'To Kill' and 'To Die' (and Other Suppletive Verbs) in Uto-Aztecan[*]

Jason D. Haugen[a] **& Michael Everdell**[a]

a) Department of Anthropology, Oberlin College
10 N. Professor St., Oberlin, OH 44074
USA

jhaugen@oberlin.edu

everdellm@gmail.com

Abstract

Previous research has noted that verbal suppletion for ergative number agreement (i.e. agreement with the subjects of intransitives and the objects of transitives) is widespread throughout the Uto-Aztecan language family and as such is reconstructable to Proto-Uto-Aztecan (PUA) (Langacker 1977). However, no previous works have systematically surveyed the attested forms of suppletion in these languages nor posited specific proposals for reconstructions of particular suppletive morphs back to PUA. We redress this lacuna by surveying the suppletive verbs in the various sub-groups of Uto-Aztecan and assessing which of those are sufficiently widespread to reconstruct to PUA. We argue for specific PUA reconstructions for two verbal domains: DIE and KILL, arguing that there were three distinct suppletive verb stems for marking these functions: *muku DIE.SG, *ko(i) DIE.PL, and *mɨʔa KILL.SG. The plural form of KILL in PUA was derived by adding a causative suffix *-ya to the plural stem for DIE, thus yielding: *ko-ya. Other suppletive verbs in the family are not as easily reconstructable to PUA due to variation in attested forms, although some semantic functions seem to be widespread enough to be reconstructable. The PUA forms serving those functions would have been altered in different ways at different times by a lexical replacement process endemic to cases of strong suppletion, i.e. *incursion* (Juge 2000). We also consider the issue of potential areal contact involving suppletion patterns in the areas where Uto-Aztecan languages are spoken, finding limited but suggestive evidence for possible areal effects involving suppletion for verbal number agreement.

Keywords

suppletion, diachrony, linguistic typology, areal linguistics, Uto-Aztecan

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1. Introduction

Mel’čuk (2003) defines *suppletion* as “a relation between two segmental linguistic signs *X* and *Y* of language *L* such that the semantic difference between *X* and *Y* is maximally regular (i.e. grammatical in *L*), while the formal difference between them is maximally irregular, i.e. unique in *L* (or close to it)….” (p. 180). He goes on to note that suppletion “creates the least natural, i.e. the most opaque, correlations between related signs; therefore, it is a rather marginal phenomenon in all languages” (p. 180). The maximal irregularity of suppletion, along with its supposed marginality “in all languages”, raises intriguing questions for the historical linguist, not the least of which are how such suppletive irregularities might arise and, once in place, how and why they might be maintained in a given language or even an entire group of languages over long periods of time. There are a number of studies which investigate this question for specific languages and language families; see Veselinova (2013) for a recent relevant overview and crucial references.

In addition to shedding light on the specific histories of individual languages and language families, understanding the diachronic developmental pathways of suppletive morphology is also more broadly relevant to linguistic typology and theories of morphology. Several recent large-scale survey works have sought out a deeper understanding of the attested patterns of suppletion in the languages of the world, including Veselinova’s (2006) global survey of verbal suppletion and Bobaljik’s (2012) global survey and theoretical analysis of adjectival suppletion. These works provide insight into the structure of existing suppletive patterns but, as

typological studies documenting the existence of particular patterns, fall somewhat short of explaining how such patterns actually came to be in the first place.[1]

With all of the above in mind, the purpose of this paper is to investigate the possible etymological sources for suppletive verb pairs (and in some cases, triplets) in one language family which is well-known to have relatively robust attestations of suppletive morphology: Uto-Aztecan. Verbal suppletion, which in this family (and perhaps universally, see Harley et al. *forthcoming*) indicates number agreement with the objects of transitive verbs and the subjects of intransitive verbs, has long been assumed to be reconstructable for Proto-Uto-Aztecan (cf., e.g., Langacker 1977: 127). However, no serious attempt has yet been put forward to address the crucial questions of: (i.) what the Proto-Uto-Aztecan (henceforth, PUA) suppletion system was actually like, or (ii.) what the specific suppletive morphs in PUA actually were. In subsequent sections we will apply the comparative method and internal reconstruction to search for cognates among suppletive Uto-Aztecan verb roots to address question (ii), for the purpose of shedding some more light on question (i). We will conclude that while it is very likely that PUA had a robust system of verbal suppletion, the lack of clear cognates across the family make reasonable reconstructions of actual morphs ("vocabulary items") difficult, and, in some cases, probably, impossible, to convincingly propose. One semantic domain where solid reconstruction does seem to be possible, we argue, is in the different verbs for *die* and *kill*. We propose that many extant Uto-Aztecan verbs for *die* and *kill* derived from a system wherein there were three suppletive verb stems: *muku 'DIE.SG', *ko(i)- 'DIE.PL', and *mɨʔa 'KILL.SG'. We argue that the plural form

[1] However, it should be pointed out that the geographical distribution of particular suppletion patterns may give some insight into prehistoric cultural contacts if such patterns can be shown to be the result of areal effects. One very intriguing implication of Bobaljik's (2012) survey of adjectival suppletion patterns, for example, is that comparative and superlative suppletion may well be amenable to such areal effects. We discuss this issue further in section 6 below.

for *kill* was formed by regular derivation with a causative suffix, *-ya, from the plural form for *die*: i.e., *ko-ya 'DIE.PL-CAUS'.

Going beyond the specific case study of Uto-Aztecan comparative morphology, we emphasize that because of its large geographical distribution and contact with many other languages and linguistic areas of the Americas, the Uto-Aztecan family is an ideal candidate for exploring questions of cross-family language contacts with regard to suppletion and other types of morphology, whether regular or irregular. We therefore also place our comparative Uto-Aztecan suppletion evidence into the light of cross-family comparison to see to what extent suppletion might be an areal phenomenon in the various cultural and linguistic regions where Uto-Aztecan languages can be found. We find that verbal number suppletion may be an areal phenomenon of only part of the attested Uto-Aztecan range, i.e. the larger potential language area which Everdell (2013) calls "the Greater Southwest", which includes southern California, the US Southwest, the Great Basin, the southern Plains, and Northwestern Mexico, but which crucially excludes Mesoamerica.

This paper is structured as follows. In section 2 we briefly recount previous research on the typology and diachrony of suppletion which informs the analyses presented in our survey, and we summarize previous research into Uto-Aztecan suppletion patterns more specifically. Section 3 gives a brief background on Uto-Aztecan subgrouping and phonology to orient our reconstructions for *die* and *kill* in PUA, which we present in section 4. Section 5 overviews the patterns of suppletion found in the various sub-groups of Uto-Aztecan, and shows why reconstruction of specific morphological forms to the protolanguage is difficult in most cases. Section 6 reviews the available evidence for suppletion in other language families which have

been in contact with Uto-Aztecan to gauge to what extent verbal number suppletion might be an areal phenomenon. Section 7 concludes.

2. Previous Research

Research into the nature of suppletion has figured prominently in many recent discussions in language typology as well as in linguistic theory. We maintain that in-depth case studies investigating the diachronic development of suppletion in different language families will be able to shed light in both domains. In section 2.1 and 2.2 we discuss the crucial background which informs our perspective on the comparative Uto-Aztecan suppletion evidence from typological/historical and synchronic theoretical perspectives, respectively.

2.1. Typological and historical studies on suppletion

On the typological end, various authors have surveyed patterns of suppletion which occur cross-linguistically. Hippisley, Chumakina, Corbett, and Brown (2004), for example, survey 30 languages and find that suppletion is surprisingly common and seemingly resistant to paradigm levelling. They point to multiple factors which lead to this resistance. These include relatively high frequency for suppletive morphemes, as is commonly assumed, but also whether inflectional properties encoded by suppletion are *contextual* or *inherent* (with the claim being that "it is the inherent inflectional categories that typically provide the context for suppletion", p.395)[2] and the fact that "the distribution of phonologically unrelated stems in cases of suppletion follows the distribution of stems of more regular lexemes" (p.398).

[2] Hippisley et al. point out several counterexamples to this generalization, and the Uto-Aztecan data to be discussed below provide many further instances. The issue lies in their categorization of *number* as being 'inherent' to nouns but 'contextual' for verbs. Under their generalization, suppletion for number ought to be more common for nouns

Our current study into the patterns of verbal number suppletion in Uto-Aztecan has been particularly informed by two previous typologically-oriented works on verbal suppletion: Booker (1982)'s classic (but apparently yet little-known) overview of verbal number suppletion patterns found in the native languages of North America, and Veselinova (2006)'s more recent global survey.

To our knowledge, Booker (1982) presents the first systematic attempt at surveying the verbal number suppletion patterns of the languages of the Americas, and subsequent overviews of these languages (e.g., Campbell 1997, Mithun 1999) have not substantially added new information to Booker's initial observations. Booker found that verbal number suppletion is common among North American languages of many different families. Specifically, she identifies suppletion in 32 languages from 13 genetic groupings.[3] Her findings are summarized in (1):

(1) Booker's generalizations on number suppletion in languages of North America
(Booker 1982: 25 [8])

1. Intransitives will supplete when transitives do not, but the reverse is not true.
2. Among intransitives, locatives (verbs denoting position and motion) will have suppletive forms when non-locatives do not, but not vice-versa.
3. The verb 'die' is unique in that it frequently tends to be the only suppletive form in the non-locative non-stative intransitive category.
4. If transitives are involved, they will most likely be causatives of the related locative intransitives.
5. The verb 'kill' parallels 'die' in that it may occur as the sole representative of the non-

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than for verbs. In Uto-Aztecan languages, however, suppletion for ergative number agreement in some verbs is ubiquitous, but for nouns suppletion for number is comparatively rare. (One UA language which seems to have a relatively robust set of suppletive nouns is Hopi, cf. Hill and Black 1998:865).

[3] Booker follows Voegelin and Voegelin (1977) in utilizing a number of "stocks" which are now heavily criticized (see, e.g. Campbell 1997), e.g. "Hokan", "Penutian", etc. Obviously, splitting these large-scale macro-phyla into a number of smaller families would in turn increase the number of families represented by verbal number suppletion in North America. Booker's 13 genetic groupings presenting languages demonstrating clear verbal number suppletion are distributed throughout North America. They are: Caddoan; Chinookan; "Gulf" (which includes Muskogean); "Hokan" (which includes Pomoan and Yuman); Kiowa-Tanoan; Na-Dene (including Haida and Athabaskan); "Penutian" (including Zuni); Salishan; Siouan; Tonkawa (a language isolate); Uto-Aztecan; Yuchi (a language isolate); and Yukian.

locative category.

6. Non-locative statives denoting size are most likely to be suppletive, 'big' and 'small' occurring most frequently.
7. The basic number distinction is binary--singular vs. plural. Singular-dual-plural may be marked in locative predicates but not non-locatives, and in intransitives but not transitives. The reverse, i.e. a three-way contrast in non-locatives but not locatives and in transitives but not intransitives, does not occur.

As we will show in detail in the next section, our survey of Uto-Aztecan suppletion patterns largely fall in line with Booker's generalizations. For example, none of the languages we surveyed had suppletive transitives without suppletive intransitives, nor do we find languages with suppletive intransitive non-locatives without also having suppletive intransitive locatives. While we do not find many suppletive verbs indicating size in Uto-Aztecan, verbs meaning *die* and *kill* are ubiquitous. Dual number agreement has been independently innovated in some languages (particularly Hopi and Numic), but where it exists the three-way distinction applies to both locatives and non-locatives and to transitives as well as to intransitives.

Veselinova (2006) takes a global approach to her investigation of suppletion in languages from all over the world, and as such her study provides what is probably the most thorough look at verbal suppletion patterns that has been done to date. In addition to showing suppletion for number agreement (i.e. the Uto-Aztecan-like ergative pattern wherein intransitive verbs agree in number with their subjects while transitive verbs agree in number with their objects), verbs can also supplete for tense and/or aspect inflection (as in English *go/went*) or for use in imperatives (e.g., Maltese *jigi* 'come.INDIC' vs. *ejja* 'come.IMP'; Veselinova 2006: 143). We focus here on Veselinova's generalizations regarding number agreement suppletion, which is most relevant to what we find in Uto-Aztecan.

