

A Study of Animal Lexicon in Hawaiian

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1. Introduction

Language is a massive part of any region's culture. By studying the language and its vocabulary words, one can unveil the culture's major principles and what the culture values. Hawaiian is a Polynesian language of the Austronesian language family. According to the American Community Survey (US Census Bureau 2015) conducted in Hawaii, the Hawaiian language has more than 18,000 users claiming to be able to speak the language.

The vocabulary of Hawaiian and how it reflects Hawaiian culture is a major aspect that greatly interests the author. The reason why this study explores Hawaiian animal lexicon is because when I was learning Hawaiian on my own, I discovered some interesting phenomena, such as the detailed classification of marine animals, for example: *i'a* 'fish' and *kūmū* 'goatfish' use completely different roots. In addition, many land animals are loan words, for example: *koa* 'goat' (from English *goat*). Based on these features, this study hopes to launch a comprehensive survey of Hawaiian animal lexicon.

This research mainly discusses three questions: How the Hawaiian language classifies the different animal words? Which words are original (therefore able to be traced back to their Austronesian roots)? Which words are borrowed from another language, and where are these loanwords from?

The following is the structure of the paper: literature review (§2), method (§3), analysis and results (§4), conclusion (§5).

2. Literature Review

There have been several studies on Hawaiian. Some of these include research on grammar conducted by Elbert and Pukui (1979), von Chamisso (1969), and Hawkins (1975), historical vocabulary words collected by Trussel and Blust (2020), dictionaries made by Pukui, Elbert and Mookini (1978), and Hitchcock (1976), a study conducted by Carr on loanwords (1964), study on phonology by Newbrand (1951), and research on place names by Pukui and Elbert (1966). From this point of view, the research on Hawaiian mainly focuses on grammar, and there is still little research on lexicon. This study hopes to fill this academic gap.

3. Method

The author used the Ulukau Hawaiian dictionary, the Hawaiian State Library, Drops and Duolingo to gather a large amount of vocabulary (the last two mentioned sources are language learning apps). The total amount of vocabulary words involved in the research accumulated to more than 150 words.

The author then identified the words that are loanwords, and after that, determined which language the loanwords are from and the rules of word loaning. The author used different dictionaries in this process. These are listed below: Ancient Greek: Eulexis Dictionary, Maori: Te Aka Dictionary, Samoan: University of Hawaii English / Samoan Dictionary, Formosan languages: Thousands Words List, historical linguistics: the Austronesian Comparative Dictionary (Trussel and Blust 2020), hence the ACD.

The author additionally made a detailed analysis of the different animal words. The analyses include basic information about each word, such as if Hawaii has/had native species of such animals (if Hawaii does not have native species, it is more likely than not that the word is a loanword), and different animals' vocabulary in another language, especially Maori and Samoan in order to compare and confirm if the nearby languages have similar results of the same vocabulary words or for other purposes.

The author furthermore accessed the ACD for researching the historical linguistics part of the paper (§4.2), which the author used to find words and word roots, and studied several related articles.

4. Analysis and results

There are three main discoveries about Hawaiian animal lexicon, includes: 1. Marine animals are distinguished in detail (§4.1); 2. Many marine animals can be traced back to proto languages (§4.2); 3. Findings 3: Land animal vocabulary tends to be borrowed (§4.3).

4.1 Finding 1: Marine animals are distinguished in detail

The Hawaiian language has a rich vocabulary concerning the different types of marine animals, and has a special way in classifying the different animals living under the sea. This section will touch on marine animals (§4.1.1), corals (§4.1.2), crabs (§4.1.3), rays (§4.1.4). The exception of squids and octopi will also be discussed (§4.1.5). In addition, I also found two cases where marine animals and land animals are presented as synonyms (§4.1.6), and the body parts of different animals have different references (§4.1.7).

4.1.1 Sea dwellers and their vivid names

The common name for fish or sea creatures is *i'a*. The following words are the vocabulary for specific marine creatures.

