʔ	we-pcena-a·tewa-·-we-ʔ
	c. Truncation (11c)		
	Surface realization:	[picna·tewa·weʔ]	[wepcena·tewa·weʔ]

Taken together with the floating mora, this becomes problematic with third person objects as in (12) because it means that Kisseberth's Truncation rule could never operate: an intervening consonant would block it, and a completely different surface realization should result:

(15) Truncation	picna-we-ʔ	we-pcena-weʔ	(=12c)
Surface realization	*[picnaweʔ]	*[wepcenaweʔ]	

Therefore, *contra* Kisseberth 1970 and those who cite him, instead of a truncation rule, what is happening here is a rule of conflation that takes an underlying sequence of /awe/ or /ewa/ and conflates it into a single [o], as in (16a). Also, to account for paradigms where agreement of rounding occurs across glottal stops, a second harmony rule is required (16b):

(16)	a.	Conflation:	/awe/ or /ewa/ → [o]
	b.	Vowel harmony :	$/V_1ʔV_2/ \rightarrow /V_1ʔV_1/$

One last illustration of how these rules ought best to be seen as historical processes rather than synchronic phonological rules is shown in the past tense paradigm in (17), in which either Deletion rule must be inactive or the second person past suffix must be extrametrical for the correct form to surface:

[6] Note that this particular combination of ROOT /-a/ + FUT /a·/ vowel hiatus always resolves as long [a·], despite the fact that Tonkawa in principle could have resolved as a trimoraic, super-heavy [a:], cf. *yakpa·-kwa* 'when he hit him' vs. *yakpa:-kwa* 'when he hit you' (*-kwa* 'when' lengthens any preceding vowel regardless of its underlying length). Some purely morphophonological selection must be occurring with this suffix.

(17)	/yakapa-wesʔa-we-ʔei-[no]/
	hit-SUBJ.PL-DECL-PAST-2SUBJ
	‘Y’all hit him’
CONFLATION	yakap-osʔ-o-ʔei-no
DELETION	yakap-osʔ-o-ʔei-n
ELISION	yakp-osʔ-o-ʔei-n
HARMONY	yakp-osʔ-o-ʔoi-n
Attested form:	yakposʔoʔoin**o**

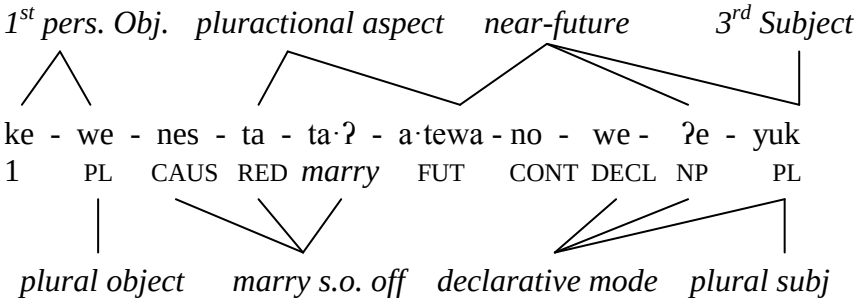
In this case, it is probable that some amount of historical morphological restructuring has occurred, in which a second person *–no* suffix has grammaticalized after the deletion rule ceased to be effective.

2.4 Multiple Exponence

But even from a purely morphological perspective, such paradigms are complicated, since even after one has applied morphophonological rules, a number of the morphemes which are semantically compatible with multiple paradigms – third person plural, for example – do not recur, but instead have a separate distinct form for each tense/mode form: *-nik*, *-yuk*, *-lok*. Other formants, such as the dual morph *–nes’a*, appears in more than one paradigm, but not in all paradigms in exactly that form – in the consequential, the form appears inexplicably as *-nes’e*. Some forms have consistent elsewhere-forms, such as the evidential *-nwa·*, which appears everywhere except in the third person plural, where it appears as *-nwaʔa*.