Veselinova makes the striking claim that there is a robust implicational hierarchy to observe in her data on verbal number suppletion in the languages of the world; this implicational hierarchy is shown in (2):

(2) Veselinova's verbal number lexicalization/suppletion hierarchy (2006: 155 [147])

Intransitive motion verbs > Die/injure > Transitive motion verbs > Others
Position verbs Stative verbs

The implicational relationship among these categories is that languages do not seem to have verbs with meanings on the right side without also having verbs on the left side. There is a looser connection between these categories and frequency of lexical items found in each for any given language and also cross-linguistically. Veselinova finds that intransitive motion verbs (e.g. 'go', 'fall') and position verbs (e.g. 'sit', 'lie') are "especially frequent"; these are followed by the die/injure category (verbs like 'die', 'injure', 'kill' and other verbs of destruction, e.g. 'hit', 'break', 'cut', 'bite off', etc.) as well as her conjoined category of transitive motion verbs (e.g. 'put', 'throw') and stative verbs (e.g. 'sleep', and dimension verbs like 'big', 'tall', 'long', 'short'), which are "common but not as frequent as" the first category; finally, the "others" category includes a wide range of different semantic fields (e.g. 'eat', 'say', 'make noise', 'make netbag', etc.), which according to Veselinova are "highly unusual" because they account for only around 5% of the total number of suppletive verbs in her data (pp.154-5).

As was the case with the generalizations made by Booker, our survey of verb suppletion in Uto-Aztecan languages largely follows Veselinova's implicational hierarchy and generalizations. We will illustrate how each language and/or subgroup of Uto-Aztecan fits into Veselinova's hierarchy when we survey the actual attested Uto-Aztecan suppletive verbs in section 5 below.

Regarding historical linguistic studies into the diachronic development of suppletion patterns, there is a good deal of research focusing on the specific patterns of suppletion found in particular languages and language families, e.g. Maiden (2004) on suppletion in Romance; see Veselinova (2013) for a recent bibliography and overview of other examples. Such studies for the Uto-Aztecan language family have hitherto been lacking, thus motivating the current research detailed below.

As for works attempting to make generalizations for broad cross-linguistic application, Juge (2000) provides a particularly insightful and useful characterization of the different ways that suppletive morphology can develop over time. Following many other discussions in the literature, Juge notes that suppletion patterns typically exist on a continuum from morphemes maintaining a partial sharing of form (e.g. English *run ~ ran*, a verb pair which can be regarded as suppletive on some analyses) to total dissimilarity of form (e.g. English *go ~ went*, which is in fact regarded as suppletive on most analyses). According to Juge, this dichotomy of "weak suppletion" vs. "strong suppletion" can often be attributed to the different pathways by which suppletive morphemes enter paradigms.

Juge identifies three main pathways of suppletion development: (i) sound change (both regular and irregular); (ii) analogy; and (iii) incursion. The first two patterns typically lead to "weak suppletion", where there is still some phonetic similarity shared by the forms of different members in a given paradigm (e.g., consider the irregularity of the English verb-pair *say~says*, i.e. [*se:j~sɛz*], which contrasts with regular forms like *pay~pays*, i.e. [*pe:j~pe:jz*] and not [*pe:j~*pɛz*]). Juge's notion of *incursion*, on the other hand, involves "the incorporation of forms from one lexeme into another, historically separate, lexeme" (p.186). It is this type which typically leads to the maximal dissimilarity often referred to as "strong suppletion". See Juge

(2000) for detailed discussion of the complex developments leading to overlapping suppletions in the preterites of Romance verbs meaning 'to be' and 'to go'.

One particularly interesting case of incursion is the loss of an older suppletive past tense verb form for 'go' in Old English, *ēode*[4], which was replaced by the past tense form for the verb *wend*, i.e. *went*. As Juge notes, "in the case of previously suppletive paradigms, incursion tends to change the phonological substance of the allomorphy but leaves the suppletive pattern intact" (p. 186). As we will detail below, most of the suppletion patterns that we observe in Uto-Aztecan verb paradigms are of the strong variety, and we suspect that, for those cases which do not show evidence for clear reconstructions to PUA (which, as it turns out, are most cases), the different forms that we do observe likely resulted from this kind of incursion. What can we reconstruct for PUA in such cases? Janda and Joseph (2003: 109) ominously (and metaphor-mixingly) raise the issue of suppletions replacing suppletions as "chasms that cannot be bridged" and "an often insurmountable barrier" for doing historical linguistic reconstruction. We will heed these cautions below by maintaining that, while semantic categories being marked by suppletion in various sub-groups of Uto-Aztecan probably show strong evidence that those categories were marked by suppletion in PUA (otherwise we would have to argue that suppletion for the same category would have had to have been independently developed multiple times, a violation of Occam's Razor), if we cannot use the comparative method to show that specific suppletive forms are cognates and descended from a reconstructable antecedent then we will not propose a specific form for PUA for that category. Even if we cannot, at our current state of knowledge,

[4] For this verb form, Juge (2000: 186) gives us *e:ode*, while Janda and Joseph (2001: 109) provide us with *eode*; unfortunately the *Oxford English Dictionary* does not choose between those two options, offering us instead a third spelling: *éode*. According to an anonymous reviewer, the actual spelling would have been with a macron on the *e* to indicate the extra length of this diphthong, so we use *ēode* in our text here.

"bridge a particular chasm" or "surmount a particular barrier", it will still be of use to point out places where such chasms and barriers exist, since a strong argument for PUA suppletive patterns can be made in some cases even without proposing specific reconstructable forms.

2.2. Theoretical approaches to suppletion

Within theoretical morphology, suppletion has always been a crucial topic in discussions of notions like *morpheme* and *lexeme* (and the relations among them), etc., but it has also more recently become an important testing ground for ideas pertaining to locality in the triggers for allomorphy. Bobaljik (2012), for example, proposes a syntactic structural account of adjectival suppletion such that the superlative degree properly contains the comparative, thus ruling out unattested adjectival suppletion patterns like *$*good_A$—$better_B$—$goodest_A$* (cf. English $good_A$—$better_B$-$best_B$ and Latin $bonus_A$—$melior_B$—$optimus_C$). For the verbal number agreement domain, it has been argued that the cross-linguistically typical pattern of ergative agreement in verbal number suppletion may also be due to locality. That is, under the assumption that subject of unaccusative intransitives derives from a verb phrase-internal position (i.e. the unaccusative hypothesis of Perlmutter 1978), this patterning can be explained, in all cases (by hypothesis), as an instance of verb agreement with a VP-internal argument (cf. Harley et al. *forthcoming*).[5]

Also at issue within theoretical morphology is the question of the nature of the morphemes which may show suppletion. Some recent work in the framework of Distributed Morphology, e.g. Embick & Halle (2005), has attempted to limit suppletive morphology to functional items, stipulating that lexical items (i.e. roots) cannot be suppletive. In addition to

[5] Exceptions to this generalization may be found in Seri (Marlett 2011); see our discussion in section 6 below.

arguments from elsewhere, evidence has been presented from Uto-Aztecan languages to suggest that roots can indeed supplete.[6] Harley (2011) presents a variety of intransitive and transitive verbs from Hiaki (Yaqui) to show that the meanings of those verbs seem to be lexical (rather than "light", or functional) in nature; Haugen and Siddiqi (2013) present a similar range of verbs from Hopi (data originally published by Hill and Black 1998) to make the same point; see (3):

(3) Suppletive Verbs in Hopi and Hiaki – Number Agreement with Intransitive Subjects

	Gloss	**Hopi**		**Hiaki**	
		SG./DL SUBJ.	PL.SUBJ.	SG. SUBJ.	PL.SUBJ.
a.	'arrive'	*pitu*	*öki*	*yepsa*	*yaha*
b.	'be dancing'	*wunima*	*tiiva*	—	—
c.	'be eating'	*tuumoyta*	*noonova*	—	—
d.	'be lying down' (pres.)	—	—	*vo'ote*	*to'ote*
e.	'descend'	*haawi*	*haani*	—	—
f.	'die'	***mooki***	***so'a***	***muuke***	***koko***
g.	'enter'	*paki*	*yungya*	*kivake*	*kiimu*
h.	'fall'	*pòosi*	*löhö(k-)*	*weche*	*watte*
i.	'get up'	—	—	*yehte*	*hoote*
j.	'go, leave (pres.)'	—	—	*siime*	*saka*
k.	'go, walk'	—	—	***weye***	*kaate*
l.	'go out'	*yama(k-)*	*nönga(k-)*	—	—
m.	'run'	*wari(k-)*	*yùutu(k-)*	*vuite*	*tenne*
n.	'sit, dwell'	*qatu*	***yeese***	***yeesa***	*hooye*
o.	'sleep'	*puuwi*	*tookya*	—	—
p.	'stand up'	—	—	*kikte*	*hapte*
q.	'walk around'	***waynuma***	*yakta*	***weama***	*rehte*

(4) Suppletive Verbs in Hopi and Hiaki – Number Agreement with Transitive Objects

	Gloss	**Hopi**		**Hiaki**	
		SG./DL. OBJ.	PL.OBJ.	SG. OBJ.	PL.OBJ.
a.	'bring along'	*wiiki*	*tsaama*	—	—
b.	'bring in[1], put into'	*pana*	*tangata*	*kivacha*	*kiima*
c.	'kill'	*niina*	***qöya***	*me'a*	***sua***
d.	'put, place'	*tavi*	*oya*	*yecha*	*hoa*
e.	'put on top'	*tsokya*	*kwapta*	—	—

[6] Indeed, in her global survey of verbal suppletion patterns, Veselinova (2006) finds that verb root suppletion is particularly common with number agreement, as opposed to suppletion for tense/aspect or for imperatives. As Veselinova puts it, verbal number suppletion "is by far the most numerous group when compared to the groups of verbs with other kinds of suppletion. Highly specific lexical meanings are commonly encountered here whereas such meanings are absent from the verbs observed in other kinds of suppletion" (p. 155).

f.	'stand (s.t.) up'	—	—	*kecha*	*ha'abwa*

[1] In the Hiaki forms, the gloss for this verb is 'bring in' only.

Intriguingly, while these two Uto-Aztecan languages have suppletive verbs serving the same semantic functions, many of the actual verb forms do not seem to be cognate—we've bolded apparent (as well as merely possible) cognates in the tables above. Many of the verbs that we see here, and which we review in section 5 below, seem to be "lexical" to us, so we agree with work in the literature which suggests that roots may supplete just like functional items. Indeed, as there is no theory-neutral way to define "suppletive" vs. "non-suppletive", nor even "lexical" vs. "functional", the best approach may be one that recognizes a cline between these notions rather than force a discrete discontinuity based solely on theory-internal motivations (Haugen and Siddiqi 2013: 501-2).[7]

Our purposes in this paper are largely historical, so the investigation of suppletion is especially important to us because irregular morphology often reflects old features of a language family and as such can often be useful as a diagnostic of shared retentions or innovations in language family sub-groups. In the next section we examine previous scholars' work regarding suppletion in the Uto-Aztecan language family.

2.3. Previous work on Uto-Aztecan suppletion

Previous works on suppletive verbs in specific Uto-Aztecan languages include Hale et al. (1991) on Hopi; discussion of a slightly different set of suppletive verbs, and also suppletive

[7] Haugen and Siddiqi (2013) give arguments from the grammaticalization of functional morphemes from lexical morphemes that the DM view on a discrete split between "suppletable" functional items and "non-suppletable" lexical items is untenable. These include arguments from Hopi, where there are suppletive suffixes as well as free verbs (with the former being more conducive to a "functional vocabulary" analysis than the latter), as well as Hiaki (where there are suppletive "verb-affix hybrids" which seem to be only partway on the grammaticalization cline from free lexical verb root to bound functional suffix); see also Tubino Blanco et al. (2009) on this second point.

nouns, from Hopi in Haugen and Siddiqi (2013; data originally from Hill and Black 1998); and Harley et al. (2009, *forthcoming*) on verbal suppletion in Hiaki. As discussed above, Haugen and Siddiqi (2013) compare the evidence from Hopi and Hiaki and find that only a few of the attested suppletive verb forms are likely cognate, even though many of the same semantic functions are represented by suppletive verbs in the two languages. As also discussed above, this may be due to these languages sharing a suppletive paradigm inherited from earlier stages, and perhaps even PUA itself, and one or both languages undergoing *incursion* for one member of a paradigm or another. We discuss this issue below.