Ahi (tuna), *hāhālua* (manta ray), *hīhīmanu* (stingray), *kūmū* (goatfish), *lau'ipala* (yellow tang fish), *mahimahi* (dolphinfish), *manini* (convict surgeonfish), *manō* (shark), *nai'a* (dolphin), *ono* (wahoo fish), *awa* (milkfish), *kīkākāpu* (sunset butterflyfish), *lauwiliwilinukunuku'oi'oi* (long nose butterflyfish), *lauhau* (speckled butterflyfish),

humuhumunukunukuāpua'a (reef triggerfish), *kāmano* (salmon; borrowed word?), *ōpae* (shrimp), *koholā* (whale), *he'e* (octopus), *papa'i* (crab), *mūhe'e* (squid), *pololia* (jellyfish).

An overview of the word would reveal that neither of these ocean creatures had anything to do with the word *i'a*. In Mandarin, for example, all the animals mentioned above (except for the, shrimp, crab, squid, and jellyfish) all end with the root word for fish, 魚 (e.g., *ahi* 'tuna' is 鮪魚, *hīhīmanu* 'stingray' is 黃貂魚, *he'e* 'octopus' is 章魚, and *koholā* 'whale' is 鯨魚). Furthermore, when both Mandarin and English regard *kīkākapu*, *lauwiliwilinukunuku'oi'oi*, and *lauhau* as butterflyfish, the Hawaiian language gave the different types of butterflyfish different names, commonly based on the shape or thickness of the fish (e.g., the repeating *lau* in some types of fish mentioned above means 'leaf,' corresponding to the flatness of the fish). However, fish with similar appearances have the same name (there are two types of butterflyfish are named *lauhau*).

4.1.2 Colourful corals with colourful names

It is found that there is an abundance in Hawaiian words relating to the coral, a clear indication that coral reefs are important to the culture of Hawaii. A tiny fraction of these words include *ko'a* (coral), *puna* (coral; the distinction between *ko'a* and *puna* is vague), *pūko'a* (coral head), *ēkaha kū moana* (black coral), *puna kea* (white coral), *pā'eke* (small coral), *āko'ako'a kohe* (coral mushroom), *kanahe* (porous coral), amongst much more. A quick inspection would see that the amount of the selected words directly using the words *ko'a* or *puna* (the two words that mean coral) is very limited (in the example, only *puna kea* and *pūko'a* directly use the two words meaning coral). Most of these coral related words use distinct word roots to express their meaning. It is, however, observed that many of the other words associated with coral have the letter *k* or *p* as the initial. It is unclear whether this is just a coincidence, or that these words actually have a common word root with *ko'a* and *puna*, and the representation is minimised into one single letter.

According to a scientific article conducted by Asner et al., every single island of the Hawaiian archipelagos have living coral on almost every single coast (2020). This fact furthermore supports the reason why the Hawaiian language has such a massive amount of coral related lexicon.

4.1.3 Specific species of crabs

In Hawaiian, the general term for crab is *papa'i*. However, there are several types of other crab species known to the Hawaiian language, including *'A'ama*, *'ala'eke*, *'elemihi*,

kūhonu, mo‘ala, ‘ōhiki, ‘e‘eke, ‘elekuma, hīhīwai, kukuma, kūmimi, kūmoana, kumulīpoa, maka‘āloa, ‘ōhiki-‘au-moana, ‘ōhiki-maka-loa, pai‘ea, pākīkī, pāpā, paua, pe‘eone, pōhakuhalī, pokipoki, unauna. It is essential to acknowledge the fact that the Hawaiian lexicon is not like other languages, and the different crab words prove just that. In English, most if not all of the organisms mentioned above are either named after the scientific name of the species, or have the word crab in the names. The same principle applies also to the Mandarin language, which sets the character 蟹 (crab) as the root word with features that modify the species.

4.1.4 Different rays with different names

In English, both manta ray and stingray are ‘rays’, but use the additional words ‘manta’ and ‘sting’ to modify the word ‘ray.’ However, in Hawaiian, the two distinct rays, although looking obviously alike, have completely different words that are not likely to be related for the two kinds of rays (*hāhālua* ‘manta ray’; *hīhīmanu* ‘stingray’).

4.1.5 Exception: Squids and octopi with similar names

Squids and octopi are common marine creatures that are characterised by having multiple tentacles. In Hawaiian, the word for octopus is *he‘e*, while the word for squid is *mūhe‘e*. These two words ostensibly relate to one another, with *mūhe‘e* (squid) being a derivative of the word *he‘e*. The prefix *mū-* indicates a state but is less common (Hale Kuamo‘o), thus ‘squid’ in Hawaiian can therefore be understood as the rarer octopus. It is also important to note that there are both endemic squids and octopi in Hawaii. The similar words for squids and octopi act as an exception for Hawaiian’s specific word distinctions.

