

GRAMMATICAL SKETCH OF THE
TOHONO O'ODHAM LANGUAGE

by

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List of Abbreviations

1	first person	Q	question marker
2	second person	QUOT	quotative
3	third person	REFL	reflexive
ABSTR	abstract	REM	remote
AUX	auxiliary	SG	singular
C	consonant	SPEC	specifier
CONJ	conjunction	STAT	stative verb
COP	copula	SUBR	subordinate marker
DEF	definitive		
DEM	demonstrative		
DER	derivation		
DESID	desiderative		
DET	determiner		
FUT	future		
IPFV	imperfective		
LOC	locative		
MDL	modal		
PFV	perfective		
PL	plural		
POS	positive		
POSS	possessive		
PRON	pronoun		

Abstract

This work serves as a grammatical sketch of the Tohono O’odham language, a Uto-Aztecan language belonging to the people native to southern Arizona and north-west Mexico. This thesis is not a comprehensive grammar of the O’odham language, but rather focuses on specific linguistic elements of phonetics, phonology, morphology and syntax. This thesis includes: [1] a phonemic inventory of O’odham phonemes and a brief explanation of how these phonemes interact in various positions, [2] a general understanding of the important roles pronouns and auxiliaries serve such as aspect, number, and person, [3] the derivational properties of nouns and verbs, and how noun and verb phrases are modified—similar to the roles of adjectives and adverbs, [4] a review of basic principles of sentence structure, and [5] a glossed text that demonstrates many of the features discussed herein. Glossed examples are included where useful and an entire glossed text is provided in the appendix. For further studies, there are additional O’odham language resources and materials available including multiple dictionaries, a pedagogical grammar, and numerous scholarly articles. The progression and availability of some of these resources is discussed in chapter 1. Unless otherwise stated, the data and vocabulary in the examples are provided by Zepeda (1983).

Introduction

The name O'odham is a self-identifying term often used to refer to the O'odham community and language of the O'odham people (Fitzgerald, 2005:1). Tohono O'odham is a member of the Tepiman sub-family within the Uto-Aztecan language family (Figure 1). It belongs to the Native people of southern Arizona and north-west Mexico. Historically, the Uto-Aztecan language family was one language. Saxton et al. (1983:128) explain, "... as the centuries passed, general mobility resulted in scattered groups which progressively brought about division in language groups..." According to Asher & Christopher (2007:9) in *The Atlas of the World's Languages* there are eight sub-families in the Uto-Aztecan family, and Tohono O'odham is a dialect of the O'odham language within the Tepiman subfamily (Figure 1). However, Saxton et al. (1983:117, 128) refers to Tohono O'odham (previously known as Papago) as a language with 5 dialects (Figure 2). For the purposes of this thesis, Tohono O'odham is referred to as a language.

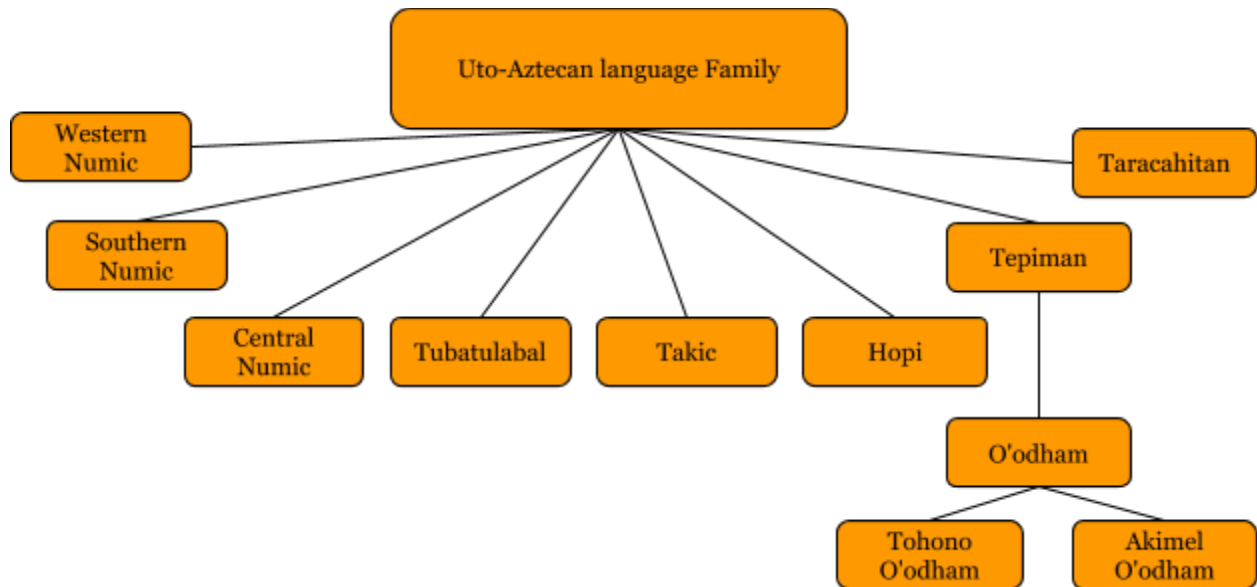


Figure 1. Tohono O'odham as a dialect (Asher & Christopher, 2007:9)

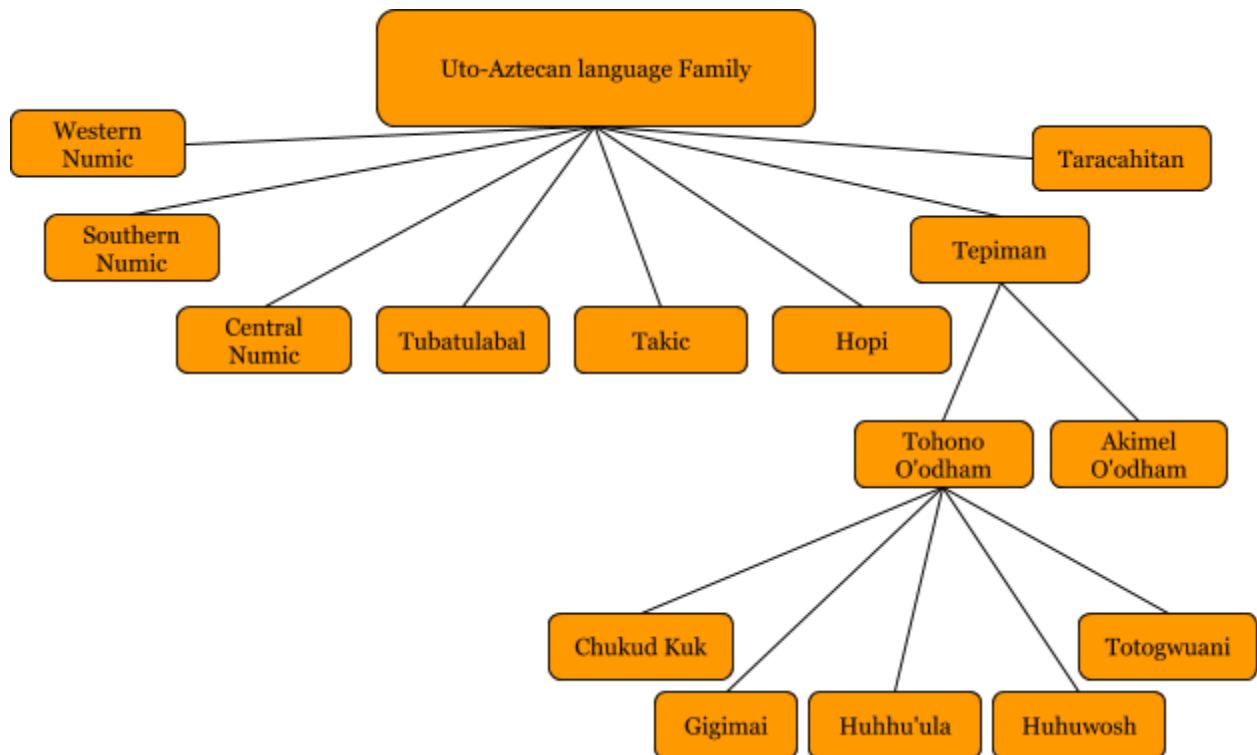


Figure 2. Tohono O'odham as a language (Asher & Christopher, 2007:9; Saxton et al., 1983:117)

Most Tohono O'odham speakers in the United States live within the Tohono O'odham reservation; there are additional speakers in the San Xavier Reservation, Gila Bend Reservation, 'Akī Ciñ Reservation, the surrounding towns of Phoenix and Tucson, and Mexico (Asher & Christopher, 2007:20; Zepeda, 1983:xii). The area in which Tohono O'odham was originally spoken is larger than the current Tohono O'odham Nation's boundaries (Figure 3).

1.1 Language Vitality

The O'odham language and people have been referred to by many names such as Pima-Papago, Upper Piman, Papago, Nebome, Nevome, and O'othham (Eberhard et al., 2019). After Spanish contact in the mid seventeenth centuries, the Spanish worked to alter the O'odham “social, economic, and political interest”. As a result, O'odham place names were replaced (Breeneman, 2014:8-10), and other Spanish terms were adopted into the O'odham

language. “Spanish has had the primary influence on writing preferences, since hundreds of Spanish words were adopted into Papago-Pima during three centuries of Spanish and Mexican rule” (Saxton et al., 1983: xi).

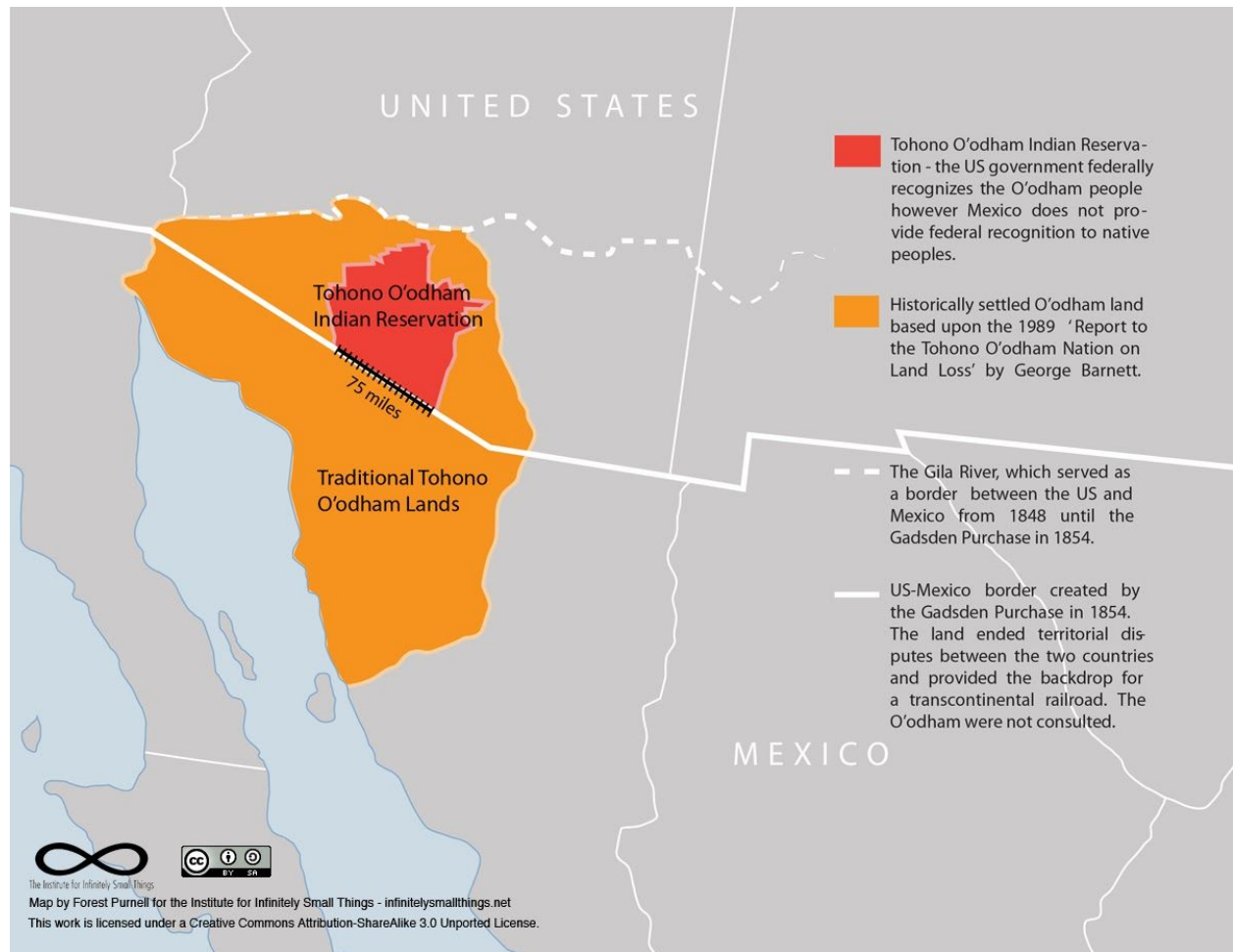


Figure 3. Historical O'odham land and reservation

Consequently, Spanish continues to be one of the main languages spoken on the reservation (Charts 1 and 2). “From the early 18th Century through to the present, the O'odham land was occupied by foreign governments. With the independence of the Republic of Mexico, O'odham fell under Mexican rule. Then, in 185[4], through the Gadsden Purchase or Treaty of