From a comparative perspective, the standard work on most aspects of historical Uto-Aztecan morphology remains the comparative grammar by Langacker (1977). Langacker (1977) observes that most UA languages have at least a few verbs which are suppletive, and these are consistently of the ergative pattern mentioned above. As he states, "These traits can definitely be reconstructed for [Proto-Uto-Aztecan]" (p. 127). However, Langacker does not reconstruct actual verb forms to the level of PUA; this will be our topic in subsequent sections. Langacker also notes that Uto-Aztecan suppletive verbs are "largely confined to verbs with basic meanings including 'go', 'sit', 'run', 'kill', 'put', etc." (p.127). This conclusion largely presages the more typologically-based generalizations drawn from larger cross-linguistic samples made by Booker (1982) and Veselinova (2006), and reflects such tendencies as Veselinova's implicational hierarchy of verbal number suppletion (see 2 above). However, highly specific verbs are certainly attested in Uto-Aztecan—Veselinova (2006:153) herself cites Hopi *–toni* 'go around something out of sight SG' vs. *–kya* 'go around something out of sight PL' as a particularly lexicalized suppletive verb pair.

Langacker also points out that in the Uto-Aztecan languages there is a continuum from

full to partial suppletion; e.g. some morphological alternations at the level of the segment may be regarded as suppletive, such as Tarahumara *čupere* 'be sharp.SG' and *čubere* 'be sharp.PL'. However, we stress that one must be cautious to not regard regular morphological processes as suppletion when other explanations exist to account for morphological alternations. In particular, prosodic morphology such as reduplication, where some part of a verb stem is repeated to serve some morphological function (e.g. Hiaki *bwiika* 'sing' forming a habitual as *bwi-bwika*), and morphological mora augmentation, where a word-internal lengthening of a consonant or vowel occurs (e.g. Hiaki *maveta* 'receive' forming a habitual as *mavveta*, and *yepsa* 'arrive (sg.)' > *yeepsa*), [8] are quite common in the family (cf. Haugen 2005, 2008), and these independent morphological processes should not be regarded as suppletion per se.

Below we will regard as *suppletive* only those forms in a verb paradigm which cannot be reduced to regular morphological processes (e.g. reduplication or mora augmentation), or the affixation of a regular affix with clear and consistent function.

Before we turn to the etymological puzzles which form the basis for our discussion (i.e. (i) what was the PUA suppletion system like?; and, (ii) what were the specific suppletive morphs in PUA?) in sections 4 and 5, we will first present crucial background information on the Uto-Aztecan language family, controversies surrounding its sub-grouping, and the reconstructed phoneme system of PUA, in section 3.

[8] Such word-internal morphology can and has been analyzed as affixation, where the affix consists of a bare mora which typically gets infixed into the stem for prosodic reasons; cf. Samek-Lodovici 1992, Davis and Ueda 2002, Haugen 2005, 2008, Zimmermann and Trommer 2013).

3. The Proto-Uto-Aztecan Sound System and Uto-Aztecan Family Subgrouping

The Uto-Aztecan family tree has long been a subject of disagreement among Uto-Aztecanists. On the most conservative grouping the languages are divided into about 8 sub-groups branching from PUA, including language isolates like Hopi, Tübatulabal, and Tubar (Steele 1979). Various scholars have provided arguments for larger groupings, though, with the most common being Northern-Uto-Aztecan (comprised of Numic, Takic, Hopi, and Tübatulabal) based on shared phonological and morphological innovations (cf. Heath 1977, 1978, Manaster Ramer 1993). Southern Uto-Aztecan has until recently been more controversial, and has largely been based on lexicostatistical information (Miller 1984), although Merrill (2013) has proposed that this grouping is also supported by shared sound changes. See Dakin (2001) for an excellent comprehensive overview of different UA subgrouping proposals which have appeared over the past century or so, and J. Hill (2011) for the most recent evaluation of UA subgroups using the criterion of shared innovations in the domain of phonology.

Ideally, valid sub-groups within the family would demonstrate shared morphological innovations and/or retentions, as well, for which irregular morphology like suppletion could be an ideal test case. We will discuss the issue of suppletion evidence for UA-internal subgrouping below, but in general the results are not conclusive because aspects of UA suppletive morphology are relatively widespread throughout the family and robust across sub-groups, so clear patterns uniquely identifying one controversial subgrouping or another are hard to find.

In order to contextualize our reconstructions, and in particular our claims for cognacy among specific suppletive morphs found in the family, a few remarks on the UA sound system and sound correspondences are also in order. With the exception of the liquids and (non-bilabial) nasals, the phoneme system of PUA is relatively well understood and reconstructions to PUA,

for vowels and consonants in word-initial position, at least, are largely uncontroversial. Figure (5) gives the set of consonant correspondences recently presented by Stubbs (2011), excluding the word-medial liquids and non-bilabial nasals.

(5) **UA Consonant Correspondences (initial position, mostly)** (Stubbs 2011)

PUA	*p	*t	*k	*kw	*m	*n	*c	*s	*w	*y	*ʔ	*h
Num	p	t	k	kw	m, ŋw	n	c,-y-	s	w	y	ʔ	h
Hp	p	t	k,q	kw	m	n	c,-y-	s	w,l	y	ʔ	h
Tb	p	t	h,k	w	m	n	c,-y-	š	w	y	ʔ	h
Sr	p	t	k,q	kw	m	n	c,-y-	s,h	w	y	ʔ	h
Ca	p	t	k,q	kw,w	m	n	c,-y-	s	w	y	ʔ	h
Ls	p	t	k,q	kw	m	n	c,-y-	s,š	w	y	ʔ	h
Tep	w,v,-p/v-	t,c	k	b	m	n,ñ	s, š	h,ø	g	d,j	ø, ʔ	ø, ʔ
Eu	p	t	k	b	m	n	c, č	s	w	d	ø, ʔ	h
Tr,Wr	b,p	t	k	w	m	n	c, č	s	w	y	ø, ʔ, h	h
Yq,My	b,p	t	k	bw	m	n	c, č	s	w	y	ʔ	h
Tbr	w,-p-	t	k	kw	m	n	c, č	s,h	mw,ny	y,ñ	ø,h	h
Cr	h	t	k,č	kw,čw	m,mw	n	c, č	s	w	y	ʔ	ʔ
Wc	h	t	k	kw	m	n	c, č	s,z	w	y	ø	ø
CN	ø,p	t	k	kw	m	n	c, č	s,š	w	y	ø, ʔ, h	ø

Reconstructions for the liquids and nasals has long been a source of contention and some confusion. Merrill (2013) has recently proposed a plausible reconstruction wherein PUA had both the alveolar and the velar nasal (i.e. IPA **n and **ŋ) in both initial and word-medial positions; PUA **r only occurred in word-medial position. In Merrill's account, PSUA innovated two phoneme mergers which identify it as a first-level daughter of PUA: **-n- > *-r- (i.e. a lenition of-n- in medial, probably inter-vocalic, position only) and **ŋ > *n categorically (i.e. in all positions). This state of affairs is shown in (6); the PSUA innovations are given in boxes:

(6) P**UA Liquids and (Non-Bilabial) Nasals** (Merrill 2013)

PUA	****ŋ-**	****-ŋ-**	****n-**	****-n-**	****-r-**
PNUA	*ŋ-	*-ŋ-	*n-	*-n-	*-r-
PSUA	***n-**	***-n-**	*n-	***-r-**	*-r-

As Merrill (2013) details, there is some variation across the daughter languages in how the reflex of PUA **-r- and SUA *-r- is expressed, with some languages having /r/, some having /l/, and some having both /r/ and /l/. Langacker (1976) proposes that there may have been some dialect variation within PUA regarding the realization of *r, with the southerly dialects having *l. Reflexes of **r are given by Stubbs with the correspondence sets of vowels, as in (7).

(7) **UA Vowel Correspondences, and reflexes of **-n-/**-r-** (adapted from Stubbs 2011)[9]

PUA	*i	*a	*u	*o	*ɨ[10]	**-n-/-r-
Numic	i	a	u	o	ɨ	n
Hp	i	a	o	ö	ɨ	n
Tb	i	a	u	o	ɨ	n
Sr	i	a	u	ö	ɨ	n,r
Ca	i	a	u	i	e	n,l
Cp	i	a	u	i	ɛ	n,l
Ls	i	a	u	e(i)	o(u)	n,l
Gb	i,e	a	u,o	e,o	o	n
Tep	i	a	u	o	ɨ	l,d,r
Tr,Wr	i	a	u,o	o	e,i	l,r
Yq,My	i	a	u	o	e	l,r
CrC	i	a	ï	u	e	l,r
CN	i	a	i	o	e	l

Most of our actual reconstructions of suppletive verb forms in PUA do not actually implicate liquids or non-bilabial nasals one way or the other. However, these tables will be useful for the non-specialist reader to consult in checking our claims for cognacy and reconstructability to

[9] In Stubbs 2011 the column for the liquids is headed by *l; we follow Merrill (2013)'s reconstructions in (7).
[10] Orthographic representations for the Uto-Aztecan "fifth vowel" vary by author, and the correct reconstruction of the actual PUA fifth vowel remains controversial. We follow one prominent tradition by using *ɨ*, whereas Stubbs (2011) uses *ï*; other symbols (and claims for reconstruction) have included *ɯ*, *ə*, and *e*. K. Hill (2014) avoids the issue altogether by implementing an abstract symbol *E* for PUA forms.

PUA. We now turn to our actual reconstructions, focusing first on PUA DIE and KILL (§4), and then turning to a cross-family survey of the suppletive verbs found in representative languages of each UA subgroup (§5).

4. DIE and KILL in Proto-Uto-Aztecan

For our reconstructions we focus in most detail on two specific suppletive verbs in PUA: DIE and KILL, which are semantic domains robustly showing suppletion across the UA languages, and/or which are represented by clear cognates in various UA languages. These verbs are often morphologically related cross-linguistically (as well as in UA), with KILL frequently being derived via causativization of the verb root for DIE, whether that verb root is suppletive (as it is in Cahuilla, cf. *-mek-an-* 'kill.SG' derived from *-múk-* 'die.SG' + *-an-* CAUS, and *-čex-en-* 'kill.PL' derived from *-čex-* 'die.PL' + *-en-* CAUS), or not (as in Classical Nahuatl, cf. *mic-tia* (/mik-tia/) 'kill', derived from *miqui* (/miki/)'die', subject number unspecified, + *-tia* CAUS).

For PUA we reconstruct three distinct verb roots for the domain of DIE and KILL, arguing that there was clear suppletion for verb number agreement only for DIE —namely, our reconstructed forms *muku- (for DIE.SG) and *ko(i)-(for DIE.PL). We reconstruct the root *mɨʔa for KILL.SG, and argue that the plural form for KILL was derived by the use of a causative suffix (*-ya)[11] on the plural root for DIE, yielding a complex form something along the lines of *ko-ya. These reconstructions are summarized in (8):

[11] Langacker (1977: 144-5) reconstructs a variety of causative suffixes for PUA, including *-na and *-ca, proposing that the latter is the plural or distributive allomorph of the former (with reflexes of this division found in Southern Paiute and Tarahumara). Given Manaster-Ramer's (1993) sound law for Proto-Northern-Uto-Aztecan (i.e. the intervocalic lenition of **-c- > *-y-), however, we would not expect to see *-*ya* as a reflex in the Southern languages if **-*ca* had been the form in the protolanguage; *-*ya* is clearly attested as such in SUA, however, and it has even undergone further regular phonological developments in these languages (e.g., the Tepiman fortition of *y > d, resulting in –*da* for this causative suffix).

(8) **PUA Reconstructions for 'Die' and 'Kill'**

	SG	PL
DIE	***muku-**	***ko(i)-**
KILL	***miʔa**	*ko-ya die.PL-CAUS

Let us turn to the comparative UA evidence for these reconstructions, starting with DIE (4.1) and then proceeding to KILL (4.2).

4.1. DIE *in Uto-Aztecan*

The distribution of Uto-Aztecan verbs for DIE, in the singular and the plural (and in some cases, the dual, as well), are shown in (9). In this chart we have bolded the forms which we think are derived from our reconstructed PUA forms; more questionable cases are italicized and discussed below. (Language abbreviations and data sources are included at the end of this paper; in general we have tried to stick with the orthography of our sources, but have made a few changes for clarification, e.g. we use IPA *ɨ* instead of Tohono O'odham orthographic *e*; for Classical Nahuatl we have used *ki* instead of Spanish orthography-based *qui*, etc. Such alterations are indicated by including the original orthography to the side in parentheses).