4.1.6 Underwater and land: homophonic creature names

The common names of sea cucumbers and slugs are both *loli*, and the common names of bats (the mammal) and starfish are both *‘ōpe‘ape‘a*.

Sea cucumbers and slugs look physically similar. Although one is in the sea and another is on land, these two organisms might be put together as a single word because of their physical similarities. On the other hand, the bat and the starfish do not look alike. There is no obvious explanation to the reason why the names of these animals are homophonic, but it is crucial to note that there are both endemic species of the bat and the starfish in Hawaii.

4.1.7 The Word Distinctions of Specific Animal Body Parts

Albeit the vague distinction in the classification of animals, the distinction of certain body parts on animals is very detailed, with the tail of land animals (*huelo*), of fish (*hi‘u*), of fish, lobsters, and shrimp (*pewa*), and of birds (*puapua*) having different words with different

word roots. Same goes with the head of humans (*po'o*) and of octopi (*pū*), and the wings of birds or other objects such as kites and planes (*'ēheu*), and of flying fish (*maha*).

4.2 Findings 2: Many marine animals can be traced back to proto-languages

In this part, the paper investigates the historical linguistics of animal words in the Hawaiian, in an attempt to figure out which types of animals are, in fact, original words that had existed prior to western influence.

According to the ACD, the words in Table 1 are words that can be traced back to older origins. The blank spots in the table would mean that there are no records of related words in the corresponding language shown at the top of the table (POC; Proto-Oceanic, PMP; Proto Malayo-Polynesian, and PAN; Proto-Austronesian. The languages listed are in an order from the nearest to the furthest compared to the modern Hawaiian language). In table 1, it can be seen that most of the words that can be traced back in history concerning animal related words are marine organisms (19 words out of the 25 listed words are marine animals).

Table 1 Different Hawaiian words that could be traced back to older Austronesian language group(s) (ACD).

Ölelo Hawai'i	English Translation	POC	PMP	PAN	Ölelo Hawai'i	English Translation	POC	PMP	PAN
Aku	Bonito fish	*qatun			Manu	Bird	*manuk		
Akule	Big-eyed or goggle-eyed scad		*qatulay		Mū	Big eye emperor fish		*muquŋ	
Awa	Milkfish		*qawa *qawan		Nohu	Stonefish	*nopuq	*nepuq	
A'u	Swordfish		*saku *saku-layaR		Palani	A kind of surgeonfish	*balanji		
Honu	General name for turtles	*poŋu	*peŋu	*peŋu	Pe'a	Bat (mammal)	*bweka		
I'a	General name for fish or other marine animals		*hikan	*Sikan	Pipi	Hawaiian pearl oyster	*bibi	*bibi	
Kala	Surgeonfish	*salaŋ			Pipipi	Small mollusks	*bibi	*bibi	
Kanaka	Human being		*tau-mata	*Cau	Pula	A fish	*pulaR		*bulaR
Kīnana	Mother hen or bird and her brood		*ina	*ina	Puna	Coral	*buŋa	*buŋa	*buŋa
Kio	A mollusk	*ti-Rom	*ti-Rem		Uku	Green jobfish		*qutud *qutun	
Ko'a	Coral	*toka	*tekas		Ula	Hawaiian lobster	*quraŋ		*qudaŋ
Lai	Doublespotted queenfish		*daRi		'Uku	Louse, flea		*kutu	*kuCux
					Lō	Earwig (insect)	*loRo		

Furthermore, the author made a table that indicates how POC transitioned into the modern Hawaiian language (Table 2). These can help tracing more Hawaiian vocabulary words back to the POC language.