La Mesilla, O’odham land was divided almost in half, between the United States of America and Mexico” (Tohono O’odham Nation, 2016). The Tohono O'odham Nation was established in 1917 and consists of 11 districts including the Baboquivari District, Chukut Kuk District, Gu Achi District, Gu Vo District, Hickiwan District, Pisinemo District, San Lucy District, San Xavier District, Schuk Toak District, Sells District, Sif Oidak District (Tohono O'odham Nation, 2016).

In 2018, the U.S. Census Bureau estimated that there were 10,000 people living in the Tohono O'odham Nation. Youth are turning to English, and O'odham is being spoken less (see Charts 1 and 2).

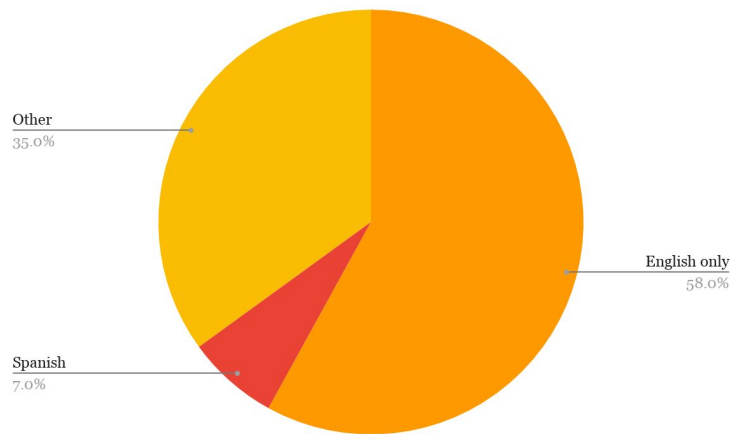


Chart 1. Language at home, adults 18+

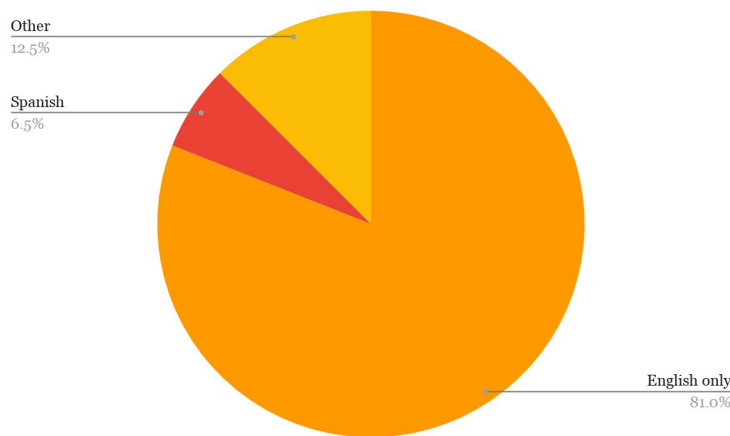


Chart 2. Language at home, children 5-17

1.2 Resources

Colleen Fitzgerald (2005) presented the documentation that had been done for the O'odham Language at the Conference on Endangered Languages and Cultures of Native America. In this presentation, Fitzgerald included a summary of documentation efforts, publications (table 1), and current museum and university holdings of language materials.

Table 1. Previous language documentation (Fitzgerald, 2005:2-3)

-
- “Mason (1950), Mathiot (1973) and Saxton (1982) each give grammatical sketches of the language, and Zepeda (1983) provides a pedagogical grammar. None approach the scale of contemporary descriptive grammars.
 - O'odham linguists from the community have also contributed significantly to this scholarship: Dolores (1913, 1923), Alvarez and Hale (1970), Hill and Zepeda (1992, 1994, 1998) and Zepeda (1984, 1987).
 - Two dictionaries exist, Mathiot (1973 – not in print) and Saxton et al. (1989).
 - The text collections represent only a limited set of genres, primarily traditional, conventionalized discourse such as ritual speeches, songs, and coyote tales and creation stories (Russell 1908 [1974], Densmore 1929, Chesky 1943, Saxton and Saxton 1973, Bahr 1975, 1980, 2001, Haefer 1977, 1980, 1981, Bahr et al. 1979, Underhill et al. 1979, and Underhill (1993).
 - One autobiography has been partially published in Tohono O'odham (Manuel and Neff 2001). (At least two other biographies have been published, but in O'odham).
 - Three annotated texts exist, Mason (1950), Saxton (1982), and Mathiot (1991).
 - The limited types of published genres mean that only two texts represent people telling stories about their lives in the O'odham language: Mathiot (1991) and Manuel and Neff (2001).”
-

Fitzgerald mentions that O'odham documentation lacks texts, recordings, and a contemporary grammar sketch. There is a need for more diverse documented text. Currently the documentation is based around “traditional, conventionalized discourse such as ritual speeches, songs, and coyote tales and creation stories” (Fitzgerald, 2005:2).

This thesis serves as a grammatical sketch of the Tohono O'odham language. It is not a comprehensive grammar of the O'odham language, but rather focuses on specific linguistic elements of phonology, phonetics, morphology and syntax. This thesis includes: [1] a phonemic

inventory of O'odham sounds and a brief explanation of how these sounds interact in various positions, [2] a general understanding of the important roles pronouns and auxiliaries serve such as tense, number, person, and person markers, [3] the derivational properties of nouns and verbs, and how noun and verb phrases are modified, similar to the roles of adjectives and adverbs, [4] a review of essential elements in sentence structure, and [5] a glossed text that demonstrates many of the principles discussed herein. I chose these topics to provide a brief overview of basic features of the O'odham language. Unless otherwise stated, the data and vocabulary in the examples used here are provided by Zepeda (1983).

Currently, there is one O'odham dictionary in print: *Tohono O'odham/Pima to English: English to Tohono O'odham/Pima* (Saxton et al., 1983). This dictionary is searchable from both English to O'odham and O'odham to English. It is not, however, in the Nation's official orthography (the Alvarez-Hale orthography). There are two dictionaries out of print: *Dictionary Papago/Pima-English, O'othham-Mil-gahn, English-Papago/Pima, Mil-gahn-O'othham* (Saxton & Saxton, 1969) and *A Dictionary of Papago Usage* (Mathiot, 1973). A revision of Mathiot's 1973 dictionary, *Tohono 'O'odham-English Dictionary*, is available in PDF format through the University at Buffalo. This revised version is in a writing system more similar to the Alvarez-Hale orthography. In addition, there are two dictionary manuscripts. One was begun by David Shaul which is now in possession of the Tohono O'odham Nation. Mathiot also holds a manuscript.

The variation of terms used to refer to the O'odham language and people has affected accessibility to documented material. Archives are now participating in better practices by referring to Native languages and people by their self-identified names, and cross-referencing information to make materials more accessible. Much of the documentation is held in universities and museums across the United States. The wide distribution of language materials

negatively affects accessibility since many people are unaware of available resources (Fitzgerald, 2005:2). The Tohono O’odham Cultural Museum, within the Tohono O’odham Nation, holds archives for long-term preservation (Tohono O’odham National, 2017) with the intention of repatriating items and collecting papers about the Tohono O’odham people (Fitzgerald, 2005:1).

The Heard Museum of Advancing American Indian Arts is currently processing *The Madeleine Mathiot Collection on Tohono O’odham Linguistics*. Madeleine Mathiot is a linguist who began her work with the O’odham language in the late 1950’s. Mathiot published *A Dictionary of Papago Usage* in the early 1970’s. A revised manuscript entitled *Tohono O’odham-English Dictionary*, is available through the University at Buffalo website: <https://www.acsu.buffalo.edu/~mathiotm/> Mathiot donated her notes from her research to the Heard Museum in Phoenix, Arizona.

O’odham language lessons are currently available at Tohono O’odham Community College, University of Arizona, Pima Community College, and Ha:şan Preparatory and Leadership School. With the exception of Ha:şan Preparatory and Leadership School, these language courses are intended for adults.

There is also a collaborative effort from TOCC (Tohono O’odham Community College), TON IT (Tohono O’odham Nation Information Technology), the Nation’s Education Department, and members of the UArizona department of linguistics to produce an online dictionary in O’odham. In December 2018, there was a language symposium for tribal leaders. The basis of the symposium was to bring attention to the vitality of the Tohono O’odham language and solicitate recommendations for revitalization efforts. As an outcome, TOCC is taking the lead with the creation of a Language Center.

Phonetics and Phonology

This chapter includes a description of [1] where and how O'odham consonants and vowels are produced; [2] a phonemic inventory of O'odham consonants and vowels; [3] a display of some of the suggested diphthongs; [4] a comparison of O'odham writing systems; [5] a description of acceptable consonant-vowel sequence; and [6] a brief overview of stress in words. The O'odham language has 25 phonemes: 20 consonants and 5 vowels. The O'odham alphabet is phonetic, meaning each letter represents a single phoneme. There are numerous phonemic outlines which include various writing systems. Some linguists contradict each other in their research of O'odham phonemes and representing characters. Because of this, supporting references for each of the phonemes are included in the phonemic inventory, and the writing systems are presented in comparative format. The approximate English equivalents of each phoneme are provided by Zepeda (1983) and Saxton et al. (1983) unless otherwise indicated.

2.1 O'odham Phonemes

Phonemes are represented by symbols in the International Phonetic Alphabet (IPA). tables 2 and 3 describe phonemes by where and how they are produced. Phonemes are displayed outside the tables in forward slashes (e.g. /b/).

Table 2. O'odham consonants

	bilabial	dental	alveolar	retroflex	palatal	velar	glottal
stop	p b		t	ɖ		k g	ʔ
nasal	m		n		ɲ	ŋ	
fricative		ð	s	ʂ			h
approximant					j		

Table 2 describes the place of articulation (horizontal axis) and manner of articulation (vertical axis) of O'odham consonants. Within the columns, consonants on the right are voiced and consonants on the left are unvoiced. The place and manner of articulation of the consonants /tʃ, dʒ, ɟ, w/ can not be accurately described within table 2. Therefore, the description of where and how /tʃ, dʒ, ɟ, w/ are produced can be found in the phonemic inventory in section 2.2.