Such forms show a considerable number of features bundled into one affix. But if many features can map onto one morph, it is also possible for one feature to map onto many morphs – and for many features to map onto many overlapping morphs. Such examples of multiple exponence abound in polysynthetic languages, not least in Tonkawa (18):

(18) Multiple Exponence in Tonkawa:



‘They will be keeping on marrying us off to them.’

In (18) we get a glimpse of truly how complicated a Tonkawa verb can be. Some features surface in one affix after another, while others show up only in one affix. Tonkawa verbs show agreement with primary objects, but two separate morphs are required for plural first

or second plural objects: *ke-* (which marks first person) and *we-* (which pluralizes speech act participants). The main verb stem of this lexical item might be translated as 'to keep on marrying someone off', but is actually composed of a more basic root *ta·ʔ-* 'marry, hold', plus a causative prefix *nes-*, which is separated by a reduplicant of the root to mark lexical pluractional aspect. At the same time, however, each of these cannot be considered 'inflectional' – they are part of the lexical specification. Verbal aspect, in turn, can be additionally indicated by a continual aspect marker *-no*. This verb also manifests no less than three indications of declarative modality: the declarative suffix *–we* which means nothing else; the nonpast suffix *-ʔe*, which is absent in interrogative, evidential, intentive, imperative, mirative and potential modes; and *–yuk*, which is used in both present and near (but not far) future paradigms to indicate third person plural. Finally, one suffix that one might expect to be here, *-wes'a*, fails to surface despite the fact that the nearly homophonous dual suffix *–nes'a* does arise in the third person dual. One could easily explain this gap by reference to differential grammaticalization histories of *–nes'a* vs. *–wes'a* (e.g. by saying that third person *–nes'a* is an analogical extension from first and second persons into third person), but it is nonetheless synchronically something of a mystery – *if* one assumes a one-to-one relationship between sound and meaning as with classical morphemic theory.

§3. Problems with Amorphous Accounts: Templatic Dependencies

Thus the classical item-and-arrangement account of morphology faces real problems from languages like Tonkawa. As discussed at some length in Stump (2001), however, an alternative account based on a simple template without reference to the kinds of dependencies that may hold between them also faces a number of difficulties. Anderson (1992) called this simple rendering of templates the Fixed Linear Ordering Hypothesis (FLOH):

(19) FIXED LINEAR ORDERING HYPOTHESIS: a language's blocks of realization rules are arranged in a fixed linear sequence reflected by the sequence in which the rules themselves apply.

Thus, in the Tonkawa examples discussed above, if the FLOH held generally, we would never expect any dependencies to hold *between* any two or more rule blocks, for example a special continuous aspect suffix only in the presence of verbal reduplication also marking continuous aspect. Stump shows that in fact such dependencies do occur in a variety of different languages, and different dependencies have different kinds of implications for a general morphological theory.

3.1 Overlapping realizations

One of the problems with the morpheme was that it could not allow for any kind of **insufficient exponence**: when we expect a form to be there, but it fails to arise. Patterns of morphological blocking such as those that create hierarchical systems in Algonquian, Carib, or Kartvelian languages are one kind of insufficient exponence, in that two or more morphs compete for realization in a single slot on the verb[7]. Another kind of insufficient exponence is manifest in Tonkawa in the form of subtractive morphs which results from back-copying of the moraic length from the reduplicant onto the root:

[7] See Wier (2011, Chs. 4-5) for an extensive discussion of the problems posed by Georgian morphological blocking for both morphemic and amorphous theories of morphology.