We leave open the possibility that our proposed PUA *-ya causative was specified for plurality, as Langacker suggests for *-ca. Langacker also alludes to another causative, *-tu-ya, which "probably relates at some remote stage to the *-na/-*ca causative" (p. 145). This latter causative would presumably have been the source for such UA causatives as Yaqui *–tua*, CN *–tia*, etc. Maybe this was not actually an active causative on the verb KILL in PUA times, but then again, given similar derivations of KILL from CAUSE-TO-DIE in various UA sub-groups (Takic and Aztecan, at least), maybe it was.

(9) 'TO DIE' IN UTO-AZTECAN

			SG		PL
PUA: 'DIE'			***muku-**		***ko(i)-**
			SG	DL	PL
Numic					
	WN	NP	yai/yaʔi	-----	**koi**
	CN	GSh	tiaì	kokoì	**koì**
		TSh	tiyaih	tiyaih	**ko'i**" / tsüüwah
		Cm	tʉyaaitʉ		**kooi**tʉ
	SN	Ch	ja'ʔi-kwaʔ		ja'ʔi-kwaʔ
Takic					
		Cp	qaaw		chix
		Ca	**-múk-**		-čex-
		Ls	takwaya		tapa, takwaya
		Sr	*mymyʔk*[1]		**qoʳʔai**
Tübatulabal					
		Tb	**mūk**|ut		kattahwa|t
Hopi					
			SG	DL	PL
		Hp	**mooki**	mooki	so'a
Tepiman					
		TO	**muhki**[2](?)		**ko'o, koi** (?)
		NT	**múúkui**		**kóóyi**
		Nv	**muku (mucu)**		**koho** (**coho)**
Taracahitan					
		Yq	**muuke**		**koko**
		Tr	**mukú**		suhuí
		Wr	**mugu-**		wahíba
		Op	**mu'ukă** (**mücă)**		???
Corachol					
		Wc	**mɨ (mü)**		**-kui** (**-cui)**
Aztecan					
		CN	**miki (miqui)**		miki
		Pl	**mik-**		mik-

[1]According to K. Hill (2011), the Sr SG. form for DIE can also be used in the plural interchangably with the PL. form.
[2] Cf. *muhki, ko'i* 'a dead person or animal'; *huhugam* 'those who are gone or have died'

We will consider only the singular and plural forms of these and the other verbs,

regarding the development of the dual category (here, and elsewhere) as an independent innovation of Central Numic[12] (cf. Babel et al. 2013: 472) as well as of Hopi[13] (cf. K. Hill 2001: 303). We do note, however, that dual-marking occurs in different ways in the different languages which utilize it. In Hopi, duals are typically marked on (animate) nouns with a regular suffix *–t* (Hill and Black 1998: 870), but for the purposes of suppletive verb agreement duals consistently pattern with the singular (cf. the singular/dual form for 'die.SG', *mooki*, which contrasts with the plural form, *so'a* 'die.PL'). In Central Numic, however, there seems to be variation in how the dual gets derived: whereas in Gosiute Shoshone the dual form for 'die' is derived by reduplication of the plural form (i.e. *koì* > *kokoì*), in Tümpisa the dual form is identical to the singular form (similar to the case in Hopi). For 'to kill', the Gosiute dual form is identical to the plural (rather than being reduplicated), and in Tümpisa, again, the dual is identical to the singular. Other irregularities of dual marking in Numic will be discussed in our survey of other suppletive verbs in Numic below in §5.

Returning to our proposals for reconstruction, we reiterate that our reconstructed forms for PUA DIE are *muku and *mɨʔa for DIE.SG and DIE.PL, respectively. Let us examine the evidence for each in turn.

[12] According to Babel et al (2013: 472), Northern Paiute (NP) has also developed distinctive duals for some postural verbs, probably through contact with Shoshoni. Since NP does have a dual category which does not seem to be used for DIE and KILL, in contrast to Central Numic languages, we put "----" to indicate NP's absence of dual-marking verbs in our tables of cognates.

[13] K. Hill (2001) proposes that the Hopi dual, which applies only to animates, derived historically from an alternant PUA plural suffix **-tï, which would have contrasted with a regular plural suffix **-mï, which was perhaps for inanimates. See also Hill and Hill (2000) on variation across Uto-Aztecan in patterns of marking plurality on different classes of noun in these languages.

4.1.1. Reflexes of *muku – DIE.SG

Straightforward reflexes of *muku can be seen in most of the sub-groups within Uto-Aztecan: Takic (assuredly in Cahuilla, cf. *-múk-* 'die.sg', but probably not in Serrano[14]); Hopi (cf. *mooki* 'die.sg/die.dl', with the *o* being the regular Hp reflex of PUA *u); Tübatulabal (cf. *mūk|ut* 'die.sg'); Tepiman (cf. Northern Tepehuan *múúkui* 'die.sg', Nevome *mucu* (/muku/) 'die.sg'); Taracahitic (cf. Yaqui *muuke* 'die.sg', Tarahumara *mucú* (/mukú/) 'die.sg.', Guarijío *mugu-* 'die.sg', Ópata *mücă* (/mu'ukă/) 'died.sg'); Corachol (cf. Huichol *mü* (/mɨ/) 'die.sg.', with *ü/ɨ* being a regular Huichol reflex of PUA *u); and Aztecan (cf. Classical Nahuatl *miqui* (/miki/) 'die' and Pipil *mik-* 'die', with *i* being the regular Aztecan reflex of PUA *u).

The last-mentioned sub-group, Aztecan, seems to have generalized the meaning of its reflex of PUA *muku as 'die' generally (with no specification regarding number), as this verb has always been also used for the plural in Aztecan since Spanish colonial times. (This account is clearly more parsimonious than the alternative wherein each other Uto-Aztecan group would have developed a suppletive alternant for the plural of 'die', either independently or in some other mid-level subgrouping since the break-up of PUA. We reject the former possibility on the grounds of appealing to Occam's Razor, and because no proposal for UA-internal sub-groupings has ever linked all of the groups of Uto-Aztecan exclusive of Aztecan, so we reject that possibility here, too).

If *muku is a reasonable reconstruction for PUA 'DIE.SG', as we think that this evidence clearly suggests, then we are left to explain what must be innovations for this semantic role

[14] Although the form in Serrano *mymy?k* 'die.SG'' may seem like a potential etymon of our *muku due to its phonological resemblance, Ken Hill (personal communication) notes that the Serrano *y* vowel is not the expected reflex of PUA *u. It is further worth pointing out that this verb may be a reduplicated form, although why that would be the case for a singular (rather than a plural) verb is not known.

across Numic (no language of which appears to have retained a reflex of *muku serving its original function) and for most of Takic. For the Numic case, most of the languages have similar reflexes along the lines of *yai(h)* or *tiyai*. Stubbs (2011:149) offers two relevant cognate sets: *ya'ay 'die' (his set #656) and *tɨʔa/*tɨya (his set #657), and, following a personal communication from Jane Hill, suggests that the latter could be related to the former via compounding derivation with an element *tɨ-* or *ti-*. K. Hill (2014) lists these cognates under one heading, tE-21, with a probable meaning of 'sickness', given other cognates in NUA, e.g. Hopi *tuuya* 'sickness'. Given the limited distribution of relevant cognates, however, we regard this innovation of semantic shift from 'sickness' to 'die.sg' as probably unique to Numic, and further philological study among these languages may shed light on it or other possible origins. Southern Numic seems to have regularized the word DIE by generalizing the singular form to cover the plural as well; this is not the case for KILL, as we show below.

For the exceptions in the Takic languages, which seem to follow no clear-cut patterns (cp. Cupeño *qaaw*, Luiseño *takwaya*, and Serrano *mymyʔk*), we suggest again independent developments in individual languages (rather than some higher UA subgroup), probably involving incursion from one lexeme to another to replace the PUA form *muku which has been retained in most other daughter languages.

4.1.2. Reflexes of *ko(i) – DIE.PL

Now we turn to evidence for our reconstruction of PUA *ko(i)- as DIE.PL. In NUA, clear reflexes exist in most of Numic (cf. NP *koi* 'die.pl', Gosiute Shoshoni *koì* 'die.pl', and Comanche *kooitʉ* 'die.pl') but not in Hopi or most of Takic—perhaps Serrano is the only Takic language with a reflex, if *qo^{r}ʔai* is derived from our *ko(i). This etymon is most robustly found

in SUA, for which examples can be clearly seen across Tepiman (cf. Tohono O'odham *ko'o*, *koi* 'die.pl'); Northern Tepehuan *kóóyi* 'die.pl'; Nevome *coho* (/koho/) 'die.pl'), in parts of Taracahitic (e.g. Yaqui *koko* 'die.pl', which apparently developed reduplication for plurality to go along with the inherent plurality of the inherited root); and in Corachol (cf. Huichol *–cui* (/-kui/) 'die.pl'). As was mentioned above, Aztecan apparently lost its reflex of the PUA plural verb for 'die' when the PUA singular form *muku generalized.

Two of the exceptions are potentially related: i.e. Hopi *so'a* and Tarahumara *suhuí*. K. Hill (2014) gives the latter (but not the former) in his cognate set su-03 'finish, use up, consume'. The origins of these latter forms may also be implicated in the plural form for Yaqui KILL, *sua*, which we will illustrate and discuss below. The reflexes of this cognate set may be the source of replacement incursion of our PUA *ko(i).

Remaining to be explained on our account are the apparently innovative forms developed in parts of Numic (e.g. Chemehuevi *ja'ʔi-kwaʔ* 'die.pl') and Takic (e.g. Cupeño *chix* and Cahuilla *–čex-*, which probably share the same origin, as well as the further forms found in Luiseño: *tapa*, *takwaya*), as well as Tübatulabal *kattahwa|t* 'die.pl' (which also has to do with being or getting sick, a semantic function shared by 'die' in other UA languages; however, this particular form is without clear etyma along similar lines in other UA languages). For these exceptional forms we have as yet no suggestions for sources, but we do note that according to our analysis these would have replaced the PUA form via incursion.

To summarize our discussion of DIE, despite some aberrant forms in various UA languages which do not conform to our specific reconstructions of PUA *muku DIE.SG and *ko(i) DIE.PL, we suggest that the available evidence supports our reconstructions for the protolanguage. The forms which do not fit this historical picture apparently replaced one

suppletive form for another, instantiating Juge (2000)'s process of incursion, where suppletions have apparently replaced suppletions.

4.2. KILL in Uto-Aztecan

The distribution of Uto-Aztecan verbs for KILL, in the singular and the plural (and in some cases, the dual, as well), are shown in (10); once again we've bolded the presumed etyma of our reconstructed forms and put more questionable etyma in italics. In this table we list data from two varieties of Tarahumara: Tarahumara de Samachique (Tr_S, data from Hilton 1959) and Choguita Rarámuri (Tr_{Ch}, data from Caballero 2008).

(10) 'TO KILL' IN UTO-AZTECAN

			SG	DL	PL
PUA:	**'KILL'**		***miʔa**		***ko-ya** **die.PL-CAUS**
			SG	DL	PL
Numic					
	WN	NP	patsa	-----	koi
	CN	GSh	pekkà	wasí	wasí
		TSh	pakkah	pakkah	wasü"
		Cm	pehkarʉ		wasʉpu
	SN	Ch	pa'ka		**ko'ʔi**, ma'juma
Takic					
		Cp	**meq**(a(n))		chix-nin
		Ca	**-mek-**an-		-čex-en-
		Ls	**moq**na		**qe'ee**
		Sr	**my^{r}k**a^{r}n		**qō^{r}n**
Tübatulabal[1]		Tb	**mű̱k|at**		ayya'ìn|at
Hopi					
			SG	DL	PL
		Hp	niina	niina	**qöya**
Tepiman					
		TO	**mi'a,** *mu'a, muhkith(?)*		**koktha**(?)
		NT	*múááyi*		**kóódai**

	Nv	*muha*	**kohohda** (**cohoda)**
Taracahitan			
	Yq	**me'a**	sua
	Tr_{Ch}	**me'á / mi'ri**	**ko'i**
	Tr_S	**mi'yá**	**ko'ya** **(co'ya)**
	Wr	**meʔá-/meʔri-**	**koʔyá-/koʔi-**
	Op	**mea'aria** (**meäria)**	
Corachol			
	Wc	*mi=*	**kukúuya, kuuyáa** **(cucúuya, cuuyáa)**
Aztecan			
	CN	mik-tia	mik-tia
	Pl	mik-tia	mik-tia

[1] For Tübatulabal 'kill', Voegelin 1935 offers: mɨʔig- ~ ʔɨmiʔɨk, without specifying whether it is sg, pl, or both.