Table 3. O'odham vowels

	front	central	back
high	i	ɨ	u
low		a	ɔ

There are 5 vowels in O'odham. In table 3, the vowels are described by height (vertical axis) and backness (horizontal axis). The vowels /ɔ, u / are rounded vowels. Vowels are labeled as rounded when they are pronounced with rounded lips. The vowels /ɨ, a, i/ are unrounded.

2.2 Phonemic Inventory

The phonemic inventory displays all 25 phonemes, consonants and vowels, in alphabetical order. There is some debate on which exact phonemes should be included in the O'odham phonemic inventory, thus supporting references for each of the phonemes are included in the phonemic inventory.

1. /a/ is a low back unrounded vowel similar to the 'o' in 'not' and 'a' in 'father' (Mason, 1950:6; Alvarez & Hale, 1970:296; Saxton et al., 1983:113; Zepeda, 1983:4).
2. /b/ is a voiced bilabial stop with its unvoiced counterpart being /p/. It is pronounced 'b' as in 'big' and 'ball'. In medial position /b/ is strongly glottalized and voiced (Mason, 1950:8;

Hale, 1965:296; Alvarez & Hale, 1970:94; Saxton et al., 1983:113; Zepeda 1983:4; Dolores & Mathiot, 1991:237).

3. /tʃ/ is a voiceless postalveolar affricate with its voiced counterpart being /dʒ/. It is pronounced 'ch' as in 'chip' and 'chicken'. /tʃ/ is preaspirated when not in the initial position (Mason, 1950:8-9; Alvarez & Hale, 1970:94; Saxton et al., 1983:113; Zepeda 1983:4; Dolores & Mathiot, 1991:237; Fitzgerald, 2012:435).
4. /ð/ is a voiced dental fricative. It is pronounced 'th' as in 'this' and 'smooth'. In the medial position /ð/ is strongly glottalized and voiced (Alvarez & Hale, 1970:94; Saxton et al., 1983:113; Zepeda 1983:4; Dolores & Mathiot, 1991:237).
5. /ɖ/ is a voiced retroflex stop, and best described as a 't' with a glottal stop. Its closest English equivalent is the 't' in 'but' (Mason, 1950:8-9; Saxton et al., 1983:113; Zepeda 1983:4; Dolores & Mathiot, 1991:237; Fitzgerald, 2012:435).
6. /ɨ/ is a high central unrounded vowel similar to the 'u' in 'hum' (Mason, 1950:6; Saxton et al., 1983:113, 117; Zepeda, 1983:4; Fitzgerald, 2012:435).
7. /g/ is a voiced velar stop with its voiceless counterpart being /k/. It is pronounced 'g' as in 'go' and 'gun'. In the medial position /g/ is strongly glottalized and voiced (Mason, 1950:8; Hale, 1959:11; Alvarez & Hale, 1970:94; Saxton et al., 1983:113; Zepeda 1983:4; Dolores & Mathiot, 1991:237).
8. /h/ is a voiceless glottal fricative. It is pronounced 'h' as in 'hat' and 'hooves' (Hale, 1959:9; Alvarez & Hale, 1970:97; Saxton et al., 1983:113; Zepeda, 1983:4; Dolores & Mathiot, 1991:237).
9. /i/ is a high front unrounded vowel pronounced as the 'i' in 'machine' (Mason, 1950:6; Saxton et al., 1983:113; Zepeda, 1983:4).

10. /dʒ/ is a voiced postalveolar affricate with its voiceless counterpart being /tʃ/. It is pronounced 'j' in 'job' and 'jostling'. In medial position /dʒ/ is strongly glottalized and voiced. (Mason, 1950:8; Alvarez & Hale, 1970:94; Saxton et al., 1983:113; Zepeda, 1983:4; Dolores & Mathiot, 1991:237; Fitzgerald, 2012:435).
11. /k/ is a voiceless velar stop with its voiced counterpart being /g/. It is pronounced 'k' in 'kiss' and 'kicking'. /k/ is preaspirated when not in the initial position (Mason, 1950:8; Alvarez & Hale, 1970:94; Saxton et al., 1983:113; Zepeda, 1983:4; Dolores & Mathiot, 1991:237).
12. /ɺ/ is an apico-alveolar lateral flap "... when it is pronounced, the tip of the tongue touches a point behind the upper teeth and swings away forcefully" (Alvarez & Hale, 1970:95). Its closest English approximant is the 'dd' in 'ladder'. (Hale, 1965:296; Alvarez & Hale, 1970:95; Saxton et al., 1983:113; Dolores & Mathiot, 1991:237; Fitzgerald, 2012:435).
13. /m/ a voiced bilabial nasal. It is pronounced 'm' as in 'miss' and 'moon'. When pronounced with the lips come together (Alvarez & Hale, 1970:96; Saxton et al., 1983:113; Zepeda, 1983:4; Dolores & Mathiot, 1991:237).
14. /n/ is a voiced alveolar nasal. It is pronounced 'n' as in 'no' and 'noisy' (Alvarez & Hale, 1970:95; Saxton et al., 1983:113; Zepeda, 1983:4; Dolores & Mathiot, 1991:237).
15. /ɲ/ is a voiced palatal nasal. The closest English approximant is the 'ny' in 'canyon' (Alvarez & Hale, 1970:95; Zepeda, 1983:4; Dolores & Mathiot, 1991:237; Fitzgerald, 2012:435).
16. /ŋ/ is a voiced velar nasal. The closest English approximant is 'ng' in 'finger' (Alvarez & Hale, 1970:95; Zepeda, 1983:4).
17. /ɔ/ is a low back rounded vowel pronounced similar to the vowels in 'awe,' 'ought,' and 'pot' (Mason, 1950:6; Saxton et al., 1983:113; Zepeda, 1983:4).

18. /p/ is a voiceless bilabial stop with its voiced counterpart being /b/. It is pronounced 'p' as in 'pot' and 'pickaxe'. /p/ is preaspirated when not in the initial position (Alvarez & Hale, 1970:94; Saxton et al., 1983:113; Zepeda, 1983:4; Dolores & Mathiot, 1991:237).
19. /s/ is a voiceless alveolar fricative and said with the tip of the tongue behind the upper teeth. It is pronounced 's' in 'see' and 'saddle' (Alvarez & Hale, 1970:96; Saxton et al., 1983:113; Zepeda, 1983:4; Dolores & Mathiot, 1991:237).
20. /ʃ/ is a voiceless retroflex fricative. It is pronounced 'sh' in 'ship' and 'shoes' (Zepeda, 1983:4; Alvarez & Hale, 1970:95; Dolores & Mathiot, 1991:237; Fitzgerald, 2012:435). In other phonemic descriptions, Mason (1950:8-9) uses the post alveolar fricative /ʃ/ while Saxton et al.,(1983:113) use /ç/to describe the palatal fricative.
21. /t/ is a voiceless alveolar stop with its voiced counterpart being /d/. It is said with the blade of the tongue against the upper teeth. It is pronounced 't' as in 'top' and 'teeth'. /t/ is preaspirated when not in the initial position (Alvarez & Hale, 1970:94, 96; Zepeda, 1983:4; Dolores & Mathiot, 1991:237).
22. /u/ is a high back rounded vowel pronounced like the 'u' in 'brute' and the 'oo' in 'book' (Mason, 1950:6; Saxton et al., 1983:113).
23. /w/ is a voiced labial-velar approximant pronounced as the 'w' in 'win'. (Alvarez & Hale, 1970:94; Saxton et al., 1983:113; Zepeda, 1983:4)
24. /j/ is a voiced palatal approximant pronounced as the 'y' in 'yes'. /j/ is a consonant only found in loanwords from Spanish (Mathiot 1973:28; Saxton et al. 1983:113; Zepeda 1983:4).
25. /ʔ/ is a glottal stop. Its closest English equivalent is the stop of air in the middle of 'uh-oh' (Alvarez & Hale, 1970:97; Saxton et al., 1983:113; Zepeda, 1983:4; Dolores & Mathiot, 1991:237).

2.3 Diphthongs

It should be noted that there is little consensus on how many diphthongs occur in O'odham. Hale (1959:8) suggests 12 vowel clusters (iu, io, ia, iă, eu, ei, ui, ua, uă, oi, ai, au). Saxton et al. (1983:113) suggest that all vowel sequences occur except ao, uo, ae, ue, and oe. Zepeda (1983:4) includes 4 diphthongs in her pedagogical grammar (ai, ei, oi, ui). Miyashita (2011:328) lists 12 diphthongs (ai, ia, io, oi, iu, ei, ui, ea, eo, au, oa, ua). Miyashita (2011:328) uses stress assignment to classify diphthongs into light and heavy types (table 4).

Table 4. light and heavy diphthongs (Miyashita, 2011:330)

light	ai, ia, io, oi, ui, ei, ui
heavy	ea, eo, au, oa, ua

According to Miyashita (2011:332), “heavy diphthongs are similar to long-vowels because they cannot occur unstressed; light diphthongs, on the other hand, are similar to short vowels because they occur in both stressed and unstressed positions.” Both light and heavy diphthongs occur in odd and even syllables as well as non-final syllables (Fitzgerald, 2012:441).

2.4 Writing System Comparison

Although O'odham phonemes have been represented in many ways, I have chosen six writing systems to compare: the Alvarez-Hale system, because it is the official writing system of the Nation; the Saxton writing system, because it is used in the only O'odham dictionary currently in print; along with four systems developed by Mathiot, presented herein to examine how O'odham phonemes have been represented through time.

The Alvarez-Hale writing system (1970), developed in the late 1960's, was named the official orthography of the Tohono O'odham Nation in 1974 (Zepeda, 1983:5). The Saxton writing system was originally used in *Dictionary, Papago/Pima-English, O'othham-Mil-gahn, English-Papago/Pima, Mil-gahn-O'othham* (Saxton and Saxton., 1969). Later it was used in *Tohono O'odham/Pima to English, English to Tohono O'odham/Pima* (Saxton et al., 1983). The 1983 dictionary uses 'th' where Saxton and Saxton previously used 'd', then uses 'd' where the 1983 dictionary previously used 'D.' Mathiot developed an orthography in 1957 published in *Practical Orthography for the Papago Language Based on Phonemic Analysis*. She used a similar orthography in *A Dictionary of Papago Usage* (1973). Later, an updated orthography more similar to the Alvarez-Hale writing system was used in *Tohono 'O'odham-English Dictionary* (n.d.). Although this dictionary is more extensive than the Saxton et al. (1983) dictionary, it is only searchable from O'odham to English. Mathiot and Dolores co-authored *The Reminiscences of Juan Dolores, an Early O'odham Linguist*. Here Mathiot describes the orthography Dolores used while writing autobiographical reminiscences in O'odham (Dolores & Mathiot, 1991).