(20) (Hoijer 1933: 30)

	FULL GRADE	REDUPLICATED	
a.	ma·ka-	ma-maka-	‘cry, weep’
b.	na·te-	na-nata-	‘step on’
c.	ya·ce-	he-ya-yacew-	‘look at’
d.	so·la-	so-sola-	‘drip on’
e.	cʔo·ma-	cʔo-coʔma-	‘close one’s eyes’
f.	so·pka-	so-sopka-	‘swell up’
g.	co·lʔa-	co-colʔa-	‘defecate’
h.	mʔe·ica-	he-mʔe-mʔeica-	‘urinate’

What is interesting about such reduplication constructions is that while the extra material always conforms to a strictly monomoraic CV template, it is not clear that one can say this about the reduplicant process itself, since the quantity of the affix affects the quantity of the root, contrary to an understanding of reduplication which involves discrete asymmetrical units ‘base’ and ‘reduplicant’. For theories of morphology in which templatic slots are fundamental units of theorizing, and not mere epiphenomena, this proves problematic, since it suggests a sort of blurring of the lines between one slot and its neighbor: **overlapping** realizations, rather than actually **merged** realizations.

3.2 Mobile morphology

Such overlapping realizations pose a problem for templatic theories of morphology by calling into question the nature of categoriality, a problem which indeed also afflicts morphemic theories. However, there are also morphological phenomena that not only do not fit into one discrete templatic slot of a noun or verb, there are also processes that appear to ‘hop’ over adjacent slots to surface some distance from their normal place of realization. In Tonkawa verbs with both a future suffix and a second person object, the realization of the second person object’s floating mora depends on the polarity of the verb. Thus if the verb is positive, it will have a template like in (21) and (22) with the second object mora coming after the future suffix:

(21) Verb template with future, 2Obj, and positive polarity:
CAUS – TH – RED – ROOT – FUT – 2OBJ – CONT – DECL – 1SBJ

(22)

a. [ya·lo·na·tonoʔs]	b. [ya·lo·na·tew**a·**noʔs]
ya·lo·na-a·tewa-na-we-ʔe-s	ya·lo·na-a·tewa-V·-na-we-ʔe-s
kill-FUT-CONT-DEC-NPAST-1SBJ	kill-FUT-2OBJ-CONT-DEC-NPAST-1SBJ
‘I will kill him’	‘I will kill you’

As one can see, the contrast between (22a) and (22b) consists in whether an extra underlying mora supplied by the additional agreement morphology bleeds the rule of conflation that would otherwise collapse /ewa/ into [o][8]. In a verb form with negative polarity, we would

[8] If a suffix with a phonemically long vowel follows the future suffix, then the unconflated version also appears, e.g. in the assertive mode (Hoijer 1933: 87):

expect a similar outcome, because the negative suffix precedes rather than follows the future tense suffix. In fact, what we find in (23a) vs. (23b) is something rather different: the expected bleeding of conflation triggered by the extra mora does not happen, the conflation goes through, and the extra mora surfaces unexpectedly *before* the future tense suffix, on the first vowel of the negative prefix (23b).

(23) a. [ya·lo·napa·tonoʔs]
ya·lo·na-ape-a·tewa-no-we-ʔe-s
kill-NEG-FUT-CONT-DEC-NPAST-1SBJ
'I will not kill him'

b. [ya·lo·n**a·**pa·tonoʔs]
ya·lo·na-·-ape-a·tewa-no-we-ʔe-s
kill-2OBJ-NEG-FUT-CONT-DEC-NPAST-1SBJ
'I will not kill you'

There are at least two possible responses to this. The first is that the mora is inserted into the expected templatic slot after the future tense but is subsequently moved to create a nice string of syllables all of equal vowel length, presumably to allow for proper distribution in higher level prosodic units. This first response is however problematic for at least two reasons. First, a great deal of typological evidence has now converged on the view that morphological markers are never positioned for purely phonological reasons. Paster (2006, 2009) devotes the most attention to this question because of the implications it has for questions of modular autonomy and the relative ordering (in some theories) of morphology vs. phonology. After an exhaustive study of over 600 grammars, she was able to come up with no more than five potential examples of phonologically conditioned affix ordering, all of which she argued presented problems under closer inspection "because it includes cases in which the surface ordering can be explained in purely phonological terms without requiring the morphological affixation process itself to be phonologically motivated" (Paster 2009: 30). Beyond typological rarissima however, Tonkawa presents direct evidence that adhering to some sort of prosodic constraint on syllable structure could not be the motivation for the ordering both because prosodic footing occurs from the *right*, not the left (Hoijer 1933: 21), and Tonkawa actually does allow superheavy, trimoraic syllables (Hoijer 1933: 69; 96):