For the UA verbs for KILL, we can divide our discussion into two parts: (i) focusing on languages showing remnants of the compositional morphological pattern of deriving a verb with the meaning to KILL from affixation of a causative suffix to the verb for DIE, independently of actually having PUA cognates for either function (i.e. whether or not the verb root or the causative suffix has undergone incursion), and (ii) focusing on languages showing cognates of the PUA root, or the PUA root + the PUA CAUS suffix (whether or not the morphological pattern is actually active, synchronically, in a given language).

4.2.1. A Uto-Aztecan morphological pattern: Composing KILL from DIE-CAUS

To take the former issue first, languages showing the morphological pattern of deriving KILL from 'cause to die' include the following. For the singular and plural of KILL, we see morphologically complex verbs based on a root meaning DIE with a productive causative suffix

in both Takic (Cupeño, Cahuilla) and Aztecan (Pipil, Nahuatl).[15] Other verbs which at least look plausibly complex etymologically (if not synchronically) include Hopi *niina* 'kill.sg' and Samachique Tarahumara *mi'yá*.

The second issue involves languages showing clear cognates of *ko(i) plus a suffix descended from *–ya serving as the verb for KILL. Languages in this category include Hopi (cf. *qöya*), Tepiman (cf. Northern Tepehuan *kóódai*, and others, where the expected reflex of *–*ya* would be *–da* after the glide fortition which occurred in the Tepiman languages), Taracahitic (cf. Tarahumara *ko'i* and Guarijío *koʔyá*-), and Huichol (cf. both *cuuyáa* (/kuuyáa/) and reduplicated *cucúuya* (kukúuya)). We thus argue that this comparative evidence suggests that KILL.PL was morphologically complex in PUA, where this plural verb form was derived directly from the plural root for DIE, *ko(i), via suffixation of a causative suffix *-ya.

A few additional remarks on our reconstruction for the form of the causative in these examples may be in order. As we pointed out in footnote 11, Langacker (1977) proposes two causative suffixes in PUA: *-na and *-ca. Our *–ya causative is thus a novel proposal, and we need to dispense with two alternative possible reconstructions to motivate it. First, Manaster Ramer (1992) has shown that many instances of UA -y- can be derived straightforwardly from intervocalic lenition of-c-. Is it possible that our *–ya is really Langacker's *-ca? We respond in the negative—this sound change is characteristic of the Northern UA languages; indeed, Manaster Ramer (1992) proposes the **-c- > *-y- sound change as the single unique sound law defining NUA as sub-group of UA. The distribution of our *–ya causative, however, includes many languages in SUA, including the Tepiman languages which show further phonological

[15] Recall, however, that the distribution of suppletive verb forms in UA leads us to suggest that the *singular* verb for KILL was suppletive rather than derived by regular morphology from singular DIE (i.e. our *mɨʔa does not derive from *muku in our reconstruction).

development with the hardening of *y to d, which itself is a characteristic sound law of the Tepiman languages (J. Hill 2011).

Second, Dakin (2001: 328-335) points to one particular PUA morpheme, the applicative suffix *ri-ra, which seems to show a correspondence between NUA *–ina/-una* and, excepting the Tarahumara-Guarijío (T-G) form in *–ura/-ira*, SUA *–iya/-uya* (with the expected Tepiman etyma having undergone fortition to *–ida/-uda*). Dakin proposes that this isogloss separates T-G from the rest of SUA (and even from Mayo and Yaqui, i.e. "Cahitan", which has often been grouped together with T-G in the subfamily "Taracahitan").[16] Is it instead possible that our *-ya is then related to Langacker's *-na, in parallel with SUA (excepting T-G) *–iya/-uya* corresponding to NUA *–ina/-una*? Again we answer in the negative. This time the crucial evidence comes from T-G—i.e. rather than having reflexes in *–ra*, as is the case with the applicative under Dakin's discussion, T-G reflexes for KILL clearly have *–ya*: cf. Tarahumara *me'a* KILL, and Tarahumara *ko'i* KILL.PL and Guarijío *koʔyá* KILL.PL.

We thus conclude that *-ya was a causative for PUA, at least in the context of deriving KILL from 'CAUSE to DIE'. It is not clear at this point how this *-ya causative would have related to Langacker's proposals for *-na and *-ca, although the notion of plurality may have been a factor (as Langacker himself suggests for *-ca). Although much is still to be gained from Langacker's groundbreaking overview of PUA grammar, revisiting comparative UA morphology, and the inflectional and derivational affixes which appear in various guises throughout the family and which may be reconstructable back to PUA, would still be a worthwhile pursuit as there is much yet to be learned.

[16] See also J. Hill (2011) for recent discussion problematizing "Taracahitan" as a grouping.

4.2.2. UA etyma for PUA *mɨʔa KILL.SG and *ko-ya KILL.PL

Let us now turn to a consideration of the actual reflexes of the PUA plural forms for KILL, *mɨʔa and *ko-ya, which were illustrated in figure (10).

As was true for reflexes of singular DIE, the Numic languages seem to have lost and replaced all vestiges of our reconstructed PUA form for singular KILL. Instead, Numic languages have replaced the PUA form for KILL.SG with what Stubbs (2011: 219-20) reconstructs as PUA *pakkaC/pakki (his cognate set 1186a), meaning 'hit', which includes other forms meaning things like 'strike', 'beat', 'hurt', etc.

However, we do see reflexes of our reconstructed form *mɨʔa throughout Takic—the vowels derived from *ɨ vary wildly in this subgroup, but for the most part conform to what we'd expect them to be given standard vowel reconstructions like those in Stubbs (2011)—see (7) above. Note also that these verb stems tend to involve at least the vestiges of an earlier causative suffix: e.g. *-an, -n, -na,* etc. (see footnote 11 and our discussion of the form of PUA causatives in 4.2.1 above). Obvious reflexes are also found in Taracahitic: Yaqui *me'a,* Tarahumara *me'a*, Guarijío *meʔá-/meʔri-* and Ópata *meäria* (/mea'aria/). Tepiman might have reflexes in *mu-* or *muh-*, but the only straightforward reflex without alteration is Tohono O'odham's *mɨ'a*. This form is worth noting in that the PUA high central unrounded vowel has been retained in its original form throughout Tepiman, but has changed to *e* in the other SUA languages. Tübatulabal *mük|at* also may be derived from our reconstructed form *mɨʔa, and perhaps also Huichol *mi=*.

Innovative forms, again probably suppletions replacing suppletions in the form of lexical incursion, developed throughout Numic (which replaced KILL.SG with PUA *pakkaC/pakki meaning 'hit') and in Hopi (cf. *niina*, which may have a vestigial causative suffix in *–na*; there is no obvious source verb root in *nii* listed in the Hopi Dictionary, cf. the 1998 Hopi Dictionary,

however). Aztecan derives its word for KILL straightforwardly through the productive suffixation of a causative suffix, *-tia*, onto the verb root for die, *miqui* (/miki/), to yield *mic-tia* (/mik-tia/)/ Since *miqui* as DIE does not specify number, it is no surprise that the causativized variant is also used for the plural KILL as well.

Turning now to UA reflexes of our reconstructed PUA form *ko-ya as DIE.PL-CAUS, we observed above that some languages seem to preserve the root and the causative suffix intact: Hopi (*qöya*), Tepiman (cf. Northern Tepehuan *kóódai*, and others, where the expected reflex of *–ya* would be *–da* after the glide fortition which occurred in the Tepiman languages), Taracahitic (cf. Samachique Tarahumara *co'yá* (/koʔyá/), Guarijío *koʔyá-*), and Huichol (cf. *cucúuya* (/kukúuya/) and *cuuyáa* (/kuuyáa/)). Some languages only have attestation of the root *ko(i), including parts of Numic (e.g. Northern Paiute *koi* 'die.pl', Chemehuevi *ko'ʔi* 'die.pl') and parts of Takic (Serrano *qo̤o̤na* 'die.pl', Luiseño *qe'ee* 'die.pl'); the Serrano form seems to indicate the expected root with a different causative suffix, the reflex of PUA *-*na*. Other Takic languages have developed a different root but maintained the pattern of derivation by causativization (cf. Cupeño *chix-nin*, Cahuilla *-čex-en-*). Other languages have innovated a new verb: e.g. Tübatulabal *ayya'ìn|at* (which, given its length, may have been morphologically complex, although evidence for this in available sources is lacking) and Yaqui *sua*. This last verb may share an etymology with other UA innovations such as Hopi *so'a* 'die.pl' and Tarahumara *suhuí* 'die.pl', but the story behind that possible development is at this point opaque.

4.3. Interim Summary: DIE and KILL from PUA to the Attested Languages

To recap, we suggest that much comparative UA evidence supports our reconstructions in (9) and (10) above. A number of areas remain to be explored to explain the data which do not fit

into this picture. The exceptions presumably involved various changes and/or innovations in different subgroups of UA since the break-up of the protolanguage into various daughters. Let us summarize the open questions for each major UA subgroup one by one.

The Numic languages show much innovation from our reconstructed PUA system. In particular, the Numic languages show innovative singular forms for both DIE and KILL. Vestiges of the plural form *ko(i), which we argue was used for both DIE and, with derivation by causative affixation, KILL in PUA, can be seen throughout Numic, but usually only for DIE or KILL, not both. In Western Numic (Northern Paiute) *koi* is used without reference to subject number, but in Central Numic it used only for singular, and in Southern Numic (Chemehuevi) it is used only for plural. The Numic languages also have developed a dual category (with different ways to create duals in different languages); the findings here corroborate what has already been claimed by Babel et al. (2013) regarding the innovation of the dual category in Numic.

In Takic, some novel forms exist for various verbs for DIE in individual languages (e.g. Cupeño *chix* and Cahuilla *–čex-*, as well as Luiseño *takwaya* and *tapa*), although the productive pattern of deriving kill via suffixation of a causative still largely appears in these languages. Cognates for *muku are seen in Cahuilla and possibly Serrano; cognates for *miʔa are seen throughout; and cognates for *ko(i) appear in Serrano and Luiseño (with the former having it for both DIE and KILL).

Although Voegelin's earlier (1958) dictionary of the language does not make this clear, it does seem that Tübatulabal retained PUA's distinction for verbal number suppletion for DIE and KILL (see K. Hill 2011b). We think it is probable that the attested singular forms *mūk|ut* 'die.sg' and *múk|at* 'kill.sg' reflect direct descendence from PUA *muku and *miʔa. The plural forms for these verbs reflect Tübatulabal-specific innovations, probably involving morphologically

complex forms that we are not able to decompose at this time. Incursion of roots from other paradigms is a likely culprit.

Hopi retains two reflexes of our reconstructed forms: *mooki* ‘die.sg’ from *muku and *qöya* ‘kill.pl’ from *ko-ya. Two Hopi-specific innovative forms appear: *niina* ‘kill.sg’ (which seems to involve the remnants of an old UA causative suffix, *-na*, although it is not certain what the apparent root element *nii* would have derived from etymologically), and *so’a* ‘die.pl’, which may share some historical origin with similar plural verb forms in Yaqui and Tarahumara. Like Numic, Hopi also independently developed a dual category, which in this language, unlike some languages in Numic, patterns consistently with the singular rather than the plural.

Tepiman cognates seem to reflect each of our reconstructed forms. However, Tohono O’odham’s *mɨ’a* ‘kill.sg’ is the only clear reflex of our *mɨʔa. The singular forms for KILL in other Tepiman languages, involving *mu-*, may have been a causativization of the singular for DIE (i.e. from our *muku).