Table 5. Writing systems for consonants

IPA Symbols	Alvarez-Hale (1970)	Saxton et al. (1983)	Mathiot (1957)	Mathiot (1973)	Dolores and Mathiot (1991)	Mathiot Revised Orthography (n.d.)
/b/	b	b	b	b	p/'p	b
/tʃ/	c	ch	ch	c	tc	c
/ð/	d	th	d	d	t/'t	d
/d/	ɖ	d	ɖ	ɖ	d/t	ɖ
/g/	g	g	g	g	k/q/'k	g
/h/	h	h	x	h	h/ħ	h
/dʒ/	j	j	j	j	tc/'tc	j
/k/	k	k	k	k	k/q	k
/ɹ/	l	l	r	l	l/ly/li	l
/m/	m	m	m	m	m	m
/n/	n	n	n	n	n	n
/ɲ/	ñ	n	mh	ñ	n/ni/ny/ñ	ñ
/ŋ/	ŋ	n	nh	—	—	ŋ
/p/	p	p	p	p	p/hp	p
/s/	s	s	s	s	s	s
/ʃ/	ʃ	sh	sh	x	c	ʃ
/t/	t	t	t	t	—	t
/v/	—	—	v	v	v/w/we	v
/w/	w	w	w	—	—	—
/j/	y	y	y	y	—	y
/ʔ/	ʔ	ʔ	ʔ	ʔ	ʔ	ʔ

The writing systems for the consonants have some minor incongruencies, with the most distinct being the writing system used by Dolores and Mathiot (1991). It is most useful to study the Alvarez-Hale writing system and the Saxton writing system. It is necessary to observe which systems include /v/ versus /w/. The Mathiot and Dolores (1991) and Mathiot (1957) are the only to include both /v/ and /w/. Alvarez & Hale (1970) and Saxton et al., (1983:113) use /w/ where Mathiot (1991) uses /v/. Herzog (1982:86) states /w/ and /v/ represent two distinct phonemes, and Zepeda (1983:6) clarifies that Tohono O'odham uses /w/ while Akimel O'odham uses /v/, meaning the use of /v/ versus /w/ is a variation between languages.

Table 6. Writing systems for vowels

IPA Symbols	Alvarez-Hale (1970)	Saxton et al. (1983)	Mathiot (1957)	Mathiot (1973)	Dolores and Mathiot (1991)	Mathiot Revised Orthography (n.d.)
/a/	a	a	a	a	a	a
/i/	i	i	i	i	i/y	i
/ɨ/	e	e	e	e	e	e
/ɔ/	o	o	o	o	o	o
/u/	u	u	u	u	u	u

The vowels with unaltered length /a, i, ɨ, ɔ, u/ are consistent among the six writing systems. The only deviation is Mathiot and Dolores (1991) who occasionally use 'y' to represent /i/.

Table 7. Writing systems for extra-short vowels

IPA Symbols	Alvarez-Hale (1970)	Saxton et al. (1983)	Mathiot (1957)	Mathiot (1973)	Dolores and Mathiot (1991)	Mathiot Revised Orthography (n.d.)
/ǎ/	ǎ	—	—	—	—	—
/ĩ/	ĩ	—	—	ï	y	ï
/ĩ̃/	ě	—	—	—	—	—
/ɔ̃/	ö	—	—	—	—	—

Perhaps the greatest variation in the six writing systems are the characters and diacritics used to express short vowels. Saxton et al. (1983) and Mathiot (1957) do not differentiate between normal vowel length and short vowel length.

Table 8. Writing systems for long vowels

IPA Symbols	Alvarez-Hale (1970)	Saxton et al. (1983)	Mathiot (1957)	Mathiot (1973)	Dolores and Mathiot (1991)	Mathiot Revised Orthography (n.d.)
/ā/	a:	ah	ah	aa	ā	a:
/ī/	i:	ih	ih	ii	ī/ȳ	i:
/ī̃/	e:	eh	—	ee	ē	e:
/ɔ̄/	o:	oh	—	oo	ō	o:
/ū/	u:	uh	uh	uu	ū	u:

Long vowels are distinguished 4 ways. The Alvarez-Hale (1970) writing system and Mathiot's revised orthography (n.d.) use a colon after the vowel to represent longer duration. The Saxton writing system (1983) and Mathiot's practical orthography (1957) add an 'h' following the vowel. Mathiot's writing system used in her original dictionary (1973) uses double vowels. Finally, Dolores and Mathiot use a macron above the vowel.

2.5 Consonant and Vowel Sequences

The CVCV pattern can be observed in most Uto-Aztecan languages (Herzog, 1982:87). Consonant clusters are not generally permitted in O'odham (Kurath, 1945:21). Hale (1965:299) suggests that O'odham consonants are always followed by a vowel, however consonant clusters occur through frequent vowel deletion. Clusters may also appear word-medially as a result of affixation (Fitzgerald, 1999:206). Consonant clusters can occur in sets of two to four (1) (Saxton, 1983:32; Fitzgerald, 1999:200), with larger consonant clusters customarily in the word-final position. There is no restriction on which consonants can appear in clusters, except for the laryngeals (/ʔ/, /h/), which are always followed by a vowel, meaning they can only occur in the final position of a consonant cluster (Hale, 1965:297). Along with the ability of each consonant to appear in a cluster, all consonants are also able to singularly emerge between vowels (Saxton, 1963:31). "Schwa epenthesis applies only to word-final consonants, not to word-internal consonant clusters" (Hale, 1965:305). Vowels in the initial position of a word are always preceded with a glottal stop (Saxton et al., 1983:xii).

- (1) cluster of two → **cipkan** (working)
cluster of three → **maistla** (teacher)
cluster of four → **kotst'abe** (on a cross)

2.6 Stress

O'odham demonstrates trochee rhythm through patterns of a stressed syllable followed by an unstressed syllable (Fitzgerald, 1999:203; Fitzgerald, 2012:440). Stress also modifies the duration of long and short vowels. "Long unstressed vowels are as long in duration as short stressed vowels, while unstressed short vowels are extra-short" (Hale, 1965:296). Long vowels, short vowels, and extra-short vowels each carry stress differently. Long vowels are always stressed, while short vowels can be either stressed or unstressed, and extra-short vowels are never stressed (Hale, 1965:296).

(2) wápkon (washing) ónmad (adding salt)
kó:ks (sleeping) hímad (will be walking)

(3) hamó:n (ham) paló:ma (dove)
kawhí: (coffee) paná:l (honey bee)

(4) híhidóɖa (the cooked objects) nú:kudá (the object taken care of)
wápaiká (ditches) kó:jigákam (one owning a pig)

Primary stress routinely occurs on the initial syllable (2) "regardless of whether the word is derived or underived" (Yu, 2000:118), although loanwords may have non-initial stress patterns (3) (Fitzgerald, 1997:142). Secondary stress falls on all remaining odd-numbered syllables (4) (Fitzgerald, 1999:193). If the secondary stress falls on the final syllable (e.g., trisyllables), then the secondary stress is not realized in underived forms (Fitzgerald, 1999:193). However, secondary stress on word-final odd-numbered syllables and polymorphemic words is permitted (Fitzgerald, 1997:101), such as in derived forms (Yu, 2000:118). Summarized, final

odd-number syllable stress is only permitted in complex words (Fitzgerald, 1999:203-204).

Examples 2, 3, and 4 are provided by Fitzgerald (1999).

Pronouns and Auxiliaries

O'odham pronouns include independent pronouns, person markers, possessives, and reflexives. Fitzgerald (1999:205-206) says, "Person markers precede nouns to indicate possession and precede verbs to mark objects. A stative marker [s] precedes certain words to indicate their function as stative verbs, and a reflex marker [e] precedes certain verbs that require it." O'odham auxiliaries indicate person, number, mood, and aspect. O'odham is a synthetic language, which means each word can have multiple grammatical components. What O'odham can express with few words is lengthier when expressed in English (Kurath, 1945:15; Herzog, 1941). Grammatical gender is less common in North America, and is not expressed in O'odham. Gender is instead understood from context. There is a visible relationship between the auxiliaries and pronouns. Independent object, reflexive, postpositional object, and possessive pronouns have affixes which attach to other parts of speech, making the independent pronoun optional (Zepeda 1983).

3.1 Pronouns

An independent pronoun stands by itself and may represent a subject or object. The independent pronoun may come in initial, medial, or final position.

Table 9. Independent pronouns

	singular			plural		
	long form	short form		long form	short form	
1st person	'a:ñi	'a:ñ	I, me	'a:cim	'a:c	we, us
2nd person	'a:pi	'a:p	you	'a:pim	'a:p	you
3rd person	hegai	heg	she, he, it, that; her, him, it, that	hegam	heg	they, those; them, those

Independent pronouns include singular and plural first, second, and third persons (table 9). They do not differentiate between gender. For example, the third person singular 'hegai' is used for she/her and he/him. Demonstratives 'hegai' and 'hegam' take the place of third person subject pronouns (Mason 1950:43). There are long and short forms of these pronouns (table 9).

(5) 'a:pi 'ap s-hottam cipkan
 2SG.PRON 2SG.IPFV.AUX STAT-quickly working.IPFV
 'you are working quickly'

(6) s-hottam 'ap cipkan
 STAT-quickly 2SG.IPFV.AUX working.IPFV
 'you are working quickly'

Examples 5 and 6 demonstrate the inclusion and exclusion of the independent pronoun. While example 6 does not include the independent second person singular pronoun 'a:pi' example 6 still carries the same meaning as example 5. Including the independent subject pronoun is not required since the auxiliary expresses which pronoun is the subject.

Table 10. Direct and indirect object prefixes

	singular		plural	
1st person	ñ-	me	t-	us
2nd person	m-	you	'em-	you
3rd person	-	her, him, it, that	ha-	them, those

Direct and indirect object prefixes (table 10) function as person markers, which clarify the object of the sentence. English uses different pronouns to distinguish the subject (e.g., I) from the object (e.g., me). O'odham makes this distinction by prefixing the object pronoun to the verb (7) (Miyashita et al., 2008:46). Person markers function as clitics (Saxton, 1982; Hill & Zepeda, 1992), which means they cannot stand on their own and are dependent on another word.

(7) hegai 'alĩ 'o 'a:cim t-kuḍut
 3SG.DEM child.SG 3SG.IPFV.AUX 1PL.PRON 1PL.IPFV-bothering.IPFV
 'that child is/was bothering us'

(8) hegai 'alĩ 'o t-kuḍut
 3SG.DEM child.SG 3SG.IPFV.AUX 1PL.IPFV-bothering.IPFV
 'that child is/was bothering us'

In example 7 and 8 the direct object is 'a:cim' or 'us'. They use the 1st person plural object marker 't-' prefixed on the verb 'kuḍut'. 't-kuḍut' translates to 'bothering us'. Example 7 includes the independent pronoun however the independent pronoun is not required (8).

- (9) Mali:ya 'o g 'alĩ ñu:kud ñ-we:hejed
 Mary 3SG.IPFV.AUX DET child.SG taking.care.of.IPFV 1SG.IPFV-for
 'Mary is/was taking care of the child for me'

The indirect object uses the same prefixes as the direct object. When the indirect object is a pronoun it prefixes the verb similar to the direct object, or on 'wehejed' which means 'for' (9) if 'wehejed' is present. In example 9, 'alĩ' or 'child' is the direct object and 'a:ñi' or 'me' is the indirect object. The first person singular object marker 'ñ-' is prefixed to 'we:hejed', and 'ñ-we:hejed' translates to 'for me'.

Table 11. Postpositional object prefixes

	singular		plural	
1st person	ñ-	my	t-	us
2nd person	m-	your	'em-	you
3rd person	ha-	her, him, it, that	ha-	them, those

A postpositional object prefix (table 12) is used when the object of a postpositional phrase is a pronoun. It functions as a prefix on the postpositional word (10) (Zepeda, 1983:49), and clarifies who the subject and the object of the sentence are.

- (10) Mali:ya 'o 'am ñ-ba'ic dahă
 Mary 3SG.IPFV.AUX SPEC 1SG- in.front.of.LOC sitting.IPFV
 'Mary is/was sitting in front of me'

In example 10, 'Mary' is the subject and the direct object is 'me'. The prefix 'ñ-' suffixes the postpositional word 'ba'ic' to mark 'me' as the direct object, and 'ñ-ba'ic' translates to 'in front of me'.

Table 12. Possessive affixes

	singular		plural	
1st person	ñ-	my	t-	our
2nd person	m-	you	'em-	your
3rd person	-ij, -j	hers, his, its	ha-	their

Possession can be indicated through a possessive phrase or, in the case that the possessor is a pronoun, with an affix on the possessed noun. The third person singular '-ij, -j' for 'hers, his, and its' are suffixed, the other cases are prefixed (Mason, 1950:31).