(24) a. [yakpa·kwa]
/yakapa-V·kwa/
strike-when
'when he hit him…'

b. [yakpa:kwa]
/yakapa-V·-V·kwa/
strike-2OBJ-when
'when he hit you'

Both of the forms in (24) feature the subjunctive desinence *-V·kwa*, uninteresting in all respects except that all subjunctive mood forms lengthen any preceding vowel. When this paradigm is combined with agreement for second person object, a superheavy syllable occurs. Taking this

---

[ya·lo·nate·wa·nʔes]
/ya·lo·na-ate·wa-a·-nʔe-s/
kill-FUT-ASS-ASS1/2-1
'I really will kill him'

fact together with the 'gap' syllable in (23a) which is light, we can surmise along with Hoijer[9] that principles of accentuation really do not have any effect on morpheme placement, since if they did we would expect the footing to come from the opposite end of the word.

The second response is surely the simpler response but also the one that poses the greater problems for templatic theories of morphology: that the positioning for object agreement occurs in one part of the verb for positive paradigms, but in a different part of the verb for negative paradigms:

(25) Verb template with future, 2obj, and negative polarity:
CAUS – TH – RED – ROOT – 2OBJ – NEG – FUT – CONT- DECL – 1SBJ

3.3 Portmanteau Rule Blocks

A third kind of templatic dependency is that of portmanteau rule blocks, which fuse two different (generally adjacent) rule blocks together to the exclusion of any of the other affixes which might occur in either of the two rule blocks so fused. Stump (2001) showed this by reference to Swahili negation paradigms, but the same principle is evident in Tonkawa potential paradigms as in (26):

(26)	1Sg	[yakpaʔa·nʔes]	'I might strike it'	(Hoijer 1933: 73)
		/yakapa-ʔa-·nʔe-s/		
		strike-POT-POT1/2-1		
	2Sg	[yakpaʔa·nʔey]	'You might strike it'	
		/yakapa-ʔa-·nʔe-i/		
		strike-POT-POT1/2-2		
	3Sg	[yakpaʔaylʔa]	'He might strike it'	
		/yakapa-ʔa-ilʔa/		
		strike-POT-POT3SG		

In (26), each verb form features an overt marker of potential mood plus markers of person specific to that paradigm. In the first and second persons, *-V·nʔe* bears features for both mood and person, despite being underspecified for person features. These are distinguished by separate suffixes, *-s* '1sg' or *–i* '2Sg', both of which show up in other paradigms. In the case of the third person, however, these last two suffixes collapse together as *–ilʔa,* and because no other affixes can intervene, these two rule blocks are effectively merged together, contrary to the FLOH.

3.4 Parallel Rule Blocks

Another kind of dependency that challenges the notion of templatic rule blocks is that of parallel position classes. For Stump, these are rule blocks whose members have distinct affix positions but which overlap partially or totally in their membership, and he gives the example of Lingala agreement affixes which have subject properties when they appear in one rule block, but object properties when a phonetically identical affix appears in a different rule block. However,

[9] 'Neither syllabification nor accent seem to have… any morphological distinctions entirely dependent upon them.' (Hoijer 1933: 22).

dependencies between parallel rule blocks would occur even when the different rules must be assigned simultaneously and yet separately, as is the case with various kinds of Tonkawa verb morphology. For example, to create some kinds of pluractional predicates, one must add a prefix *he(·)*-[10] plus (usually) root reduplication plus a suffix *–wa-*, involving no less than three different rule blocks simultaneously (Hoijer 1933: 75):

(27) a. [heykakawawoʔ]
/he-ya-ka-kawa-wa-we-ʔe/
$PLUR_1$-TH-RED_2-dance-$PLUR_3$-DEC-NPAST
'Several people dance.'

b. [heyayacewoʔ]
/he-ya-yace-wa-we-ʔe/
$PLUR_1$-RED_2-pierce-$PLUR_3$-DEC-NPAST
'Several get pierced.'

c. [he·nanacewoʔ]
/he·-na-nace-wa-we-ʔe/
$PLUR_1$-RED_2-bite-$PLUR_3$-DEC-NPAST
'Several bite him.'