It is perhaps in Taracahitan that we see the most straightforward reflexes of our reconstructed PUA verbs, although it is interesting to note that even here no language preserves the original system in full. We suggest that Yaqui maintains the original DIE paradigm with *muuke* ‘die.sg’ and *koko* ‘die.pl’ deriving from PUA *muku and *ko(i). Yaqui also has the form *me’a* ‘kill.pl’ descended directly from PUA *mɨʔa, but it has innovated the plural form for KILL: *sua*, the etymology of which is unknown (though perhaps related to Hopi *so’a* and Tarahumara *suhuí*). Tarahumara, on the other hand, reflects directly our reconstructed PUA KILL paradigm with *mi’yá* and *co’yá* from PUA *mɨʔa and *ko-ya, while only reflecting *mucú* in the singular for DIE. As just mentioned, Tarahumara has developed an innovation for ‘die.pl’, *suhuí*.

Our sole representative language for the Corachol subgroup is Huichol, which reflects PUA *muku with *mü* (as expected, given that PUA *u > Huichol *ü*; orthographic *ü* = IPA ɨ), *ko(i) with *–cui* (/-kui/) and *ko-ya with *cuuyáa* (/kuuyáa/) and *cucúuya* (/kukúuya/). The stem form *mi=* should be *me=* if it were directly descended from PUA *mɨʔa, since all SUA languages excepting Tepiman underwent the * ɨ > e vowel change. This might be a case of contact-induced change, if Huichol borrowed the *mi-* from Nahuatl, which generalized singular *miqui* (/miki/) 'die' (< PUA *muku) to plural and then also used it for deriving 'kill' via causativization.

Finally, the Aztecan group totally lost the number distinction for DIE; the singular form, *miqui*, a straightforward reflex of our PUA *muku, generalized,[17] as did the synchronic morphological process of deriving KILL from DIE via causative suffix affixation. Nahuatl, however, uses the causative form *–tia* rather than the reflex of *-ya seen in some other SUA languages.

Having concluded our in-depth reconstructions for suppletive verbs in two specific semantic domains in PUA, DIE and KILL, we now turn to a survey of the other suppletive verbs found in these languages. It will become clear that solid reconstructions in these other domains are much more difficult to support at the level of PUA.

[17] This development is in accord with another fact about the Aztecan group which will become clear below—namely, that this UA group, apparently uniquely in the family, lost most traces of the suppletion which it otherwise would have inherited from the protolanguage.

5. Survey of the Other Uto-Aztecan Suppletion Data

In this section we survey the examples of Uto-Aztecan suppletion which have been presented by various previous authors. In some cases we regard some irregular verb forms as non-suppletive, as they can be explained through other morphological processes (e.g. reduplication, mora affixation). In the following tables we put in bold examples which we deem clearly suppletive, on the grounds of the formal differences between the forms being maximally irregular, as per Mel'čuk (2003). Other forms are also included here either because other authors have called them suppletive, and/or because they are useful in a comparative context (i.e. other Uto-Aztecan languages may have suppletion for a given gloss); these are italicized for orthographic contrast and because we are not offering a definitive argument against a suppletion analysis for these forms. We will review examples of suppletion in representative languages from each of the major UA subgroups in turn.

5.1. Suppletion in Numic

Numic is traditionally divided into three sub-groups: Western, Central, and Southern. Western Numic is comprised of Mono and Northern Paiute; we consider here Northern Paiute.

Thornes (2003: 316) gives the following examples as the set of suppletive verbs in his corpus of Northern Paiute, noting that he suspects that this is a relatively limited sample of the suppletive verbs that may exist in the language. Again, we put in bold the verbs which seem to be maximally formally different (i.e. strongly suppletive), while other may be derived via regular morphological processes (e.g. reduplication, mora affixation):

(11) Suppletive Verbs in Northern Paiute (Thornes 2003: 316)

Gloss	SG	DL	PL
die	**yai/yaʔi**		**koi**
enter	**ija/igʲa**		**sunua**
fly/rise	*yotsi*		*yozi*
give	**gia**		**himi**
go	*mia*	*mimia*	*miʔa*
kill	**patsa**		**koi**
lie	**hapi**	**kwapi**	**pokwa**/wakwapi
make a hole	*wɨtawaaka*		*wɨtaaki*
open	**-kwonao**		**-wonitao**
put/place	**tɨkɨ**		**tiuna**
return	*koči*	*kokočɨ*	*kočɨmmi*
shut in	*wɨttɨma*		*wɨttɨmita*
sit	**katɨ**	**[k]yɨgwi**	**aataʔa**
stand	**wɨnnɨ**	**wammi**	**kono**
talk	**yadua**		**apiča/apikʲa**
travel	**nɨmmi**		**moo, moʔo**
turn over	*tsamɨna*		*tsamɨnita*

Central Numic is composed of the dialects of Shoshone and Comanche. We have data from Gosiute Shoshone, Tümpisa Shoshone (aka Timbisha, formerly Panamint), and Comanche. In the selected vocabulary section of his grammar of Gosiute, Miller (1996b) includes a variety of verbs specified as having singular, dual, or plural meaning. These are shown in (12); in these data *c* represents an alveolar affricate.

(12) Suppletive Verbs in Gosiute Shoshone (Miller 1996b: 718-20)

Gloss	SG	DL	PL
arrive	*pitɨ́*	*pippitɨ̀*	*pitɨ́*
close, shut	*-tɨmà*		*tɨmì*
come	*kimma*	*kikimma*	*kimmà*
cry	**yakaí**	**namoì**	**namoì**
cut flexible things	**-kaʔà (?)**		**-kɨtà (?)**
cut brittle things	*-kɨpà*		*-kɨpi-tà*
die	**tiaì**	**kokoì**	**koì**
enter	**yaí**	**yuyuà**	**wekú**

fall over	**annì**	**aʔannì**	**anni·tɨ / hamià**
fly/get up	**yɨcɨ́**	**yɨyɨcì / yoyotì**	**yotí**
go, walk	*mia*	*mimia*	*miá*
kill	**pekkà**	**wasɨ́**	**wasɨ́**
lie	**hapí**	**kopí / kʷapí**	**kopikkan / kʷapikkan (kokkopi for inanimate)**
open		*-tɨhpá*	*-tɨpaì*
push	**-kaʔì**		**-ponkà**
run	**nukkì**	**nunukkì**	**nutà**
sit	**katɨ́**	**yɨkʷí**	**yɨkʷikkan**
sleep	**ɨppìì**	**ɨkkoì**	**ɨkkoì**
stand	**wɨnɨ́**	**tacakkihkan**	**topoihkan**
talk	**tekʷá**	**niwɨnɨ̀**	**niwɨnɨ̀**
throw	**tawí**	**petí**	
tie	*-tamà*		*-tamì·*
wake up	*tɨpuì*	*tɨtɨpuì*	*tɨpuì*

Dayley (1989) also presents many verbs specified as having a singular, dual, or plural subject or object; these are shown in (13):

(13) Suppletive Verbs in Tümpisa Shoshone (Dayley 1989)

Gloss	**SG**	**DL**	**PL**
bring	**yaappitü**	**yaappitü**	**himappittuhun**
bring to	**yaakkin**	**yaakkin**	**himakkin**
carry in the hands	**yaa"**	**yaa"**	**hima**
come	*kimma*	*kikimma*	*kimmah*
die	**tiyaih**	**tiyaih**	**ko'i" / tsüüwah**
enter	**ika"**	**weeki"**	**weeki"**
fly	**yütsü"**	**yütsü"**	**yoti"**
go	*mi'a*	*mimi'a*	*mi'a"*
go in/go down	**ika"**	**weeki"**	**weeki"**
go up/out	**to'eh**	**toto'eh**	**küa"**
kill	**pakkah**	**pakkah**	**wasü"**
lie	**hapi"**	**kopi"/kwopi"**	**kopittükih**
put/place	**tüki"**	**taha"**	**taha"**
return	*ko'eh*	*koko'eh*	*ko'eh, kohih*
run	**nukkwi**	**nunukkwi**	**nutaan**
sit	**katü"**	**yükwi**	**nuupaih, yuunaah, yingka**

stand	**wünü"**	**wüwünü**	**toppangih, tattsaho**
sleep (go to)	**üppüih**	**okko'ih**	**okko'ih**
talk	**nangkawih**	**ningwünü**	**nangkawih, ningwünü**
travel	**nuwi**	**yingka / ningka**	**yingka / ningka**
turn over/around	*-munuh*	*-munuh*	*-munuppeh*

Also in Central Numic, but interestingly lacking the dual number agreement seen in Gosiute and Tümpisa, is Comanche. Charney (1993) offers the following set of suppletive verbs, and she notes that this is "the only indication of an ergative pattern in Comanche" (p. 114):

(14) Suppletive Verbs in Comanche (Charney 1993: 114)

Gloss	**SG**	**PL**
carry	**yaa**	**himi**
drive something out	*taika*	*tahkɨa*
go in or out	**toʔi**	**kɨa**
go inside	**ika**	**weekwi**
hold	**yaa**	**himi**
kill	**pehkarʊ**	**wasʊpu**
lie down	*havi*	*kwavi*
remove	*kweʔya*	*kweyuʔi*
say/tell	**yɨkwi**	**nikwi**
sleep	*ɨhpɨi*	*ɨhkoi*
talk	**tekwa**	**niwɨnɨ**

The Numic subfamily has a relatively robust system of suppletion compared to some other UA subfamilies, and the verbs included in table 11-14 do fit into Veselinova's and Booker's number suppletion hierarchies (figures 1 and 2, respectively). All of the Numic languages surveyed have verbs in at least the first 3 categories of Veselinova's implicational hierarchy and the first two categories, i.e. the applicable ones, of Booker's list of generalizations.

5.2. Suppletion in Takic

The Takic subfamily is traditionally divided into Cupan (Cupeño, Cahuilla, and Luiseño) and Serrano-Gabrielino. Our survey includes two Cupan languages: Cupeño and Cahuilla.

J. Hill (2005) lists seven distinct verb roots showing suppletion for singular and dual agreement.[18] Some of these serve multiple semantic functions, which we include here as separate entries. For the purposes of our comparative analysis, therefore, we regard these as homophones. In Hill's orthography there are several digraphs: *sh* = (alveo-)palatal fricative; *ch* = (alveo-) palatal affricate; and *ng* = velar nasal.

(15) Suppletive Verbs in Cupeño (J. Hill 2005:114)

Gloss	SG	PL
be in a place	**hiw**	**qa**
be sick	**qaaw**	**chix**
be there (like voilà)	**qa**	**we**
die	**qaaw**	**chix**
dwell	**hiw**	**qa**
fall	**xalew**	**yevev**
go in	**chulup**	**sulul**
go out	**pulich/-pulish**	**muyaq**
kill	**meq(a(n))**	**chix-nin**
push in	**chulup**	**sulul**
run	**ya'**	**ngen**
sit	**hiw**	**qa**

For Mountain Cahuilla, Sauvel & Munro (1981) include a variety of forms showing suppletion for singular and plural agreement. These are included in (16); *ch* = (alveo-) palatal affricate.

(16) Suppletive Verbs in Mountain Cahuilla (Sauvel & Munro 1981)

Gloss	SG	PL
be located	**qál (sg. nonliving/sg. with live subj.)**	**wén (pl. nonliving subj.)**
be sick	**múk**	**chéx**

[18] There is an eighth suppletive root, *neq(e(n))* 'come', which has a suppletive future form, *menmax*.

die	**múk**	**chéx**
kill	**mekan**	**chexin**
lie down	**qál**	**wén**
put	**táv**	**wén**
shoot	**múh**	**múmaan**
take	**kús**	**hívin**

Takic, like Numic, fits perfectly into Veselinova's and Booker's hierarchies with all languages in this subfamily satisfying the first 3 categories of Veselinova's implicational hierarchy, but not the "other" category, and the first two (which are the only applicable ones) of Booker's list of generalizations.

5.3. Suppletion in Hopi

For the examples of suppletive verbs in Hopi, please see (3) and (4) above. Hopi satisfies both Veselinova's and Booker's generalizations, with Veselinova's intransitive motion and position verbs being satisfied by 'arrive' and 'stand' (along with several others), both 'die' and 'kill' satisfying the die/injure category, 'enter' and 'sleep' satisfying the transitive motion and stative verbs category. Hill and Black (1998) do not present clear verbs in the "other" category, but Veselinova (2006) does note Hopi *–toni* 'go around something out of sight SG' vs. *–kya* 'go around something out of sight PL'. The only two aspects of Booker's generalizations that really apply to Hopi are that there are no transitives without intransitives and no non-locatives without locatives, both of which are satisfied.