- (11) ñ-pa:la 'o 'am ke:k ki: ba:šo
 1SG.POSS-shovel 3SG.IPFV.AUX SPEC standing.IPFV house.SG in.front.of
 'my shovel is/was standing in front of the house'

In example 11, the first person possessive prefix 'ñ-' is used with 'pa:la' to indicate the shovel is mine. 'ñ-pa:la' translates to 'my shovel'. Possessive affixes can co-occur with plural reduplication (Hale, 1959:139).

Table 13. Reflexive prefixes

	singular		plural	
1st person	ñ-	me	t-	us
2nd person	'e-	you	'e-	you
3rd person	'e-	herself, himself, itself	'e-	them, those

A reflexive prefix is attached to a verb. Sentences with reflexive verbs are transitive since there is an object being acted upon by a verb (Hale, 1959:87). The reflexive prefix agrees with the subject's person and number (12) (Zepeda, 1983:41-42).

- (12) hegam 'o 'e-hu:kajid
 3PL.DEM 3PL.IPFV.AUX 3SG.REFL-warming.IPFV
 'they are warming themselves'

In example 12, the subject is 'hegam' or 'they', thus the reflexive prefix on the verb 'hu:kajid' or 'warming' is the third person plural 'e-', and 'e-hu:kajid' translates to 'warming themselves.'

3.2 Auxiliaries

O'dham auxiliaries illustrate imperative and non-imperative moods (Saxton, 1982:126); perfective and imperfective aspects; first, second, and third person; as well as singular and plural. The auxiliary can act as a free and bound morpheme. The auxiliary expresses person, number, reflexives, tense, and possessives (Miyashita, 2006).

Table 14. Imperfective auxiliary

	singular			plural		
	long form	short form		long form	short form	
1st person	'añ	ñ	I am/was	'ac	c	we are/were
2nd person	'ap	p	you are/were	'am	m	you (pl) are/were
3rd person	'o	'o	she, he it is/was	'o	'o	they are/were

Table 15 describes the imperfective aspect of auxiliaries. The imperfective aspect is used for continuous actions in the past or present. In English this is often indicated with 'ing' at the end of a verb. The non-future imperfective uses the 'plain-form' of the auxiliary (13) with imperfective verbs (Hale, 1969:204).

- (13) 'a:ñi 'añ ñeok
 1SG.PRON 1SG.IPFV.AUX speaking.IPFV
 'I am speaking'

Table 15. Perfective auxiliary

	singular			plural		
	long form	short form		long form	short form	
1st person	'ant	nt	<i>does</i>	'att	tt	<i>does</i>
2nd person	'apt	pt	<i>not</i>	'amt	mt	<i>not</i>
3rd person	'at	t	<i>translate</i>	'at	t	<i>translate</i>

The perfective auxiliary (table 16) applies to actions which have been completed in the past or present, in contrast to the imperfective previously mentioned. Saxton et al. (1983:xxii) explains, "Perfective aspect is usually called the 'regular' form, that is, verbs that do not end in '-ing.'"

- (14) 'a:ñi 'ant ñeo
 1SG.PRON 1SG.PFV.AUX spoke.PFV
 'I spoke'

- (15) 'a:ñi 'ant o ñeo
 1SG.PRON 1SG.PFV.AUX FUT speak.PFV
 'I will speak'

The article 'o' indicates future aspect (Hale, 1969:204). The word order for future imperfective and future perfective sentences is 'auxiliary → future marker 'o' → verb'. In this sentence structure the auxiliary may appear sentence initial while maintaining the word order of 'auxiliary → future marker 'o' → verb' (Zepeda, 1983:134-135). The perfective auxiliary is used with both non-future (14) and future perfective (15) aspect. Additionally, the perfective auxiliary is used in future imperfective sentences (Zepeda, 1983:72). Example 16 demonstrates a future imperfective sentence using the perfective auxiliary. It also uses the short form of the perfective auxiliary in the initial position. Although the future perfective and future imperfective use the same auxiliary, they use different verb forms as discussed in section 4.3.

- (16) t o golonad g sa'i g Klisti:na
 3SG.PFV.AUX FUT rake.IPFV.FUT DET grass DET Christina
 'Kristina will be raking the grass'

Table 16. Special imperfective auxiliary

	singular			plural		
	long form	short form		long form	short form	
1st person	kuñ	ñ	am/was	kuc	c	are/were
2nd person	kup	p	are/were	kum	m	are/were
3rd person	—	k	is/was	—	k	are/were

The special imperfective auxiliary (table 16) is used in interrogative sentences and conjoining sentences.

(17) şa:ci ap hihidođ
 what 2SG.IPFV.AUX cooking.IPFV
 'what are you cooking'

(18) p hascu hihidođ
 2SG.IPFV.AUX what cooking.IPFV
 'what are you cooking'

Note that the auxiliary in interrogative sentences may come before (17) or after (18) the question word. In examples 17 and 18, the second person singular 'p' translates to 'are you'. This depends on whether a pre-auxiliary or post-auxiliary question word is used. This is described in more detail in section 5.4.

(19) 'uwĩ 'o cipkan ñ 'a:ñi ko:ş
 woman.SG 3PL.IPFV.AUX working.IPFV 1SG.IPFV.AUX 1SG.PRON sleeping.IPFV
 'The women is/was working and I am/was sleeping'

(20) gogs 'o međ c hi:nk
 dogs 3PL.IPFV.AUX running.IPFV CONJ barking.IPFV
 'The dog is running and barking'

(21) 'a-'al 'o cicwi kc hehem
 PL-children 3PL.IPFV.AUX playing.IPFV CONJ laughing.IPFV
 'The children are/were playing and laughing'

In conjoined sentences, the auxiliary of the second sentence is always moved to the initial position of the second sentence and functions as the sentence conjunction (Zepeda, 1983:25). In example 20, the first person singular auxiliary 'a:ñ' drops its vowel to become 'ñ'.

The conjunction 'c' conjoins verbs, nouns, and adpositions (Hale, 2001:299). It will also be heard as 'kc' when the preceding word ends in a vowel (19) (Hale, 2001:300). In example 20, 'c' joins the verbs 'running' and 'barking'. In example 21, 'kc' conjoins the verbs playing and laughing. 'kc' is used in place of 'c' since the 'kc' follows 'cicwi,' which ends in a vowel.

Nouns and Verbs

Since nouns and verbs function similarly in grammatical aspects such as reduplication and derivational attributes (as well as word order as will be seen in section 5.1) they have been grouped into a single chapter. Some nouns and verbs even go as far to share the same stems (Mason, 1950:70). Additionally, there are derivational processes which verbalize nouns and nominalize verbs (Mason, 1950:70). This chapter includes a background on [1] reduplication, [2] quantifiable nouns, [3] aspect, tense, and mood, [4] stative verbs, [5] the copular verb *wuɔ*, and [6] derivational suffixes.

4.1 Reduplication

Reduplication is not uncommon in languages (Kurath, 1945:21). O'odham marks plurality with partial reduplication in nouns and verbs (Hill & Zepeda, 1998:1). "Both pluralization of nouns and repetitive action of verbs, are normally expressed by reduplication of initial sounds" (Mason, 1950:70). Reduplication is determined by which vowel is stressed (Mizuki, 2011).

- (22) *ha'a* (pot) → *haha'a* (pots)
ba:ñimad (crawling) → *babañimad* (crawling)
- (23) *pa:la* (shovel) → *papla* (shovels)
gaswua (combing hair) → *gagswua* (combing hair)

Generally the reduplicate is an initial CV with either a short or long vowel, such as the 'ha' in 'ha'a' and 'ba' in 'ba:ñimad' (22). There is some irregularity and in certain situations the second vowel is lost (Hale, 1965), for example the plural of 'papla' is not 'papala', and the plural of 'gaswua' is not 'gagaswua' (23).

- (24) 'o:gǐ (father) → 'o'ogǐ (fathers)
 'u'l (stuck out) → 'u'u'l (stuck out)
- (25) tianda (store) → titianda (stores)
 mi:sa (table) → mimsa (tables)

For nouns and verbs that begin with a vowel the vowel is reduplicated (24). Borrowed Spanish words also conform to the same rules of reduplication (25) (Kurath, 1945:21).

- (26) ceggia (fighting) → ceggia (fighting)
 ha'icu (thing) → ha'icu (things)
- (27) meḡ (running) → wo:po'ō (running)
 ke:k (standing) → gegok (standing)

There are other exceptions to these rules, for example some words keep their same form when singular and plural (26), while others use two distinct words for the singular and plural form (27) (Kurath, 1945:22).

4.2 Quantifiable Nouns

There are three categories of quantifiable nouns: count, collective, and mass (Mathiot, 1962:40). These examples are provided by Mathiot (1962) converted into the Alvarez-Hale writing system.

- (28) hujuḡ (lizard) ñuwǐ (buzzard)
 'ali (child) la:bis (pencil)

(29) naw (prickly pear) mu:ñ (beans)
cucul (chicken) hu:ñ (corn)

(30) pa:n (bread) şu:dağĭ (water)
'o'ođ (sand) toki (cotton)

Count nouns can appear in both plural and singular form (28). A collective noun (29) refers to a group which can be considered either as individual entities or as one larger entity (SIL International, 2020). Mass nouns cannot be counted (30). In general nouns are preceded by the 'g' determiner 'the/a'.

4.3 Aspect, Tense, and Mood

O'dham displays aspect, tense, and mood. For example the perfective and imperfective aspect; future and non-future tense; and imperative and non-imperative mood.

(31) ko:s (sleeping) hehem (laughing)
şoak (crying) ki: (living)

(32) ñei (saw) huhu'i (chased)
me: (ran) ñeo (spoke)

The imperfective aspect indicates an ongoing action in the future or non-future (31). The perfective aspect indicates a completed action in the future or non-future (32). Verb forms for imperfective and perfective are visibly similar, as the perfective is most often derived from the imperfective verb form.

(33) him (walking) → hi: (walked)
hi:nk (barking) → hi:n (barked)

In regular derivation from imperfective to perfective, the final consonant is dropped from the imperfective verb (33) (Zepeda, 1983:59-60). The perfective and imperfective also use different auxiliaries, which are covered in 3.2.

- (34) ñeok (is/was speaking) → ñeokad (will be speaking)
 meḍ (is/was running) → meḍad (will be running)

Verbs in the perfective aspect keep the same form for future and non-future tense. The imperfective verb undergoes stem changes to form the future structure. To create the future form add either 'ad' to the end of the imperfective verb if the verb ends in a consonant (34) or 'd' if the verb ends in a vowel (Zepeda, 1983:72).

- (35) 'uwĩ 'at o ñei g ceoj
 women.SG 3SG.PFV.AUX FUT see.PFV DET boy.SG
 'the women will see the boy'

The future perfective and future imperfective use the future marker 'o' immediately before the verb (Zepeda, 1983:63-72). 35 is an example of a sentence in the future perfective tense.

An imperative sentence states a command or request. Although there are multiple ways to form the imperative sentence, the most common method is to attach the prefix '-iñ' to an imperfective or '-ñ' if the verb ends in a vowel.

- (36) cipkan (working) → cipkaniñ (work!)
 cicwi (playing) → cicwiñ (play!)

The perfective can also take imperative suffixes, but these cases are limited. There are some exceptions to this rule, (e.g. the retroflexive consonants 's,' and 'd' cannot be followed by the vowel 'i', thus the suffix '-ñ' is used instead). In addition, the imperative form in an intransitive sentence must agree in number with the subject. The imperative form in a transitive sentence agrees in number with the object, however, the number is implied (Zepeda, 1993).