As is clear, a thematic prefix may (27a) or may not (27b) separate otherwise adjacent rule blocks.

In a historically related process (Hoijer 1933: 76), to create reciprocal predicates, one must likewise add a prefix *he(·)-* plus a suffix *–V·yewa-*, as in (28). Here however, there is an additional morphosyntactic templatic dependency (albeit not a strictly morphomic one), since although the reciprocal probably historically evolved from a pluractional suffix, the synchronic agreement is third person singular – the regular plural agreement suffixes are not possible here. Furthermore, the reciprocal construction sometimes introduces stem alternations not seen in other voice operations, thus bleeding into a fourth templatic slot as well (28b, d).

(28) a. [henpapasxa·yewoʔ]
/he-na-pa-pasaxa-V·yewa-we-ʔe/
$RECIP_1$-TH-RED-play.shinny-$RECIP_2$-DEC-NPAST
'They play shinny with each other.'

b. [he·ʔatna·yewoʔ]
/he·-ʔatanawa-V·yewa-we-ʔe/
$RECIP_1$-love-$RECIP_2$-DEC-NPAST
'They love each other.'

c. [hetatxa·yewoʔ]
/he·-ta-taxa-V·yewa-we-ʔe/
$RECIP_1$-RED-talk-$RECIP_2$-DEC-NPAST
'They talk amongst themselves.'

d. [hecocoxa·yewoʔ]

[10] Hoijer cannot find an explanation for the vowel length difference, but it probably has to do with the absorption of an internal ha- thematic prefix: *he-ha- > he·-.

/he-co-coxana-V·yewa-we-ʔe/
RECIP$_1$-RED-sleep-RECIP$_2$-DEC-NPAST
'They sleep with each other.'

Thus, ironically, examples of multiple exponence like this may argue both for and against morphemic and amorphous theories of morphology *simultaneously*.

3.5 Recursive Incorporation

One final problem that templatic theories of morphology face is the potential for morphological recursion within the word itself. In Tonkawa, this usually takes the form of incorporated elements, ranging from simple noun incorporations to the incorporation of whole clauses. While incorporating processes themselves are quite well-known in the literature, most languages place restrictions on what kinds of and how many elements may be incorporated. Despite an absence of native speaker judgments, extant texts of Tonkawa make clear that multiple incorporation was quite possible. In (29), we see single instances of incorporation into nouns, but multiple incorporations of predicative modifiers are possible – as many as four in (30a).

(29) Predicative incorporation (single incorporatee)

a. ʔe[·]-kla ta-na-nesʔe-k-lakno ʔo. cakaw-kwa·low-ʔa·-yʔik
be-DS.NSIM move.PL-ABL-DU-PART-EVID river-big-DEF-ALL
'So the two of them went off to the big river…' (TT 19.15)

b. Ha·csokonay-la ha-kla-na-t ya-coxʔ-an-a·naxok-wa·-yʔik
Coyote-SG.NOM move.SG-down-ABL-SS.PURP TH-camp-GER-big-OBV-ALL
'Coyote went down to the big camp…' (TT 4.1)

(30) Predicative incorporation (multiple incorporatees)

a. ʔe·-kla ʔekwan-esxaw-maslak-pax-wa·-ʔa·-la
be-DS.NSIM dog-big-white-only-OBV-DEF-NOM.SG
"na·kw sa·sik k-a·-yoxo-w," no-k-laknoʔo.
all.right 1SGACC 1.OBJ-TH-ride-IMP say-PART-EVID
'So the horse that was white all over supposedly said: 'All right, ride me.'' (TT 19.4)

b. "kokon-ke-la ha·csokonay-eykaʔay-samox-ka-k
chief-1SGPOSS-NOM.SG wolf-big-red-PL-ACC
[k]e-nes-ʔe-y-wey-coʔ,"
1.OBJ-CAUS-CAUS-TH-bind-RES
'My chief has made me catch big red wolves.' (TT 19.4)