POC	Modern Hawaiian	Examples	POC	Modern Hawaiian	Examples
a	a	* <i>lasoR</i> → <i>laho</i> (male)			(turn), * <i>runrunj</i> → <i>lulu</i> (calm)
b	p	* <i>burja</i> → <i>puna</i> (coral), * <i>buku</i> → <i>ho'o pu'u</i> (to heap up), * <i>bayan</i> → <i>pā</i> (pearl-shell lure)	o	o	* <i>matolu</i> → <i>mākolu</i> (thick), * <i>motus</i> → <i>moku</i> (island), * <i>qo</i> → <i>ō</i> (to answer)
c***	h	* <i>icuj</i> → <i>ihu</i> (nose)	p (initial / middle)	w or h	* <i>papine</i> → <i>wahine</i> (woman), * <i>paRak</i> → <i>hā</i> (hoarse), * <i>pale</i> → <i>hale</i> (house)
e	e	* <i>ule</i> → <i>ule</i> (testicles), * <i>wage</i> → <i>wae</i> (leg), * <i>keii</i> → <i>eli</i> (to dig)	p (ending)	(dropped)	* <i>qatop</i> → <i>ako</i> (to thatch), * <i>qarop</i> → <i>alo</i> (face)
g***	glottal stop ('okina)	* <i>waga</i> → <i>wa'a</i> (canoe), <i>guRurj</i> → <i>'ū</i> (groan)	q	(dropped)	* <i>qawa</i> → <i>awa</i> (milkfish), * <i>tolaq</i> → <i>kola</i> (hard), * <i>raqe</i> → <i>lae</i> (forehead)
i	i	* <i>balarij</i> → <i>palani</i> (a type of surgeonfish), * <i>nipon</i> → <i>niho</i> (tooth), * <i>qoti</i> → <i>oki</i> (stop)	r (initial / middle)	l	* <i>quraj</i> → <i>ula</i> (Hawaiian lobster), * <i>ramaR</i> → <i>lama</i> (light), * <i>raunraun</i> → <i>laulau</i> (wrapped packages)
j	k or (dropped)	* <i>jaot</i> → <i>kao</i> (dart), * <i>kiajo</i> → <i>'iako</i> (outrigger boom), * <i>jalan</i> → <i>ala</i> (road)	r (ending)	(dropped)	* <i>saur</i> → <i>kau</i> (to put), * <i>tokalaur</i> → <i>ko'olau</i> (windward sides of the Hawaiian islands), * <i>ponor</i> → <i>hono</i> (gathering of chiefs in a taboo ceremony)
k	glottal stop ('okina)	* <i>kawe</i> → <i>'awe</i> (tentacle), * <i>kiki</i> → <i>'i'i</i> (small), * <i>tutuk</i> → <i>kuku</i> (to beat)	R	(dropped)	* <i>pulaR</i> → <i>pula</i> (a fish), * <i>toRo</i> → <i>lō</i> (earwig), * <i>akaR</i> → <i>a'a</i> (muscle)
l	l	* <i>pulu</i> → <i>hulu</i> (feather), * <i>loto</i> → <i>loko</i> (inside), * <i>leqo</i> → <i>leo</i> (voice)	s	k or h or (dropped)	* <i>salarj</i> → <i>kala</i> (surgeonfish), * <i>lisa</i> → <i>liha</i> (egg of louse), <i>sarja</i> → <i>ana</i> (to measure)
m (middle / initial)	m	* <i>malaq</i> → <i>maka</i> (raw fish), * <i>manuk</i> → <i>manu</i> (bird), * <i>inumia</i> → <i>inumia</i> (drink)	t (initial)	k	* <i>toka</i> → <i>ko'a</i> (coral), * <i>tabu</i> → <i>kapu</i> (taboo), * <i>taba</i> → <i>kāpa</i> (edge)
m (ending)	(dropped)	* <i>tanum</i> → <i>kanu</i> (to bury), * <i>onom</i> → <i>ono</i> (six), * <i>irarom</i> → <i>i lalo</i> (below)	t (ending)	(dropped)	* <i>kullit</i> → <i>'ili</i> (skin), * <i>qait</i> → <i>ai</i> (colt), * <i>akot</i> → <i>a'o</i> (instruction)
n (middle / initial)	n	* <i>ilRom</i> → <i>kio</i> (a mollusk), * <i>nopuq</i> → <i>nohu</i> (a fish), * <i>manuk</i> → <i>manu</i> (bird)	u	u	* <i>pui</i> → <i>hui</i> (club), * <i>matuqa</i> → <i>makua</i> (parent), * <i>ua</i> → <i>qusan</i> (rain)
n (ending)	(dropped)	* <i>qatun</i> → <i>aku</i> (bonito fish), * <i>tokan</i> → <i>ko'o</i> (support), * <i>apon</i> → <i>aho</i> (line)	w	w	* <i>kakawa</i> → <i>'a'awa</i> (wrasse), * <i>waga</i> → <i>wa'a</i> (canoe), * <i>wao</i> → <i>wao</i> (inland region)
ŋ (middle)	n	* <i>balarij</i> → <i>palani</i> (a type of surgeonfish), * <i>ŋojok</i> → <i>nonō</i> (to snore), * <i>burja</i> → <i>puna</i> (coral),	y	(dropped)	* <i>bayan</i> → <i>pā</i> (pearl-shell lure), * <i>raqan kayu</i> → <i>lā'au</i> (plant), * <i>qatay</i> → <i>ake</i> (liver)
ŋ (ending)	(dropped)	* <i>quraj</i> → <i>ula</i> (Hawaiian lobster), * <i>bulirj</i> → <i>huli</i>			