4.4 Stative Verbs

A stative verb describes the state of an object or person. Stative verbs have plural and singular forms like other verbs. The imperfective singular form of the stative verbs act as adjectives for a noun in any sentence type (Zepeda, 1983:114). These stative verbs operate as both noun modifiers and modifying predicates (Hale, 2000:155). Adjectives and adverbs are often built by modifying nouns and verbs. Many stative verbs can be used as adjectives.

(37) s-moik (being soft) s-onk (being salty)
s-cuk (being black) s-gi:g (being fat)

(38) cemaj (being small) ce'ecwaj (being tall)
mumku (being sick) wecij (being young)

Most stative verbs can be recognized by their prefix 's-' (Zepeda, 1983:111). Not all stative verbs start with 's-' but every verb that begins with 's-' is a stative verb (Mason 1950:61; Zepeda, 1983:111). "Adjectival predicates in English are nonverbal because English treats adjectives as a distinct word class from verbs. In many languages, however, the words expressing meaning associated with adjectives in English are simply verbs. In such languages, adjectival predicates are thus not a kind of nonverbal predicate, but simply a type of intransitive verbal predicate" (Dryer, 2007:227).

- (39) 'a:pi kc Huan 'am s-a'ap wuɖ he-hemajkam
 2SG.AUX.IPFV CONJ John SPEC STAT-good COP PL-people
 'you and John are good people'

Imperfective singular and plural forms of stative verbs can act as an adjective to modify singular or plural nouns in all sentence types (Zepeda, 1983:114). Hale (2000:155) adds that this type of adjective acts as a pronominal modifier and as a modifying predicate.

4.5 Copular Verb: 'wuɖ'

The copular verb 'wuɖ' is an important element of O'odham grammar (Hale, 2001:3). 'Wuɖ' is a particle and carries a grammatical function that does not fit into other parts of speech (e.g. nouns, verbs, adjectives). It acts similarly to a verb and links a subject with a subject complement, or noun, to give more information about the subject. The copula is always accompanied by the auxiliary (Fernández 2000:143). In most sentences the short form ɖ can be used (Zepeda, 1983:85).

- (40) 'a:ñi 'añ wuɖ maistla
 1SG.PRON 1SG.IPFV.AUX COP teacher.SG
 'I am/was the teacher'

- (41) 'a:pi 'ap wuɖ makai
 2SG.PRON 2SG.IPFV.AUX COP doctor.SG
 'you are/were a doctor'

In example 40, the copula joins the subject 'a:ñi' or 'I' with a subject complement 'maistla' or 'teacher.' The copula in 41 performs the same action with subject 'a:pi' or 'you' with 'makai' or 'doctor.'

4.6 Derivational Suffixes

The suffixes '-mad' '-pig' and '-kuḍ' are derivational suffixes for verbs and nouns. '-mad' and '-pig' transition nouns into verbs.

- (42) şawoñ (soap) → şawoñmad (adding soap to or washing)
 wopo (fur) → wopopig (removing fur)
 şonwui (hitting/pounding) → şonwuikuḍ (instruments used to make hit/pound)

'-kuḍ' transitions verbs into instrumental nouns (Zepeda, 1983:158). A verb formed with '-mad' (42) indicates the user is performing an action with the noun and has the same form for both imperfective and perfective aspects (Zepeda, 1983:90-91). The suffix '-pig' (42) is also used to turn nouns into verbs, but gives the verbs a slightly different meaning.

- (43) 'a:ñi 'añt şawoñ-mad g ñ-mo'o
 1SG.PRON 1SG.PFV.AUX soap-DER DET 1SG.POSS-hair
 'I soaped my hair'

Example 43 adds the suffix 'mad' directly to 'şawoñ', the perfective aspect of 'soap.' With the suffix 'mad', the noun 'soap' changes to the verb to mean 'adding soap to or washing.'

- (44) 'a:pi 'ap wopo-pig g haiwañ 'elidag
 2SG.PRON 2SG.IMP.AUX fur-DER DET cowhide.SG
 'you are removing the hair from the cowhide'

- (45) hegai 'o ḍ ñ-ce'ewida-kuḍ
 3SG.DEM 3SG.IMP.AUX COP 1SG.POSS-blanket
 'that is my blanket'

Whereas '-mad' and '-pig' can be directly suffixed to nouns, '-kuḍ' can require a modified verb before it can be suffixed (Zepeda, 1983:96). Imperfective verb form 'a' is initially suffixed to the verb if the preceding noun ends in a consonant)- suffix kuḍ. na:d+a+kuḍ.

Syntax

The syntax of a language demonstrates the organization of sentence structures. O'odham has free word order, meaning its syntax is very flexible. Syntactic structure is not exclusive from other grammatical elements, thus there are some syntactic elements not included in this chapter and instead addressed in chapter 3 and 4. This chapter covers [1] words order, [2] transitivity, [3] negation, [4] modifying clauses, and [5] interrogative clauses.

5.1 Word Order

Tohono O'odham is exceptionally flexible and functions as a free word order language (Miyashita et.al, 2003; Hale, 1992). Free word order can also be found in other Uto-Aztec languages (Hale, 1992). In free word order languages, there can still be fixed order in certain environments (Payne, 1987:784). "One or more [noun phrases], postpositional phrases, adverbials, locatives, directionals, or other grammatical elements can intervene between the aux and verb" (Payne, 1987). This flexibility can cause ambiguity (Miyashita et al., 2003; Zepeda, 1984). Independent pronouns are equally as flexible as nouns (Miyashita et al., 2003), as discussed in section 3.1. The 'g' determiner only appears when the subject is in center or final position. When a noun is in the initial position the 'g' is only implied and not present (Zepeda, 1984). All six word orders (SOV, SVO, OSV, OVS, VSO, and VOS) can be observed in O'odham (Miyashita, 2006).

5.2 Transitivity

Intransitive sentences contain a subject and verb (46, 47); they do not carry objects. Intransitive sentences have two word orders: subject-verb and verb-subject (Zepeda, 1984).

Transitive verbs match in number with the object (Saxton, 1982:227). Rules about the position of the auxiliary in intransitive and transitive sentences are discussed in section 3.2.

(46) 'a:cim 'ac hihim
 1PL.PRON 1PL.IPFV.AUX walking.IPFV
 'we are walking'

(47) cipk 'añt
 worked.PFV 1SG.PFV.AUX
 'I worked'

Examples 46 and 47 are intransitive because the subjects do not act upon an object. The word order of sentence 46 is subject-auxiliary-verb and the word order in 47 is verb-auxiliary.

In transitive sentences, the aux agrees in number with the subject, while the verb agrees in number with the direct object. Unlike an intransitive sentence, a transitive sentence contains a transitive verb and requires an object to act upon.

(48) 'a:cim 'att o hihi 'am tianda wui
 1PL.PRON 1PL.PFV.AUX FUT walk.PFV SPEC store.SG towards
 'we will walk to the store'

Example 48 is a transitive sentence with a direct object. The subject 'a:cim' or 'we' acts upon the object 'tianda' or 'store.'

(49) hegai ceoj 'o ñ-ma:k g lu:lsi 'a:ñi
 DEM boy.SG 3SG.IPFV.AUX 1SG.IPFV-giving.IPFV DET candy.SG 1SG.PRON
 'that boy is giving the candy to me'

The direct object pronoun attaches to the verb as a person marker. In example 49, the first person singular pronoun 'ñ' is used with the verb 'ma:k' and translates to 'give to me'. When

the direct/indirect object is a noun the listener uses context to distinguish the subject from the object (Zepeda, 1984:32).

(50) 'a:ñi 'an kegcid g mansa:na m-we:hejeḍ 'a:pi.
 1SG.PRON 1SG.IPFV.AUX cleaning.IPFV DET apple.SG 2PL.IPFV-for 2SG.PRON
 'I am cleaning the apple for you.'

Example 49 is a transitive sentence with indirect object pronoun. The a person marker for the indirect object pronouns attaches to as a suffix 'we:hejeḍ' when 'we:hejeḍ' is present (Zepeda, 1984:37) as discussed in section 3.1. Since the indirect object is a pronoun in example 49, the a person marker is prefixed to the verb or to 'we:hejeḍ' meaning 'for.' In example 50, 'm-we:hejeḍ' translates to 'for you'.

5.3 Negation: 'pi'

Negative statements are constructed in two ways, both with the word 'pi.' The negative marker 'pi' can come at the beginning of the sentence directly followed by the auxiliary. Alternatively, the negative marker may be placed directly after the auxiliary, providing the auxiliary remains in the second position (Zepeda, 1983).

(51) pi 'ac ṣoañ 'a:cim
 NEG 3PL.IPFV.AUX crying.IPFV 3PL.PRON
 'we are not crying'

(52) 'acim 'ac pi ṣoañ
 3PL.PRON 3PL.IPFV.AUX NEG crying.IPFV
 'we are not crying'

Example 51 and 52 use 'pi' to negate 'we are crying' to 'we are not crying.' In 51, the negative marker 'pi' is placed before the auxiliary, whereas in 52 'pi' is after the auxiliary. In both these examples the auxiliary 'ac' is found in the second position.

5.4 Modifying Clause

Modifying clauses can alter or add meaning to noun and verb phrases. The number of adverbs is extensive, with numerous possibilities of combinations. Examples of modifying clauses are subordinate clauses, postpositional phrases, and locatives. SIL International (2020) describes a subordinate clause as "a clause that is embedded as a constituent of a matrix sentence and that functions like a noun, adjective, or adverb in the resultant complex sentence." In O'odham, the clause marker 'm-' indicates a subordinate clause. It is used as a prefix on the auxiliary, and changes nouns or verbs into modifiers, which act as adjectives and adverbs (Zepeda, 1982, pp 106).

Table 17. Subordinate clause marker

	singular		plural	
	imperfective	perfective	imperfective	perfective
1st person	mañ	mant	mac	matt
2nd person	map	mapt	mam	mamt
3rd person	mo	mat	mo	mat

The subordinate clause marker 'm-' has been prefixed to the imperfective and perfective auxiliaries (table 10).

(53) hegam m-ac 'am ha-ñeid 'o wuḍ mamkai
 3PL.DEM SUB-3PL.IPFV.AUX SPEC PL-see 3Pl.IPFV.AUX COP doctors.PL
 'Those (people) that are/were watching there are/were doctors'

(54) hegai ceoj m-ant we:m cipk 'o wuḍ Husi
 3PL.DEM boy.SG SUB-3PL.PFV.AUX with work.PFV 3Pl.IPFV.AUX COP Joe
 'that boy that I worked with is/was Joe'

Example 53 is a subordinate clause in the imperfective aspect; example 54 is subordinate clause in the perfective aspect. Notice in the translation 'hegam mac' translates to 'those people that are/were'. A subordinate clause can most often translate to mean 'that' (Mason, 1950:40).

- (55) 'an → towards speaker
 'am → away from speaker
 'ab → parallel to speaker

Directional imperatives can specify movement through postpositional phrases and locatives. Postposition phrases have specifiers (55) which indicate an object's position relative to the speaker (Zepeda, 1983:47). Mason (1950:37) says, "Three elements, 'am, 'an, and 'ab, which are primarily locative-temporal adverbs are very frequently found after nouns in the position and use of postposition, and may be considered as of this nature".

(56) 'am kui we:big
 SPEC tree behind.LOC
 'behind the tree'

Postpositional phrases include a specifier and postpositional word. In example 56, the specifier 'am' describes the object as facing away from the speaker and the postpositional word 'we:big' describes the object as behind the speaker.

- (57) 'amai/'am (over there in front of speaker)
 'anai/'an (over there next to speaker)
 gaḏhu/gḏhu (over there out of sight from speaker)
 ganhu/gnhu (over there in sight of speaker)
 'eḏa/'eḏ (inside)
 'i:ma/'im (back behind speaker)
 'i:ya/'i (right here)

A locative is a word which indicates direction. In O'odham it is often the direction relative to the speaker. The locatives in example 57 have long and short forms. In most cases the short form can be used. Locatives are part of the verb complex and are found before the verb stem (Mason, 1950:64).

