Language Documentation in the Age of Smartphones

EUGENE BUCKLEY
UNIVERSITY OF PENNSYLVANIA

Native American Studies at Penn: Indigenous Knowledge in the Academy

7–8 November 2014
Indigenous languages in the US
# UNESCO endangerment criteria

<table>
<thead>
<tr>
<th>Degree of endangerment</th>
<th>Intergenerational Language Transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>safe</td>
<td>language is spoken by all generations; intergenerational transmission is uninterrupted</td>
</tr>
<tr>
<td></td>
<td>&gt;&gt; <em>not included in the Atlas</em></td>
</tr>
<tr>
<td>vulnerable</td>
<td>most children speak the language, but it may be restricted to certain domains (e.g., home)</td>
</tr>
<tr>
<td>definitely endangered</td>
<td>children no longer learn the language as mother tongue in the home</td>
</tr>
<tr>
<td>severely endangered</td>
<td>language is spoken by grandparents and older generations; while the parent generation may understand it, they do not speak it to children or among themselves</td>
</tr>
<tr>
<td>critically endangered</td>
<td>the youngest speakers are grandparents and older, and they speak the language partially and infrequently</td>
</tr>
<tr>
<td>extinct</td>
<td>there are no speakers left</td>
</tr>
<tr>
<td></td>
<td>&gt;&gt; <em>included in the Atlas if presumably extinct since the 1950s</em></td>
</tr>
</tbody>
</table>
Languages in the Southwestern US

- NE Pomo
- SE Pomo
- Kashaya
- Havasupai
- Hualapai
- Yavapai
- Navajo
Documentation

• compiling information about a language
  – written transcription
  – audio recordings
  – video recordings
• for academic interest
  – to understand languages in general
  – their structure and how they work
  – how they’re historically related to one another
• in the community interest
  – to sustain and revitalize endangered languages
  – to revive languages with no native speakers
• these goals sometimes overlap
  – but often lead in quite different directions
Language families of California

INDIGENOUS LANGUAGE FAMILIES

**Algic**
- Wiyot
- Yurok

**Athabaskan**
- Bear River–Mattole
- Chetco–Tolowa
- Eel River
- Hupa
- Kato

**Chumashan**
- Barbareño
- Ineseño
- Interior Chumash
- Island Chumash
- Obispeño
- Purisimeño
- Ventureño

**Hokan**
- Chimariko
- Esselen
- Karuk
- Palaialihan languages
- Pomoan languages
- Salinan
- Shastan languages
- Washo
- Yana
- Yuman languages

**Penutian**
- Klamath–Modoc
- Maidu languages
- Miwokan languages
- Ohlone languages
- Wintuan languages
- Yokutsan languages

**Uto-Aztecan**
- Numic languages
- Takic languages
- Tibaticalbal

**Yuki–Wappo**
- Coast Yukian
- Northern Yukian
- Wappo
s’uʔnuʔnu šínal : Huckleberry Heights
Consulting with speakers

Essie Parrish & Robert Oswalt

at Stewart’s Point Rancheria

(s’uʔnuʔnu šínal, Huckleberry Heights)

1960
Words and sentences

• Kashaya “bear” by itself
  (provided by Essie Parrish)
  – [what is the word for] “bear”
  – buṭaqá ; buṭaqá

• Kashaya “bear” in a narrative
  (told by Herman James)
  – mulídom pʰiʔt’an duwéʔli buṭaqáʔem ma·dúʔ.
  – “Suddenly, in the evening, the bear arrived home.”

Taking notes (1957)

- any bean
- black bean
- horse
- dog
- deer
- panther
- mt. lion
- wild cat
- cat
- chicken

In the box:
- ki li - black
- kaw a yi - sp. calallo
- za ca biše - deer meat
- si me wa - wild cat
- ku sha - cat
Organizing information

bùtāqa
gha butāqa sealion cf
butāqa birk'as an ant cf
butāqa kili black bear
gahle polar bear “white bear”
muna butāqa brown bear 6/67

animal
Use of information

• technical papers about language structure
  – typically necessary for academic progress
  – but not useful to communities

• grammars written for specialists
  – may contain many useful examples of the language
  – but mainly accessible only to specialists
  – sketches of the grammar can be written with more familiar terms