Table 2; Transition of POC to Modern Hawaiian. ***: the author suspects the letter no longer exists in POC (evolved into something else), but is included in the ACD.

4.3 Findings 3: Land animal vocabulary tends to be borrowed

One major animal vocabulary source, especially animals of foreign origins, is from English and other languages. These loanwords are essential to modern Hawaii, as Hawaii now provides living land for many of the introduced animals.

Hawaiian is a language with a massive amount of loanwords, which might be due to the fact that it is geographically isolated from the rest of the world. This paper discusses a general pattern in word loaning of the Hawaiian language. The author had collected a few of the loanwords that come from English, as listed in the table below. Note that there might be multiple possible translations for these words.

Table 3: Loanwords from English

Hawaiian	English	Hawaiian	English
<i>'aeko</i>	eagle	<i>kāmano</i>	salmon
<i>'amakila</i>	armadillo	<i>lākua</i>	jaguar
<i>'elepani</i>	elephant	<i>lāpaki</i>	rabbit
<i>hipa</i>	sheep	<i>makika</i>	mosquito
<i>koa</i>	goat	<i>manu palamiko</i>	flamingo
<i>kia</i>	deer	<i>naheka</i>	snake
<i>kika</i>	tiger	<i>pea</i>	bear

Hawaiian	English	Hawaiian	English
<i>kilape</i>	giraffe	<i>pelikana</i>	pelican
<i>kepola</i>	sparrow	<i>pipi</i>	cow (from beef)
<i>kiulela</i>	squirrel	<i>poloka</i>	frog

As observed from the table provided above, most of the animal loanwords from English are land animals native elsewhere, thus needing a loan word to replace the previously non-existent noun. Marine animals, on the other hand, aren't usually in this list, except for marine animals that don't appear in Hawaiian waters (e.g., *kāmano* 'salmon').

Table 5 provides an exchange list of letters for words borrowed from English into Hawaiian. Note that some loanwords listed in this table have more than one official translation.

The author has also identified a few grammatical rules in Hawaiian that heavily influences the Hawaiian loanwords. One of these factors is the fact that Hawaiian does not accept consonant clusters, which would result in consonant deletions (e.g., *kiulela* 'squirrel') or the addition of a vowel in between the original cluster (e.g., *'alememone* 'almond'). It is also observed that if the consonants in a consonant cluster have softer sounds, the consonant would typically get deleted (e.g., *'amakila* 'armadillo'). Hawaiian, furthermore, doesn't accept having a consonant as the ending of a word. Default vowels would therefore have to be added to the end of words accordingly, signifying coda changes.

The alphabet of the Hawaiian language has fewer letters (Hawaiian contains only 13) compared to most of the world. Many words thus sound significantly different from the original word, making it difficult for researchers to identify loan words. Table 5 of this research can be used to determine if a word is a loanword from English, a major source of Hawaiian loanwords.