5.4. Suppletion in Tübatulabal

In our survey we were able to find suppletive verbs forms for KILL and DIE in Tübatulabal (K. Hill 2011b). The evidence for other suppletive verbs is too scanty in the record

to add much of value to discussing Veselinova's and Booker's generalizations, so we will not draw any conclusions along those lines here, nor do we find many other examples of suppletion that would be of comparative value. This is not to say that this language did not have suppletion, just that we don't find much evidence for it in the major sources on the language (e.g. Voegelin 1935, 1958).

5.5. Suppletion in Tepiman

Our representative languages from the Tepiman sub-group are Northern Tepehuan and Nevome. Bascom (1982) gives many examples of suppletive verbs for Northern Tepehuan:

(17) Suppletive Verbs in Northern Tepehuan (Bascom 1982: 352-3)

Gloss	SG	PL
die	**múúkui**	**kóóyi**
lie down	**kaáti**	**vííti**
stand up	**kiíka**	**gúúka**
come	**dʸívia**	**dáda**
run	**mírai**	**vóópoi**
walk around	**aimírai**	**aihópai/ahíópai**
fall	**gíísii**	**suulígii**
pass by	**dáívusai**	**digávusai**
be seated	*dáha*	*daráha*
sit	*dáíva*	*daráíva*
get up	**vañígii**	**vaapáígii**
go up	**tisádai**	**tiitíídʸai**

kill	**múááyi**	**kóódai**
grasp	**bíhii**	**vúúkai**
bring	**bíídʸai**	**vúídʸai**
carry	**bíkaitʸai**	**vúúkaitʸai**
bet	**tikídʸai**	**totóídʸai**
visit	**divídʸai**	**dadʸídʸai**

Our records for Nevome, which is an older variety of Pima Bajo known from colonial documents, are relatively limited as far as information on suppletion goes. Shaul (1986) does list

a few forms which are clearly suppletive, which we repeat here in (18). In this Spanish-based orthography *c* = IPA *k*.

(18) Suppletive Verbs in Nevome (Shaul 1986)

Gloss	**SG**	**PL**
arrive	**divia**	**dada**
kill	**muha**	**cohada**
die	**mucu**	**coho**
go	*himu*	*hihimu*

Tepiman, here represented by Northern Tepehuan, fits in with Veselinova and Booker's hierarchies. Both 'fall' and 'sit' satisfy Veselinova's first category, 'die' and 'kill' satisfy her second category, and 'bring' satisfies her third category; Northern Tepehuan even has the verb 'bet', which we would place in Veselinova's "other" category.

5.6. Suppletion in Taracahitan

We follow the traditional Uto-Aztecanist classification of Tarahumara-Guarijío with "Cahitan" (Yaqui and Mayo) into a grouping of Taracahitan, although Dakin (2001) and J. Hill (2011) call this clade into question because of a lack of shared phonological innovations. We have robust data on both Yaqui and Guarijío. For the Yaqui data, see the examples in (1) above.

Miller (1996a: 145-6) provides a list of verbs showing suppletion for singular and plural agreement in the Mountain dialect of Guarijío; in Miller's orthography *c* = a palatal affricate.

(19) Suppletive Verbs in Guarijío (Miller 1996a: 145-6)

Spanish Gloss	**English Gloss**	**SG**	**PL**
estar sentado	**be sitting**	**kahtí/yasa-/yasi-**	**moci-**
poner sentado	**put sitting**	**yahcá-/yahca-**	**mociwá-**
estar parado	**be standing**	**werí/weri-**	**aha-**
poner parado	**put standing**	**welá-/wela-**	**ahawá**
estar acostado	**be lying down**	**poʔí/poʔi-**	**peʔtí/peʔti-**

poner acostado	**put lying down**	**teká-/tegi-**	**toʔá-/toʔa**
estar colgado, agachado, en cuatro patas	*be hanging, be ducking, be on all fours*	*cuhkú/cuhki-*	*cucu-*
morirse, acabarse	**die, finish**	**mugu-/mugi-**	**wahíba-**
matarlo	**kill**	**meʔá-/meʔri-**	**koʔyá-/koʔi-**
entrar	**bring in**	**pahki-**	**moʔi-**
meterlo, encerrarlo	**put, place, enclose**	**pahcá-/pahca-**	**moʔá-/moʔa**
salir	**leave**	**maʔcihéna**	**puyá-**
caer	**fall**	**wihci-**	**luhí-**
irse	*go*	*simi-/si-*	*simpá-/sim-*
pasar por un portal	**go through a portal**	**uʔmá-ro-**	**si-ró-**
pasar por	**go through**	**aš-tó-**	**nogi-sí**
se fue	**go (past)**	**ahkipá**	**muipá, uʔ(u)mpá**

Taracahitan, here represented by Yaqui and Guarijío, satisfies Booker's generalizations and Veselinova's hierarchies. Veselinova's first category is satisfied by Yaqui 'arrive' (and several others), her second category by both 'die' and 'kill', and her third category by 'enter' (and several others). For her 'other' category we note Guarijío 'go through a doorway', and we can also add Choguita Rarámuri (Tarahumara) *rikú* 'get drunk.sg.' and *téku/téki* 'get drunk.pl' (Caballero 2008). Only the first two of Booker's generalizations apply to Taracahitan suppletion, and both Yaqui and Guarijío satisfy both of them.

5.7. Suppletion in Corachol

Information on suppletion in Cora and Huichol is limited. We do have information for two different dialects of Huichol—Comrie (1982) reports some suppletive verb forms for Santa Clara Huichol (20), while Grimes (1964, 1981) provides some different forms for Central Huichol (21):

(20) Suppletive Verbs in Santa Clara Huichol (Comrie 1982)

Gloss	SG	PL
arrive	**-nua**	**-niuʔazɨ**
go	**-töa**	**-köö**
kill	**-mie**	**-qii**

(21) Suppletive Verbs in Central Huichol (Grimes 1964, 1981)

Gloss	SG	PL
go	**-míe**	**-húu**
die	**-mü**	**-cui**
kill	**-mie**	**-qii**

Even with this limited range of verbs, Veselinova's hierarchy is satisfied—'arrive' and 'go' are both intransitive motion verbs (the first category), and 'kill' and 'die' are die/injure verbs (the second category). Similarly for Booker's generalizations.

5.8. Suppletion in Aztecan

The Aztecan branch includes one of the earliest attested and most thoroughly documented Uto-Aztecan languages, Classical Nahuatl, which has the family's smallest suppletive verb inventory, at one verb which suppletes for singular and plural, 'go':

(22) Classical Nahuatl (Launey 2011: 44)

Gloss	SG	PL
go	**yauh** (= /*yaw*/)	**wi'** (=/*wiʔ*/)

Campbell (1985: 93-5) reports some other suppletive verbs for Pipil, but those involve tense suppletion and so fall out of the range of our survey. While the Aztecan subfamily has next to no suppletion, it still satisfies both Veselinova's implicational hierarchy and Booker's generalizations with 'go' being an intransitive motion verb and a locative verb

5.9. Evaluation of our survey

We summarize the results of our survey in (23), which indicates all of the unique English glosses which have suppletive verbs in at least one Uto-Aztecan language, along with an indication of which language has such verbs. We suggest different degrees of likelihood for reconstructability to PUA—with darker gray indicating a relatively high degree of certitude, based on a specific gloss appearing in four or more subfamilies, and a lighter gray indicating a medium amount of confidence for likelihood, based on the appearance of a gloss in three sub-families.

(23) Summary Table of Glosses with Suppletive Verbs in Uto-Aztecan

	Numic				*Takic*		*Hopi*	*Tepiman*		*Tara-cahitan*		*Cora-chol*	*Azt-ecan*
	NP	GSh	TSh	Cm	Cu	Ca	Hp	NT	Nv	Yq	Wr	Hu	CN
arrive							✓		✓	✓		✓	
be sitting											✓		
be standing											✓		
be dancing							✓						
be eating							✓						
be located						✓							
be sick					✓	✓							
be in a place					✓								
be there					✓								
bet								✓					
bring								✓					
bring along							✓						
bring in							✓			✓	✓		
bring to			✓										
carry (in the hands)			✓	✓				✓					
come								✓					
cry		✓											
cut flexible things		✓											
die	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
dwell					✓		✓			✓			
enclose											✓		
enter	✓	✓	✓				✓			✓			

fall					✓		✓	✓		✓	✓		
fall over		✓											
finish											✓		
fly			✓										
get up		✓						✓					
give	✓												
go												✓	✓
go down/descend			✓				✓						
go in			✓	✓	✓								
go inside				✓									
go out			✓	✓	✓		✓						
go up			✓					✓		✓			
go through											✓		
go through a doorway											✓		
grasp								✓					
hold				✓									
kill	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
leave										✓	✓		
lie/lie down	✓	✓	✓			✓		✓		✓	✓		
lie (s.t.) down											✓		
open	✓												
pass by								✓					
push		✓											
push in					✓								
put/place	✓		✓			✓	✓			✓	✓		
put into							✓						
put on top							✓						
put sitting											✓		
run		✓	✓		✓		✓	✓		✓			
say/tell				✓									
shoot						✓							
sit	✓	✓	✓		✓		✓			✓			
sleep		✓	✓				✓						
stand	✓	✓	✓										
stand up								✓		✓			
stand (s.t.) up										✓	✓		
take						✓							
talk	✓	✓	✓	✓									
throw		✓											
travel	✓		✓										
visit								✓					
walk										✓			

walk around							✓	✓		✓			

Other interesting things to note include the fact that there may be more possible reconstructions for suppletive verbs in PUA beyond DIE and KILL and those glosses marked in dark gray above, given likely semantic shifts involving words spread across multiple glosses here. For example, we have independent entries for 'bring', 'bring along', 'bring in', 'bring to', 'carry (in the hands)', etc., making something the lines of BRING a likely suppletive PUA gloss. Similar remarks obtain for 'stand', 'stand up', 'stand something up' (so, PUA probably had a suppletive verb meaning something like STAND), as well as different meanings attached to the notion GO. Further, our deepest comparison set is the Numic sub-family, for which the gloss for 'talk' is ubiquitous, and as far as we can tell, unique to this sub-family. We can't say for sure at this point whether that form is a shared innovation or shared retention for Numic. Similarly, the distribution of the other glosses do not paint a clear picture one way or another for other sub-groups, since in many cases we have only one example word showing suppletion.

What we do think is clear from this survey is that suppletion would have been very robust in PUA, as it is in most of the daughter languages. Unraveling the prehistoric semantic shifts, processes of incursion, and other historical linguistic changes between PUA and the daughter languages would be a very difficult task indeed. To give one example of the difficulties involved, we considered comparing the forms relevant to one gloss in particular, namely 'carry', for which Stubbs (2011) lists over 40 cognate sets of potential relevance, cf. (26):

(24) Possible Uto-Aztecan cognate sets from Stubbs (2011: 108-12) for CARRY, FETCH, BRING, TAKE, GRAB, HOLD, GRASP, SQUEEZE

382 *pa-'iwï / pa-hiwï	396b *kus	405 *noC
383 *kwaLma	396c *kwisa > *kwiha (noun)	406 *ma(ma)
384 *koma	396d *kusa (noun)	407 *kucupu

385 *kopa/ kwapa
386 *yawi / ya'wi / yaŋwi
387 * yaw-nïma(k)
388 *hitapa
389 *himaC
390 *pina
391 *pana
392 *u'... / uNwa
393 *tu'u
394 *tuku
395 *tu / to (maybe toha)
396a *kwïsïC (AMR) / kwïsa/i
397 *po'i
398 *pu'a
399 *wayaka > *wkia / wiki
400a *cakwa / cakwi
400b *ca'wi
400c *ca'pi
401a *ca'ay
401b *ca''- / caC- / co'
402 *cakka
403a *nu'u
403b *nuŋu
404 *nuk
408 *nawa
409a *ma(N)-cuka
409b *(man)-cu'u/su'u
410 *yawipina
411 *pak
412 *taCci
413 *wï
414 *yu'a
415 *ŋï'a / ŋï'i / ŋïha/i

We hope that this survey has shed some light on the crucial issues involved in reconstruction of suppletion in the Uto-Aztecan languages, and that it may inspire some future effort(s) towards untangling some of these knotty etymological puzzles.