• dictionaries are an essential resource
  – but like grammars they may be very technical
  – most community members prefer simpler wordlists
  – audio recordings make pronunciation much clearer
A xeroxed wordlist (1975)

baby | naṭa qáwi, ná’na
back (of body) | bačo-
bad | pišudu
bag, sack | mišukh
ball | phiʔko
bank, cliff | ʔamahchili
bank (undercut) | seʔpétmo
bar, rod (of metal) | wá’ra
bare, nude | qahqo
bare, without | laʔká
bark (of tree) | qahwa’
barrel | warí’i
barren, sterile | haʔdas

bat (animal) | qahca ʔínaʔna
beads |
of clamshell | kuhnu
of magnesite | na’muli
seed beads | walehólyo
beans | yihó’l
bear (animal) | butaqa
brown bear | mima
human bear | kʰuy
beard | hasíme
beautiful | čiškan
bed, floor | cahti
bee, bumble- | cehhey
small species | holóm?lo
Draft of a dictionary

- hcha- ñl V. fall over, push over; of stationary, vertical long object, usually inanimate. Pl.Act -hcha-Xt- : -chat-. Cf. ²c'eɔl-, -dahchi-, -da?di-.

²+ ba-+ ca-+ da-+ ha-+ ma-+ pha-+ qa-+ $a-+
bi-+ chi-+ di-+ hi-+ mi-+ phi-+ si-+
cu-+ du-+ mu-+ phu-+ $u-+
Examples with all prefixes are in KG 410-411.21.

²-hcha-w /chaw/ to fall over (from no apparent cause).
/sima' hchaw/ to fall asleep. Calque based on English.
²-hcha-m-? /cham?/ to fall onto something; (walls) to fall in.!!
/bahchaw/ to knock over with the mouth, snout, or beak (as a pig might do).
/bihchaw/ to put both arms around and throw over (as in wrestling).
/dahchaw/ to push over with the hands or paws.
/bu7taqaΩ1 yaΩ2 ?ahcaΩ3 da'hchawΩ4./ A bearΩ1 pushedΩ4 the houseΩ3 downΩ4.

[Ps ?ahcha-, Pcy cha'ù-]
Practical problems

• even if we include cross references for all the possible forms, this becomes cumbersome in a printed volume
  – simply takes up too much space on paper

• also frustrating to find the root and then have to flip to the main entry many pages away
  – or vice versa, if organized by roots

• much easier to search *electronically* for a particular form and click to be taken directly to the relevant entry
  – similarly, click between various related entries
A computer database
A new wordlist (2014)

bare-legged  
adj. puhtí
bark  
n. qahwa·
bark house  
n. hca s’i?da hca
barked, peeled off  
n. hca s’i?da
barn  
n. kawa·yúhca
barn, cow  
n. wá·kahca
barnacle  
n. qʰac’o·
barrel  
n. wari·l
barren, sterile  
adj. ha?dás
bartender  
n. tawané·ru
baseball  
n. pʰiʔk’opʰík’oʔ tʰahqaw
basement  
n. ?ama· yó· ?ahca

bean, lima  
n. yihó·l bahtʰe
bean, string  
n. yihó·l s’amo?
beans  
n. yihó·l
bear  
n. buṭaqá
bear, human  
n. ?aca? buṭaqá
beard  
n. hasimé
beater, seed  
n. yuhu šám?
beautiful  
adj. c’iškan
because  
conj. ?éʔ
bed  
n. cahti
bed, hot  
n. honém?li
bedding  
n. šamátʰma?
bohóhso  n. Sour clover, bull clover.
bóť’  adj. soft.
božóm?  n. 1 • purse, sewing bag, bundle, traditional 
         buckskin bag for valuables.
         2 • sack full of (songs): many, or enough, songs.
budu  n. toyon berry.
budu qʰále  n. toyon.
buhkʰu  adj. humped.
buhku  adj. rounded projection going up.
buhlu  adj. hunchbacked; stooped.
buhqʰál  n. burden basket, coarse-woven basket;
         container (in certain constructions).

buhqʰál s’a·ti  n. awl for making burden baskets.
buṭaqá  n. bear (general term, and grizzly).
buṭaqá biʔk’as  n. carpenter ant, black ant.
buṭaqá ch’ilinta  n. chickadee [?]
buṭaqá šošo qʰale  n. cow parsnip, thick coastal 
         variety.
buṭaqá ?ilum?  n. gooseberry.
bute·  adv. 1 • when.
         2 • any time, ever.
buṭ’u? šáhqo  n. locust.
buʔt’u  adj. hooked, turned down (of beak or nose).
A full web dictionary
**Special characters**