However, the forms in (29) and (30) might be argued to be kinds of compounding, since they do not bear any internal structure themselves. Such forms do exist in Tonkawa, however, and they pose even more difficulties for the idea that words can be reduced to simple templates. The form in (31) shows a nominal head, *Ka·nos* 'Mexican', which has incorporated an entire relative clause *yatmaxanwa·ʔa·lak sokano* 'who owned the watermelon'. This nominal head is definite,

so its definiteness is marked overtly with a suffix *-ʔa·*, and because it is singular a singular suffix follows thereafter *-la*. The order of these suffixes is fixed, and they attach only to morphological nouns.

(31) Ka·nos-[[ya-tmax-an-wa·-ʔa·-la-k]-sokano]-ʔa·-la
Mexican-[[TH-shatter-GER-OBV-DEF-SG-ACC]-own]-DEF-NOM.SG
'The Mexican who owned the watermelon.' (TT 1.5)

(32) Ha·ʔako·n-osas-[[neswalʔan-[k-e-ykewʔ-a·to-nwaʔ]]-no-no]-wa·-ʔa·-la
man-young-[[fish-[1.OBJ-REFL-make-FUT-DEON]]-say-CONT]-OBV-DEF-NOM.SG
'The young man who said he'd be turned into a fish.' (TT. 23.4)

§4. Wordhood in Tonkawa

One possible response to the above data that challenges both word-internal boundaries and word-external ones is to say that the contrast itself is unfounded. In an important article on the definition of word-hood, Haspelmath (2011) argued that all the semantic, syntactic and orthographic criteria that linguists have used to distinguish words from phrases face important challenges that are not easily set aside, and that we do not as yet have typologically stable definition(s) of wordhood. After discarding definitions based on orthography and native speaker intuitions, he lists ten different kinds of criteria (2011: 38):

(33)
a. **Potential pauses**: words can be separated by pauses in speech; parts of words cannot.
b. **Free occurrence**: words can occur freely in discourses; parts of words cannot.
c. **External mobility**: words can occur in different positions; affixes appear in fixed orders.
d. **Uninterruptability**: the spaces between words can be interrupted by other words; word-internal structures cannot be so interrupted.
e. **Nonselectivity**: affixes are highly selective with respect to their hosts; words are promiscuous in their distribution.
f. **Noncoordinatability**: words can be coordinated with other words; affixes cannot.
g. **Anaphoric islandhood**: words are islands for anaphoric reference; anaphoric relations between words are not islands.
h. **Nonextractability**: words are islands for extraction, while clauses are not.
i. **Morphophonemic idiosyncrasies**: parts of words typically show idiosyncrasies of phonological form, while phrases do not.
j. **Deviations from biuniqueness**: morphological patterns within words often show no one-to-one correspondence between form and meaning elements.

With respect to Tonkawa, we have already seen many of these issues arise in one form or another. Many of the most convincing arguments against the notion of the morpheme were violations of biuniqueness (cumulation (2.3), multiple exponence (2.5)), but others of these criteria appear to pose problems for the amorphemic theories as well. For instance, many words that appear to incorporate to create larger units are not obviously bound morphs. The root *kwa·low* 'big' can occur indifferently either as an incorporated form in (34a), or as a free form in (34b):

(31) a. “ya·ce-w!” no-k-lakno?o. “he?e-ca ya-talp-an-kwa·low-la
look-IMP say-PART-EVID that-place TH-fry-GER-big-NOM.SG
ke·sta?anpeno?
he-cn-a·we lak ke-hes-ta?ane-ape-no-we-?e?”
REFL-lie-PERF 3SG.ACC 1.OBJ-TH-get.hold.of-NEG-CONT-DECL-PRES
‘Look! There’s a big fry-bread over there, I can’t get hold of it.’ (TT 1.11)

b. yo·m?a·to·nokwa!
“ya·ce-w! kwa·low yo·m?-a·tewa-no-kwa!” no-k-lakno?o.
look-IMP big rain-FUT-CONT-MIR say-PART-EVID
‘“Look, it’s going to rain a lot!” [Rabbit] said.’ (TT 1.9)