English	Hawaiian	Example	English	Hawaiian	Example
a	a or ā	<i>ālikekoa</i> (alligator), <i>'āpala</i> (apple), <i>'ālemone</i> (almond)	o	o or a	<i>okekelika</i> (ostrich), <i>'ota</i> (otter), <i>lopako</i> (robot)
b	p	<i>pea</i> (bear), <i>puke</i> (book), <i>poia</i> (bow)	ō	a	<i>kepola</i> (sparrow), <i>kāmano</i> (salmon),
c	k	<i>pelikana</i> (pelican), <i>ka 'a</i> (car), <i>kamepiula</i> (computer)	p	p	<i>pepa</i> (paper), <i>pea</i> (pear), <i>hāpa</i> (harp)
ç	(dropped) or k	<i>penikala</i> (pencil), <i>'āikalima</i> (ice cream), <i>lauki</i> (rice)	q	ki	<i>makika</i> (mosquito), <i>kapa kaiiki</i> (quilt), <i>kāilana</i> (quality)
d	k	<i>amakila</i> (armadillo), <i>ipaka</i> (iPad), <i>kālā</i> (dollar)	r	l	<i>lāpaki</i> (rabbit), <i>kāloke</i> (carrot), <i>mele</i> (merry)
e	e	<i>'elepani</i> (elephant), <i>āleka</i> (elk), <i>penekuila</i> (penguin)	s	(dropped) or k	<i>naheka</i> (snake), <i>pakeki</i> (spaghetti), <i>kanakaloka</i> (Santa Claus)
f / ph	p	<i>'elepani</i> (elephant), <i>manu palamiko</i> (flamingo), <i>hapa</i> (half Hawaiian)	t / tr	k	<i>kelepona</i> (telephone), <i>paka</i> (butter), <i>kalo</i> (taro)
g	k	<i>'aeko</i> (engle), <i>kika</i> (tiger), <i>manakō</i> (mango)	u	u	<i>uniona</i> (union), <i>'Ukana</i> (Uganda), <i>'Ukelenu</i> (Ukraine)
g (j)	k	<i>kilape</i> (giraffe), <i>kāpiki</i> (cabbage), <i>Kepani</i> (Japanese)	v	w	<i>'eleweka</i> (elevator), <i>wākumela</i> (vacuum cleaner), <i>wikiō</i> (video)
h	h	<i>hipopokamu</i> (hippo), <i>hōkele</i> (hotel), <i>pua 'a hame</i> (ham)	w	w or oi	<i>loio</i> (lawyer), <i>waina</i> (wine),
i / y (aye)	ai or ae	<i>kaioko</i> (coyote), <i>'Uluakae</i> (Uruguay)	x	k	<i>kelopahone</i> (xylophone)
j	k or l	<i>lākua</i> (jaguar), <i>kele</i> (jelly), <i>lanuali</i> (January)	y (ee)	e, i, ē, or ī	<i>pakali</i> (parsley), <i>hōkē</i> (hockey),
k	k	<i>kuki</i> (cookie), <i>kuke</i> (cook), <i>kikila</i> (kettle)	z	k	<i>kepela</i> (zebra), <i>pika</i> (pizza)
l	l	<i>palakeli</i> (broccoli),	sh	h	<i>hipa</i> (sheep),
m	m	<i>mākeke</i> (market), <i>malaita</i> (Malay), <i>miliona</i> (million)	ch / ch (k)	k	<i>kokoleka</i> (chocolate), <i>keli</i> (cherry), <i>kalikimaka</i> (Christmas)
n	n	<i>kāilina</i> (corn), <i>meleni</i> (melon), <i>pineki</i> (peanut)			

Table 5: Hawaiian loanwords from English exchange list.

There are, however, words that are probably not from an English origin, and therefore not listed in Table 3. The author suspects the word *pōpoki* ‘cat’ to be a word of either English or Dutch origin. The author translated the word ‘cat’ into Maori and Samoan in different reliable dictionaries (listed in §3), which respectively, are *poti* and *pusi*. It might be entirely possible that the word came directly from the Dutch *poes*, the English ‘pussy,’ or from either origin, but passed from other places into Hawaii. Furthermore, the word ‘*alopeke*’ ‘fox’ corresponds almost completely to the ancient Greek *αλωπεκή* (romanticised *alopeke*; fox skin), which might have been imported into Hawaiian via the Greek mythologies or literature (Verkerk, 2020). Furthermore, Elbert and Pukui (1979: 32) stated that the word *meli* ‘honey’ (or ‘bee’) is a loanword of Greek sources (*meli*), arriving in Hawaii via the Bible.

Additionally, there are also a few identified loanwords that are actually a product of calque (e.g., *ko’e honua* ‘earthworm’). These words are formed by translating the different parts of the word then placing these words together to form a word in another language. A swift analysis of the example provided would reveal that the word *ko’e* means worm, and that *honua* means earth.