5.5 Interrogative Clause

This section covers four interrogative or question clauses: yes/no questions, 'how many' questions, wh-question, and questions regarding 'whose.'

Table 18. Question marker 'n'

	singular	plural
1st person	'aṅ → naṅ	'ac → nac
2nd person	'ap → nap	'am → nam
3rd person	'o → no	'o → no

Interrogative questions which can be answered affirmative or negative (e.g. yes/no questions) are marked with the prefix 'n' on the auxiliary (table 18) (Hale, 1969:204).

Interrogative pronouns are fixed in the initial position (Miyashita et al., 2008:49).

- (58) n-o g mi:stol ko:s
Q-3SG.IPFV.AUX DET cat.SG sleeping.IPFV
'is the cat sleeping'

Example 58 uses the interrogative prefix 'n' on the auxiliary to change 'the cat is sleeping' to 'is the cat sleeping'.

The interrogative clause to ask the amount, or how many, uses the question word 'he'ekio'. The position of 'he'ekio' is limited in that it can not occur directly following a verb (Zepeda, 1983:120).

- (59) he'ekio 'at ha-nolawt g wopnam
how.many 3PL.PFV.AUX PL-buy.PFV DET hat.PL

g Husi 'am Cuk Şon 'am
DET Joe SPEC Tucson LOC
'How many hats did Joe buy in Tucson?'

Example 59 inquires about a number of hats by using the question word 'he'ekio'.

Table 19. Wh-question words

	pre-auxiliary	post-auxiliary
who	do:	heḍai
what (abstract)	şa:	has
what (concrete)	şa:cu	hascu
where	ba:	hebai

Interrogative sentences inquiring as to who, what, and where are indicated by pre-auxiliary or post-auxiliary markers (table 19) (Zepeda, 1983). The question words for who, what, and where have different pre and post-auxiliary forms.

(60) ba: 'o cicwi g 'ali?
 where 3SG.IPFV.AUX playing.IPFV DET child.SG
 'where is the child playing'

(61) k hebai cicwi g 'ali
 3SG.IPFV.AUX where playing.IPFV DET child.SG
 'where is the child playing'

Both 60 and 61 ask 'where is the child playing', but 60 uses the pre-auxiliary 'ba:' while 61 uses the post-auxiliary 'hebai'. Both 'ba:' and 'hebai' ask 'where'.

(62) do: 'o kotoñ 'an wo'o
 whose 3SG.IPFV.AUX shirt.SG SPEC lying.there
 'whose shirt is laying there?'

Questions asking 'whose' (62) use the same pre and post auxiliary question word for who (do: and hebai), but without a possessor (Zepeda: 1983:81).

Conclusion

Literature on the O'odham language can give conflicting information including disagreements such as O'odham being is a language or dialect, phonemes, writing systems, diphthongs, and word order. This thesis is not meant to dispute previous research, but rather it is meant to give some insight into available research, and in a few cases directly compare literature.

Asher & Christopher (2007:9) categorize Tohono O'odham and Akimel O'odham as dialects of the O'odham language while Saxton et al. (1983:117, 128) refer to Tohono O'odham and Akimel O'odham as their own languages.

There is contradicting information about the phonemes and characters used to represent the sounds in O'odham. The 'sh' sound as in 'ship', (written as 'ş' in the official Alvarez-Hale orthography) has been described as [1] a voiceless retroflex fricative /ʂ/ by Zepeda (1983:4), Alvarez & Hale (1970:95), Dolores and Mathiot (1991:237), and Fitzgerald (2012:435), [2] a post alveolar fricative /ʃ/ by Mason (1950:8-9), and [3] as palatal fricative using the symbol /ç/ by Saxton et al., (1983:113). This conflicting information is also represented in the writing systems where 'ş, sh, x, and c' have all been used to represent this said sound. The writing systems in section 2.4 are presented in a comparative format, while the contents of the phonemic chart were chosen based on supporting research.

There is little consensus on how many diphthongs occur in O'odham. Hale (1959:8) suggests 12 vowel clusters (iu, io, ia, iă, eu, ei, ui, ua, uă, oi, ai, au). Saxton et al. (1983:113) suggest that all vowel sequences occur except ao, uo, ae, ue, and oe. Zepeda (1983:4) includes 4 diphthongs in her pedagogical grammar (ai, ei, oi, ui). Miyashita (2011:328) lists 12 diphthongs (ai, ia, io, oi, iu, ei, ui, ea, eo, au, oa, ua).

The typical word order in Tohono O'odham is exceptionally flexible. O'odham functions as a free word order language (Miyashita et.al, 2003; Hale, 1992), which is also the case with other Uto-Aztecan languages (Hale, 1992). Although all 6 possible word orders can appear in O'odham (Miyashita, 2006) there has been ample discussion on what the basic word order is. Payne (1987:783-4) states that basic word order is traditionally determined by typographical and syntactic features and O'odham has traditionally been perceived and described through this limited view. Instead, we should look beyond the traditional view and explore unordered underlying structure. Payne includes word order descriptions from 8 different linguists: [1] Hale (1975) uses patterns of intonation to conclude Tohono O'odham uses SOV order, [2] Saxton & Saxton (1969) and Langacker (1977) describe O'odham as VSO, [3] Saxton (1980, 1982) propose O'odham uses a pattern of predicate non-final or predicate initial, [4] In Munro's opinion while all word orders are possible the basic order is VSO, [5] Hawkins (1979, 1980, 1983) describes O'odham as VSO, and [6] Mallinson & Blake (1981) suggests O'odham's basic word order is VSO, VOS or OVS based on the type of clause.

Appendix A: Glossed Text

The data for *Ban c Cu:wǐ* 'The Coyote and the Jack Rabbit' is provided by Dean Saxton (1982:263-266). The text has been converted to the Alvarez-Hale orthography and the gloss has been modified to meet the Leipzig glossing standard. The interlinear translation includes a morpheme by morpheme gloss and free translation. The sentences are numbered for the benefit of the reader.

1. ş 'am hu hebai hema d ge'e ban
 QUOT SPEC REM sometime one COP big coyote.SG
 One time, it is said, there was a big coyote,

 k 'am i bi-hug-im k g cu:wǐ huhu'id
 CONJ SPEC DEF food-eat-DESID CONJ DET rabbit.SG chase.IPFV
 and he got hungry and was chasing a jack rabbit.

2. ş wabş weho'i 'e-tods g cu:wǐ
 QUOT just truely REFL-frightened.PFV DET rabbit.SG
 It is said the jack rabbit was truly frightened,

 k waşaba s-ma:c m-at-ş
 CONJ but STAT-know SUBR-3SG.PFV.AUX-QUOT
 but he knew that

 pi o 'e-nako
 NEG FUT REFL-able.PFV
 he would not be able

m-at taş o me: na-ş
 SUBR-3SG.PFV.AUX time FUT run.PFV Q-QUOT
 run long

pi mu'i ɖ ahi-dag
 NEG many COP cycle-ABSTR
 because he was old

ş g ka-kioj si gewpko
 QUOT DET PL-legs very tired.PL
 and his legs were very tired.

3. ş 'ab sikol i keki-wua g cu:wĩ
 QUOT SPEC around DEF stand-completed DET rabbit.SG
 It is said the jack rabbit

ban wui
 coyote.SG towards.LOC
 turned to the coyote

c 'a-ş hab kaij ha'asa g ñ-huhu'id
 CONJ 1SG.IPFV.AUX-Q thus say stop DET 1SG.IPFV-chase.PFV
 and said, "stop chasing me.

4. 'aha n-apt o ñ-hug c hab ñ-huhuid
 or Q-2SG.PFV.AUX FUT 1SG.IPFV-eat CONJ thus 1SG.IPFV-chase.IPFV
 Or are you going to eat me and is that why you're chasing me?"

5. ş hab kaij g ban
 QUOT thus say.PFV DET coyote.SG
 It is said the coyote said,
- heu'u nt o m-hu:
 yes 1SG.PFV.AUX FUT 2SG.PFV-eat.PFV
 "Yes, I'm going to eat you."
6. ş hab kaij g cu:wĩ pi g 'am ñ-hu:g
 QUOT thus say.PFV DET rabbit.SG NEG DET SPEC 1SG.PFV-eat.PFV
 It is said the jack rabbit said, "Don't eat me,
- n-apt pi hemho o wa mu:
 Q-2SG.PFV.AUX NEG certainly FUT expect die.PFV
 because you will surely die.
7. ba-pt-p ñ-elid m-añ ɖ cu:wĩ
 thus-2SG.PFV.AUX-MDL 1SG.IPFV-think SUBR-1SG.IPFV.AUX COP rabbit.SG
 You presumably think I'm a jack rabbit.
8. ñ 'eɖa ɖ ge ko'owi
 1SG.PFV.AUX yet COP POS rattlesnake.SG
 Yet I am really a rattlesnake.
9. t g ñ-ko'ok-dag o m-mea
 3SG.PFV.AUX DET 1SG.PFV-hurt-ABSTR FUT you-kill.PFV
 And my poison will kill you."

10. nt hascu higi o hu: baş kaij g ban
 1SG.PFV.AUX what then FUT eat.PFV thus say.IPFV DET coyote
 "What will I eat then?" it is said the coyote said.

11. ş hab kaij g cu:wĩ
 Q thus say.IPVF DET rabbit.SG
 It is said the rabbit said,

'ida apt o hu: ha'icu bahi-dag
 this 2SG.PFV.AUX FUT eat.PFV thing ripe-ABSTR
 This fruit is what you will eat,

m-ant 'u'u k i:ta-cug
 SUBR-1SG.PFV.AUX take.PFV CONJ gather-carry
 that I have gathered and am carrying.

12. nt o cum 'u'u-k 'am ñ-ki: wui
 1SG.PFV.AUX FUT MDL take-go SPEC 1SG.POSS-house towards
 I was going to take them to my house

hab 'ia to'a-him 'ida 'eða haşða
 thus LOC put-move this inside basket.SG
 and thus I am carrying them stowed in this basket.

13. pt 'eða ñ-huhu'i
 2SG.PFV.AUX then 1SG.PFV-chase.PFV
 Then you chased me."

14. ş hab kaij g ban weho: wa
 they.say thus say DET coyote true expect
 It is said the coyote said, "The truth is

 m-o g cu:wĩ ko'a g ha'icu bahi-dag
 SUB-1SG.IPFV.AUX DET rabbit.PL eat.SG DET some.thing ripe-ABSTR
 that rabbits eat vegetation.

15. k waşaba g ko'owi pi ko'a
 CONJ but DET rattlesnake.SG NEG eat.IPFV
 But a rattlesnake doesn't eat it.

16. p-ki wa weho: ɖ cu:wĩ
 2SG.IPFV.AUX-obviously expect true COP rabbit.SG
 So you are evidently really a jack rabbit

 cum 'ap-s has o kaijcid
 MDL 2SG.IPFV.AUX-despite what FUT say
 despite what you say.

17. pi 'apt o şa'i e-nako
 NEG 2SG.PFV.AUX FUT very REFL-able.PFV
 You will not at all be able

 m-apt o ñ-banmad
 SUB-2SG.PFV.AUX FUT 1SG.PFV-coyote.SG
 to trick me.

18. s-ap'e 'o m-ap d cu:wǐ
 STAT-good 3SG.IPFV.AUX SUB-2SG.IPFV.AUX COP rabbit.SG
 It's good that you're a rabbit,

nopi s-ta hug-ma g cu:wǐ
 because STAT-unspecified subject eat-able DET rabbit
 Because a rabbit is edible.