Because this root also appears outside incorporating constructions, it also constitutes a violation of external mobility, since it is apparently freely mobile. Likewise, contrary to commonplace notions of lexical integrity, evidence from sentences like (28) shows that anaphoric binding can peer rather deeply inside what appear to be ‘words’, at least on one definition.

So in some sense the Scylla of word-and-paradigm morphology and the Charybdis of morphemic theories of morphology is a false dichotomy because of the binary word-phrase assumption built into it. There do seem to be kinds of morphological categories, in at least some languages, that fall in between our intuitive understandings of what words and phrases are, such as compounding, and these categories might require their own modes of linguistic description and analysis *sui generis*.

WORKS CITED

Anderson, Stephen. 1992. *A-morphous morphology*. Cambridge: CUP.

Aronoff, Mark. 1976. *Word formation in Generative Grammar*. Cambridge, Mass.: MIT Press.

Carlisle, Jeffery D. "Tonkawa Indians," *Handbook of Texas Online* (http://www.tshaonline.org/handbook/online/articles/bmt68), accessed October 17, 2012. Published by the Texas State Historical Association.

Haspelmath, Martin. 2011. ‘The indeterminacy of word segmentation and the nature of morphology and syntax’ in *Folia Linguistica* 45/1, pp. 31-80.

Hockett, Charles F. 1947. ‘Problems of Morphemic Analysis’. *Language* 23:4, pp. 321-343.

Hoijer, Harry. 1933. *Tonkawa: An Indian Language of Texas*. Extract from *Handbook of American Indian Languages, Vol. III*. New York: Columbia University Press.

Hoijer, Harry. 1949. *An Analytical Dictionary of the Tonkawa Language*. Berkeley: University of California Press.

Hoijer, Harry. 1972. *Tonkawa Texts*. Berkeley: University of California Press.

Kisseberth, Charles. 1970. ‘Vowel elision in Tonkawa and derivational constraints.’

In Jerrold M. Sadock & Anthony L. Vanek (eds.) Studies presented to Robert B. Lees by his students. Carbondale & Edmonton: Linguistic Research. 109–137.

Nichols, Johanna. 1986. 'Head-marking and dependent-marking grammar.' *Language* 62: 56-119.

Noske, Roland. 1993. *A theory of syllabification and segmental alternation: with studies on the phonology of French, German, Tonkawa, and Yawelmani*. Vol. 296. Walter de Gruyter.

Paster, Mary. 2006. *Phonological Conditions on Affixation*. Ph.D. Dissertation, U.C. Berkeley.

Paster, Mary. 2009. 'Explaining phonological conditions on affixation: evidence from suppletive allomorphy and affix ordering.' *Word Structure* 2. 18–37.

Spencer, Andrew. 2004. 'Morphology: an overview of central concepts.' In L. Sadler & A. Spencer (eds.) *Projecting Morphology*, 67-109. Stanford: CSLI Publications.

Stump, Gregory. 2001. *Inflectional Morphology – A Theory of Paradigm Structure*. Cambridge: CUP.

Wier, Thomas. Forthcoming. 'Obviation in Tonkawa.'

Wier, Thomas. Forthcoming. *Hoijer's Tonkawa Texts*. Available at: https://www.academia.edu/6774222/_DRAFT_Tonkawa_Texts

CONTACT:

Thomas R. Wier
Free University of Tbilisi
Kakha Bendukidze University Campus
Davit Aghmashenebeli Alley, 13km
Tbilisi 0131, Georgia

Email: t.wier@freeuni.edu.ge
Web: http://freeuni.academia.edu/ThomasWier