6. Evidence for broader areal connections from the UA suppletion facts?

Shared patterns of irregular morphology, including those involving weak or strong suppletion, are ideal places for the historical linguist to establish language relationships, both genetic (e.g. through demonstrating shared inheritance of prior innovations) and contact-induced (e.g. through demonstrating the borrowing of irregular patterns). While the UA suppletion evidence surveyed above showed little support, pro or con, for various UA-internal sub-groupings, we can further examine the question of whether these patterns may show any influence for contact-induced change between UA and other language families. Given UA's wide distributional range, there are many places to look, and the one location where it appears that there may be some areal effects of suppletion is in a potential language macro-area which

Everdell (2013) calls the "Greater Southwest". This potential language area includes Northwestern Mexico, Arizona, the Four Corners, the Pueblo region, the Great Basin, parts of California and possibly the Southern Plains. First, let us review what has been reported about the appearance of suppletion in other relevant Native American language families in general.

As discussed above, Booker (1982) remains the most thorough general study of suppletion patterns in North America—see section 2.1 for details. However, this work does not provide convincing evidence for contact-induced change involving Uto-Aztecan languages and suppletion. More recent thorough surveys of other aspects of indigenous North American languages also do not add significant new information to Booker's findings. In her survey of all of the native languages north of Mexico, Mithun (1999), for example, only cites data from Mikasuki (Muskogean) to illustrate the phenomenon of verbal number suppletion. Silver & Miller (1997) cite Shasta (northern California) and Shoshoni (Uto-Aztecan) as having nominal suppletion for number (i.e. singular vs. paucal for the former, and singular vs. dual or plural for the latter), as well as Karuk (an isolate) and Navajo (Athabaskan) for verbal number suppletion. In his recent thorough survey of California and adjacent languages, Golla (2011: 210) reports that suppletion applies to both nouns and verbs and is "for the most part confined to the Hokan languages, particularly Salinan, Yuman, and Seri", although this of course misses the Californian UA languages which also have it (such as Tübatulabal, as well as languages in Takic and Numic). Given the close proximity of these languages we might consider this a potential zone for areal contact involving suppletion.

Everdell (2013) suggests that there may be a "Greater Southwest" language area which includes the Pueblos, the southern Plains and also southern California and much of Northern

Mexico.[19] Everdell bases this conclusion on previous reviews of several adjoining geographical and culture areas. Sherzer (1976), for example, identifies verbal suppletion as a Puebloan areal trait, with examples found in Zuni (an isolate), Keresan, Tanoan, Apachean, and Uto-Aztecan (i.e. Hopi). Bereznak (1995) agrees, and suggests that suppletion "may be an areal trait connecting the Pueblos to the Great Basin" (p. 108), although since the Great Basin is composed of Numic languages as well as Washo this connection is probably due to the Great Basin Numic languages having the trait as an inherited feature. Other languages in this Greater Southwest region illustrating suppletion as a feature include Seri (an isolate) and Yuman. The Seri verbs of suppletion have similar functions as do the Uto-Aztecan ones reviewed above, although it is not clear that the actually attested word-forms have either been borrowed from or loaned to nearby Uto-Aztecan languages:

(25) Suppletive Verbs in Seri (Marlett 2011: 622 [118])

Intransitive	*Singular Subject*	*Plural Subject*
a. arrive	*√afp*	*√azcam*
b. arrive (in idioms)	*√ooit*	*√paailx/√eme*
c. be (flexible item)	*√iih*	*√oii*
d. enter:	*√azquim*	*√oizct*
e. lie:	*√oom*	*√ooitoj*
f. say:	*√ee*	*√ooza*
g. sit:	*√iij*	*√ahca/√ooxalca*
h. small:	*√isil*	*√ixt*
i. speak:	*√aaitom*	*√ooza*
j. stand:	*√ap*	*√oii/√ooyoj*

[19] Another possibility is that there is a "network" of distinct language areas which overlap in some places, e.g., the Pueblos, as is suggested by Bereznak (1995).

Transitive[20]

k. carry:	√*aazi*	√*oon*
l. give:	√*acozxot*	√*aconec*
m. go to:	√*yaai*	√*oziit*
n. release:	√*ácatx*	√*aalajc*
o. say, put FL:	√*ah*	√*aii*
p. use, touch:	√*Cactim*	√*Canloj*

Since it forms an intrusive "wedge" into the middle of the Uto-Aztecan range, the Yuman family is a particularly interesting location to find suppletion. Langdon (1988) is actually able to reconstruct five suppletive verbs back to Proto-Yuman:

(26) Proto-Yuman Suppletive Verbs (Langdon 1988: 489)

*wa	'to sit'
*yak	'to lie'
*p-a:	'to arrive'
*(i:)-a:	'to go'
*xap	'to enter'

These do not seem to be of a form similar to UA verbs with similar meanings, though, so we don't see conclusive evidence for prehistoric language contact here. Further, it may be particularly revealing that the actual use of these suppletive verbs is very much unlike what we see in UA, because most of the Yuman languages have a 3-way number system (non-plural, dual/paucal, multiple), and the suppletion shows up in the form of syncretisms across the dual/paucal forms and the multiple forms. For example, consider the examples from Cocopa:

(27) Cocopa (Yuman) suppletive verbs (Langdon 1988: 489)

	non-plural	*dual/paucal*	*multiple*
a. 'to sit'	wa	ya:w	wa:y
b. 'to stand'	p'a:	ya:w	wa:y
c. 'to lie'	yak	ya:w	wa:y

[20] Marlett's (2011) Seri grammar indicates suppletion for singular and plural subject agreement for both intransitive and transitive verbs, which is unlike the ergative pattern seen in Uto-Aztecan and most other languages (which have agreement for the *objects* of transitives). Steve Marlett (personal communication) confirms that this is indeed the case for Seri, while also noting that some such verbs (e.g., 'travel to (a location)') would be unlikely to take plural objects in any case.

d. ‘to be located’ ya: ya:w wa:y

This pattern does not look at all like what occurs in UA verbal suppletion. So, although the wide distribution of suppletion in languages of the Greater Southwest is tantalizing, it is at this point merely suggestive of possible areal diffusion.

Regarding prior surveys of languages at the southern-most end of the Uto-Aztecan range, it is worth noting that Suárez’s (1983) overview of Mesoamerican languages identifies suppletion as a robust phenomenon in only some languages of Uto-Aztecan (including Cora, Huichol, and Guarijío) as well as of Oto-Manguean (including Tlapanec and Chinantec). We find it safe to conclude that this limited distribution makes it clear that suppletion is not a robust areal feature in Mesoamerica, which otherwise does contain evidence for cross-familial diffusion of linguistic features in other areas of the grammars of these languages (cf. Campbell, Kaufman, and Smith-Starke 1986).[21]

In sum, although some studies demonstrate that patterns of suppletion can seem to show areal effects (e.g. the adjectival suppletion patterns described by Bobaljik 2012),[22] and even though many languages of the Greater Southwest seem to have verbal number suppletion, the evidence for specific suppletive loanwords flowing in one direction or another is quite slim. Suppletion may be an areal trait of the Greater Southwest, but this feature is not otherwise unknown in North America (cf. Booker 1982) so we cannot say for sure at this point that it has diffused through areal contact.

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[21] It is worthwhile to note that previous surveys of other irregular morphological patterns in UA, e.g., multiple patterns of reduplication, seem to also not find analogues in Mesoamerica (cf. Haugen 2005). Given recent proposals to link the Proto-Uto-Aztecan homeland to Mesoamerica, e.g., by J. Hill (2001), this lack of morphological evidence could suggest either that Mesoamerica as a linguistic area arose as such only after the break-up of PUA, or that UA languages in the area, such as Nahuatl, arrived late.

[22]

7. Conclusion

In this paper we have proposed some specific reconstructions for PUA DIE and KILL, which would explain the distribution of many (but by no means all) of the attested suppletive forms in these languages. Difficulties arise, however, in the search for cognates for the other suppletive verbs. Based on the relatively wide distribution of some glosses across the family, we do find good reason to think they were probably suppletive in PUA. These include the following:

(28) Possible PUA Glosses for Suppletive Verbs – High Likelihood (4+ sub-groups)
- a. ARRIVE
- b. BRING/CARRY
- c. DIE
- d. FALL
- e. GO
- f. KILL
- g. LIE/LIE DOWN
- h. PUT/PLACE
- i. RUN
- j. SIT
- k. STAND/STAND UP/STAND SOMETHING UP

(29) Possible PUA Glosses for Suppletive Verbs – Medium Likelihood (3 sub-groups)
- a. DWELL
- b. ENTER
- c. GO OUT
- d. GO UP
- e. WALK AROUND

For reasons discussed above, excepting DIE and KILL, we find it very difficult to posit specific reconstructed forms for these glosses. One confounding factor may be the loss of suppletive verb forms in some UA languages with the concomitant development of new suppletive forms in other languages. In general we suggest that the best approach to the diachrony here is to suppose reconstruction to PUA for semantic forms which appear in several sub-branches of the family, whether the verb forms are cognate or not. We view this approach as a simple application of Occam's Razor. If this is the correct approach, then PUA would have had

a relatively robust system of suppletion, along the lines of what has been retained in Takic, Taracahitan, and Tepiman. Numic may have expanded its system of suppletion somewhat, while Aztecan practically eliminated all traces of it.

Further, we have also concluded that there remains a possibility that verbal number suppletion has spread via cultural contact (i.e. it may be an areal phenomenon), although specific evidence for this in the form of clear loans of particular suppletive morphs is lacking. This is also the case for the adjectival suppletion patterns identified by Bobaljik (2012: 17) as a potential areal feature of a "Greater European Sprachbund". Interestingly, if patterns of strong suppletion really can show areal effects then they do so despite forceful claims to the contrary, like Dixon's (1997) inclusion of suppletion as one of three "grammatical phenomena that are very unlikely to be borrowed, under any circumstances", and as such "as a consequence [being among] the surest indicators of genetic relationship" (p.22). Langdon (1988) also expresses skepticism regarding contact-induced transmission of suppletion patterns, without actually dismissing this as a possibility: "It seems to me that suppletion per se is not necessarily a prime candidate for diffusion, though of course stranger things have happened" (p.492). Further study into the spread of suppletion via language contact, and the mechanisms behind such spread, is clearly warranted.

As one final concluding point, we reiterate that many of the suppletive verbs found in UA look very 'lexical' (i.e. root-like, rather than 'functional') to us. Therefore, we think that many UA languages exhibit robust root suppletion, just like PUA would have also had.

LANGUAGE ABBREVIATIONS AND DATA SOURCES

Northern Paiute	NP	Thornes (2003:316)
Gosiute Shoshoni	GSh	Miller (1996b:718-20)
Tümpisa Shoshone	TSh	Dayley (1989)
Comanche	Cm	Charney (1993:114) and Robinson & Armagost (1990)
Chemehuevi	Ch	Press (1979)
Ute	Ut	Givón (1979) and Givón (2011:55)
Southern Paiute	SP	Langacker (1977:127) and Stubbs (2011)
Cupeño	Cp	J. Hill (2005:114)
Cahuilla	Ca	Seiler & Hioki (1979) and Sauvel & Munro (1981)
Luiseño	Ls	Langacker (1977) and Stubbs (2011)
Serrano	Sr	K. Hill (2011a)
Tübatulabal	Tb	K. Hill (2011b)
Hopi	Hp	Hill & Black (1998) and Veselinova (2006)
Tohono O'odham	TO	Saxton, Saxton, and Enos (1983)
Northern Tepehuan	NT	Bascom (1982:352-3)
Nevome	Nv	Shaul (1986:17)
Yaqui	Yq	Harley (2011)
Tarahumara	Tr	Hilton (1959), Langacker (1977), and Caballero (2008)
Guarijío	Wr	Miller (1996a:145)
Ópata	Op	Shaul (2010:260)
Huichol	Wc	Grimes (1964, 1981) and Comrie (1982)
Classical Nahuatl	CN	Launey (2011:44)
Pipil	Pl	Campbell (1985:93-5)

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