19. pi 'añ na:k g ko:k'owi
 NEG 1SG.IPFV.AUX like DET rattlesnake.PL
 I don't like to eat rattlesnakes."

20. t 'oiwa weho: 'am i hu: hegai cu:wǐ
 3SG.PFV.AUX then true SPEC DEF eat.SG.PFV DEM rabbit
 He then indeed ate the jack rabbit

m-at cum iattogi
 SUB-3SG.PFV.AUX MDL deceive
 that tried to deceive him.

21. t heg 'ep hu: ha'icu bahi-dag
 3SG.PFV.AUX that also eat.PFV thing ripe-ABSTR
 He also ate the fruit

m-o 'i:ta-cug g cu:wǐ
 SUB-1SG.IPFV.AUX gather-carry DET rabbit
 that the jack rabbit was carrying,

k amjeɖ 'am hu heba'i i ɖahi-wua kui weco
 CONJ then SPEC REM somewhere DEF sit-completed tree.SG under
 and afterward sat down under a mesquite tree somewhere

k haha wabʂ mu:
 CONJ then just died.PFV
 and suddenly died,

nopi pi ɖ wabʂ hialwui hegai ha'icu bahi-dag
 because NEG COP just poison DEM thing ripe-ABSTR
 because the fruit was just poison

m-at-ki 'ui g cu:wǐ
 SUBR-3SG.PFV.AUX-evidently take.PFV DET rabbit
 that the jack rabbit got.

References

- Alvarez, Albert and Kenneth Hale. 1970. *Toward a manual of Papago grammar: Some phonological terms*. Cambridge: Massachusetts Institute of Technology.
- Asher, R.E and Christopher Mosley (editors). 2007. *Atlas of the world's languages* (ed. 3). UNESCO Publishing.
- Bahr, Donald. 1975. *Pima and Papago ritual oratory: A study of three texts*. San Francisco: The Indian Historical Press.
- Bahr, Donald. 1980. Four Papago rattlesnake songs. *Anthropological Research Papers*, Vol. 20, pp. 118-126. Tempe: Arizona State University.
- Bahr, Donald (editor). 2001. *O'odham creation and related events, as told to Ruth Benedict in 1927*. Tucson: University of Arizona Press.
- Bahr, Donald, Joseph Giff, and Manuel Havier. 1979. Piman songs on hunting. *Ethnomusicology* Vol. 23, pp. 247-96.
- Bayles, Kathryn A. and Gail A. Harris. 1982. Evaluating speech-language skills in Papago Indian children. *Journal of American Indian education* Vol. 21. pp. 11-20.
- Breeneman, Dale S. 2014. Bringing O'odham into the 'pimeria alta'. *Journal of the Southwest* Vol. 59. pp. 205-218.
- Chesky, Jane. 1943. *The nature and function of Papago music*. Unpublished M.A. thesis, Tucson: The University of Arizona.
- Densmore, Frances. 1929. Papago music. *Bulletin of the Bureau of American ethnology*, no. 90, Washington, D.C.: Government Printing Office.
- Dolores, Juan. 1913. Papago verb stems. *University of California Publications in American Archaeology and Ethnology* Vol. 10. pp. 241-263.
- Dolores, Juan. 1923. Papago Nominal Stems. *University of California publications in American archaeology and ethnology* Vol. 20:2, pp. 19-31.
- Dolores, Juan and Madeleine Mathiot. 1991. The reminiscences of Juan Dolores, an early O'odham linguist. Bloomington: Trustee of Indiana University.
- Dryer, Matthew. 2007. *Language typology and syntactic description* (ed. 2) Vol. 1. Cambridge University press.
- Eberhard, David M. et al. 2019. *Ethnologue: languages of the world* (ed. 22) retrieved from <http://www.ethnologue.com>

- Fernández, Zarina Estrada. 2000. Copulative constructions in Uto-Aztecan languages. *Uto-Aztecan: Structure, temporal, and geographic perspectives*. pp. 139-154.
- Fitzgerald, Colleen M. 1997. *O'odham rhythms*. PhD dissertation. Tucson: University of Arizona.
- Fitzgerald, Colleen M. 1999. Loanwords and stress in Tohono O'odham. *Anthropological Linguistics*, Vol. 41. pp. 193-208.
- Fitzgerald, Colleen M. 2005. Documenting the Documentation: The Case of O'odham. *Conference on Endangered Languages and Cultures of Native America*. Retrieved from https://www.researchgate.net/publication/237758100_Documenting_the_Documentation_The_Case_of_O'odham
- Fitzgerald, Colleen M. 2012. Prosodic inconsistency in Tohono O'odham. *International Journal of American Linguistics*, Vol. 78. pp. 435-463.
- Haefler, J. Richard. 1977. *Papago Music and Dance. Occasional Papers*, Vol. 3. Navajo Community College Press.
- Haefler, J. Richard. 1980. O'odham Celkona: The Papago skipping dance. *Southwestern Indian Ritual Drama*, ed. by C. J. Frisbie. Albuquerque: University of New Mexico Press.
- Haefler, J. Richard. 1981. *Musical thought in Papago culture*. Ph.D. dissertation, University of Illinois, Urbana, Illinois.
- Hale, Kenneth. 1959. *A Papago grammar*. PhD dissertation. Bloomington: Indiana University.
- Hale, Kenneth. 1965. Some preliminary observations on papago morphophonemics. *International Journal of American Linguistics* Vol. 31. pp. 295-305.
- Hale, Kenneth. 1969. Papago \cim\. *International Journal of American Linguistics* Vol. 35. pp. 203-212.
- Hale, Kenneth. 1975. *Papago intonation and word order*. Paper presented at the 1975 Uto-Aztecan conference.
- Hale, Kenneth. 1992. Basic word order in two 'free word order' languages. *Pragmatics of Word Order Flexibility*. pp.63-82.
- Hale, Kenneth. 2000. A Uto-Aztecan reflection of a general limit on predicate argument structure. *Uto-Aztecan: Structure, Temporal, and Geographic Perspectives*. pp. 155-168. Hermosillo: Universidad de Sonora.

- Hale, Kenneth. 2001. Preliminary remarks on the syntax and semantics O'odham (Papago) particles. *Semantics of Under-Represented Languages in the Americas Conference*. Retrieved from <http://lingphil.mit.edu/papers/hale/papers/hale050.pdf>
- Hawkins, John. 1979. Implicational universals as predictors of word order change. *Lg.* 55. pp. 618-648.
- Hawkins, John. 1980. On implicational and distributional universals of word order. *Journal of Linguistics* Vol. 16. pp. 193-236.
- Hawkins, John. 1983. *Word order universals*. New York: Academic Press.
- Herzog, George. 1982. On the phonemic status of Pima-Papago w versus v, with a note on orthography. *International Journal of American Linguistics* Vol. 48 pp. 86-87.
- Hill, Jane H. and Ofelia Zepeda. 1992. Derived words in Tohono O'odham. *International Journal of American Linguistics* Vol. 58. pp. 355-404.
- Hill, Jane H. and Ofelia Zepeda. 1998. Tohono O'odham (Papago) plurals. *Anthropological Linguistics* Vol. 40. pp. 1-42.
- Kurath, William. 1945. A brief introduction to Papago. *International Journal of American Linguistics* Vol. 12. pp. 44-45.
- Langacker, Ronald. 1977. *Studies in Uto-Aztecan grammar, 1: An overview of Uto- Aztecan grammar*. Dallas: Summer Institute of Linguistics.
- Mallinson, Graham and Barry Blake. 1981. *Language typology*. Amsterdam: North- Holland.
- Manuel, Frances and Deborah Neff. 2001. *Desert Indian Woman, Stories and Dreams*. Tucson: University of Arizona Press.
- Mason, J. Alden. 1950. *The language of the Papago of Arizona*. Philadelphia: University of Pennsylvania Museum.
- Mathiot, Madeleine. (n.d.) *Tohono O'odham- English dictionary* Vols. 1 & 2. Retrieved from <https://www.acsu.buffalo.edu/~mathiotm/>
- Mathiot, Madeleine. 1957. *A practical orthography for the Papago language based on phonemic analysis*. Georgetown University.
- Mathiot, Madeleine. 1962. Noun classes and folk taxonomy in Papago. *American Anthropologist* Vol. 64. pp. 340-350.
- Mathiot, Madeleine. 1973. *A dictionary of Papago usage*. Vol 1 & 2. Bloomington: Indiana University.

- Miyashita, Mizuki. 2006. Tohono O'odham. *Encyclopedia of Language & Linguistics* (ed. 2). pp. 735-737. Oxford: Elsevier.
- Miyashita, Mizuki. 2011. Diphthongs in Tohono O'odham. *Anthropological Linguistics* Vol. 53. pp. 323-342.
- Miyashita, Mizuki, et al. 2003. Grammatical relations in Tohono O'odham: An instrumental perspective. *Word Order and Scrambling* Vol. 4. pp. 44-66.
- Munro, Pamela. 1984. Floating quantifiers in Pima. *The Syntax of Native American Languages*, ed. by Eung-Do Cook and Donna Gertz (Syntax and Semantics, 16). pp. 269-87. New York: Academic Press.
- Payne, Doris L. 1987. Information structuring in Papago narrative discourse. *Linguistic Society of America* Vol. 63. pp. 783-804.
- Russell, Frank. 1908. *The Pima Indians Bureau of American Ethnology*, Annual Report 26. Washington, D.C. [Reprinted 1974, University of Arizona Press]
- Saxton, Dean. 1963. Papago phonemes. *International Journal of American Linguistics* Vol. 29. pp. 29-35.
- Saxton, Dean. 1980. *Evidence for basic word order in Papago-Pima* (m.s.)
- Saxton, Dean. 1982. Papago. *Studies in Uto-Aztecan grammatical sketches* Vol. 3. pp. 92-266. Arlington: University of Texas.
- Saxton, Dean and Lucille Saxton. 1969. *Dictionary: Papago & Pima to English, O'odham-Mil-gahn; English to Papago & Pima, Mil-gahn-O'odham*. (ed. 1). Tucson: University of Arizona Press.
- Saxton, Dean and Lucille Saxton. 1973. O'otham Hoho'ok A'agitha: Legends and Lore of the Papago and Pima Indians. The University of Arizona Press: Tucson.
- Saxton, Dean, et al. 1983. *Dictionary: Tohono O'odham/Pima to English, English to Tohono O'odham/Pima*. (ed 2). Tucson: University of Arizona Press.
- Shaul, David. (m.s.) Tohono O'odham Dictionary.
- SIL International. 2020. SIL glossary of linguistics terms. Retrieved from <https://glossary.sil.org/term>
- Tohono O'odham Nation. 2016. History and Culture. Retrieved from <http://www.tonation-nsn.gov/history-culture/>
- Tohono O'odham Nation. 2017. Cultural Center and Museum. Retrieved from <http://www.himdagki.org/archives/>

- U.S. Census Bureau. 2018. American Community Survey 5-year estimates. Retrieved from <http://censusreporter.org/profiles/25200US4200R-tohono-oodham-nation-reservation/>
- Underhill, Ruth. M. 1993. *Singing for power: The song magic of the Papago Indians of Southern Arizona*. Tucson: The University of Arizona Press.
- Underhill, Ruth M., et al. 1979. *Rainhouse and ocean: Speeches for the Papago year*. Flagstaff: The Museum of Northern Arizona Press.
- Yu, Alan C L. 2000. Stress assignment in Tohono O'Odham. *Phonology* Vol. 17. pp. 117-135.
- Zepeda, Ofelia. 1983. *A Papago grammar*. Tucson: University of Arizona Press.
- Zepeda, Ofelia. 1984. *Topics in Papago morphology*. PhD dissertation. Tucson: University of Arizona Press.