- a new problem is how to input special characters that are often needed
  - this didn’t happen in books, at least
- special keyboard, or letters to click for insertion
  - an issue for many national languages also
  - more challenging when the character is not found in common European languages, such as ț or Ų
- another option: search under basic letters, be shown a range of matching options
  - such as typing ta and getting all the Kashaya t options
  - interesting use of this concept in (printed) Zapotec
Valley Zapotec
Zapotec vowels

- four kinds of PHONATION
  - modal (plain) [a]
  - creaky [à]
  - post-glottalized [a’]
  - breathy [ah]

- four tones
  - high, low, rising, falling

- in total, 33 different possible combinations
  - on any particular vowel or diphthong

- this leads to very complex spellings
  - a’, aa, àa, a’aah, a’àa, aàa’, àa’a, etc.
  - but necessary if the exact pronunciation is to be shown
Simplified Zapotec spelling

A bgyahcdaàa'n gu'uh te'ihby bùunny nih ràa'p x:o'p zhìi'iny zhyàa'pih.

A bgyasdan gu teiby buny ni rap xop zhiny zhyapi.

“Once upon a time there was a man who had eight daughters.”
Simplified headwords

becw

bèè'cw  dog | *perro* § poss. x:yèè'cw; dim. bèè'cwè'eh  jl nlàa (bèè'cw-
bèè'cwta' nlà'ang), x:çwà:a'n bèè'cw

bel

bèè'e'l  meat: esp., beef | *carne:* esp., carne de res {x:peèè'la"my meat | mi carne"}  
Be'll  Abel | Abel [< Sp. Abel]  
bèè'e'l  naked | desnudo {P/C; no attr.; Naa'ca' bèè'e'l"I'm naked | Estoy desnudo"}  jl çye'r bèè'e'l, laihtyär bèè'e'l, mnì'iny bèè'e'l  
bèè'e'll  sister (of a woman) | hermana (de una mujer)  jl zhyèè'ts bèè'e'll  
bèè'e'll, bèè'e'lld  snake | serpiente, culebra, víbora {x:peèè'lla"my snake | mi serpiente"} § comb. bèè'e'll, bèè'e'lld; dim. bèè'e'le'eh  
behll, behll'd  fish | *pez, pescado* {x:pella"my fish | mi pescado"}  jl rcah zu'aht behll
Autocorrection

• Google can correct our spelling

• and suggest what we can’t remember
Autocorrection in Spanish

• it can supply special characters

![Google search results for autocorrection in Spanish](image1)

• or correct typos

![Google search results for autocorrection in Spanish](image2)
Autocorrection in Kashaya?

• it could suggest similar words

![Google search results]

• no word begins exactly with *mayu*, but there are some fairly close (“fuzzy”) matches
  – *ma-yu*       ‘dove’
  – *maya*        ‘you’
  – *mahyuṭʰmaw*  ‘poke or stir (a fire)’
  – *maʔyuʔyuw*  ‘walk painfully (on gravel)’
Match for Navajo dloo

- prairie dog
  (Noun) (noun) burrowing rodent
  (Cynomys) A small, stout-bodied burrowing wild rodent with shallow cheek pouches, native to North America and Central America.

Other meanings:
- prairie dog

Similar phrases in dictionary Navajo English. (82)
- dół’
- aadég’e
- adąątsą́ąγ’é
- ak’ő’’
- alohinidą́ąγ’é
- aego
**Smartphone dictionaries**

**deer**

*n.*

**Description**
: A wild animal with brown fur

**Example:**
Haigo bijh bitsj’ ayóó ́ikan. During the winter, deer meat tastes so good.

**Synonym**
good, bijh

---

**shaanílé**

*v.*

**Description**
: To ask for an object with the characteristic of being a slender and/or stretchable cord and being able to be carried

**Example:**
T’ilóól shaanílé. Hand me the rope.
Béésh’ahédílí shaanílé. Hand me the scissors.
Shíkée’ shaanílé.
Smartphone learning tools
Specialized keyboards
Conclusion

• digital technology creates new challenges for academics
  – it’s no longer enough to produce traditional printed materials
  – we have to learn how to use these technologies

• but it also creates new opportunities
  – modern dictionaries are created with computers anyway
  – we just need to take that information and create resources for the age of smartphones
Yahwiy!