5. Conclusion

This paper exhibits how the Hawaiian culture is marine-centred, as the vocabulary words for marine animals are much more sophisticated than the classifications of land animals, which a bulk of that is loanwords from other languages (predominantly English), and can be used to trace the Hawaiian language back to the POC language, and furthermore reveals key points of a culture in danger of demise.

By recording the data in this paper, this paper scribes a report of an essential and natural part of an endangered language, printing the foundation to further studies investigating the historical aspect of Hawaiian and/or more related languages in the Polynesia region. The author furthermore hopes that this study would aid the establishment of further studies concerning the Hawaiian lexicon.

References

- Asner, G. P., Vaughn, N. R., Heckler, J., Knapp, D. E., Balzotti, C. S., Shafron, E., Martin, R. E., Neilson, B. J., & Gove, J. M. (2020). Large-scale mapping of live corals to guide reef conservation. *Proceedings of the National Academy of Sciences of the United States of America*, 117(52), 33711–33718. <https://doi.org/10.1073/pnas.2017628117>
- Blust, R. (2013). The Austronesian languages. *Anu.edu.au*. <https://doi.org/9781922185075>

- Blust, R., & Trussel, S. (2020). *Austronesian Comparative Dictionary - Languages :H*. Trussel2.com. https://www.trussel2.com/ACD/acd-l_h.htm#Hawaiian
- Carr, D. (1964). Comparative treatment of epenthetic and paragodic vowels in english loan words in japanese and hawaiian. *Language Learning*, 14(1-2), 21–37. <https://doi.org/10.1111/j.1467-1770.1964.tb00771.x>
- Elbert, S. H., & Pukui, M. K. (1979). *Hawaiian grammar*. University Press Of Hawaii, Cop. Hale Kuamo'o. (2023). *Ulukau Hawaiian Dictionaries*. Wehewehe.org. <https://wehewehe.org/gsd12.85/cgi-bin/hdict?l=en>
- Hawaii State Public Library System. (2023). *Hawaiian words*. Librarieshawaii.org. <https://www.librarieshawaii.org/learn/brain-games/hawaiian-words/>
- Hawaiian State Data Center. (2015). *Highlights for Language Spoken at Home State of Hawaii, 2009 to 2013*. https://files.hawaii.gov/dbedt/census/acs/ACS2013/ACS2013_5_Year/Other_Files/Highlights_2009_13_acs_lang_spoke_home_hi.pdf
- Hawkins, E. A. (1975). *Hawaiian Sentence Structures*.
- Hitchcock, H. R. (1976). *An English-Hawaiian dictionary : with various useful tables*. Tuttle.
- Kaufman, D., Otsuka, Y., Schapper, A., Edwards, O., & Smith, A. (2017, March 30). *Oceanic Linguistics - UH Press*. UH Press - University of Hawai'i Press. <https://uhpress.hawaii.edu/title/ol/>
- Moorfield, J. (2023). *Te Aka Māori Dictionary*. Te Aka Māori Dictionary; Te Aka. <https://maoridictionary.co.nz/>
- Newbrand, H. L. (1951). *A Phonemic Analysis of Hawaiian*.
- Pukui, M. K., Elbert, S. H., & Mookini, E. T. (1978). *The pocket Hawaiian dictionary with a concise Hawaiian grammar*. Univ. Press Of Hawaii.
- Trussel, S. (2020). *CHD - Hawaiian-English - H*. Trussel2.com. <https://trussel2.com/HAW/haw-h.htm#63571>
- University of Hawaii. (2023). *Sāmoan / English Dictionary*. Hawaii.edu. <https://www2.hawaii.edu/~leighj/SAMOAN/dictionary/>
- Verkerk, P. (2020). *Eulexis-web*. Boîte à Outils Bibliissima. <https://outils.bibliissima.fr/fr/eulexis-web/?lemma=&dict=LSJ>
- von Chamisso, A. (1969). *Über die Hawaiische Sprache*.

第二屆臺灣中學生語言科學科展
The 2nd High School Language Science Fair in Taiwan

Ethan 科展指導老師推薦函

指導老師：林鴻瑞（國立暨南國際大學中國語文學系博士、兼任講師）

學生：I Chen Hsieh (Ethan)

作品名稱：A Study of Animal Lexicon in Hawaiian

各位評審教授鈞鑑：

I Chen Hsieh (Ethan) 語言科學科展作品，屬於語言科學科展中語言文化保存之主題，將展出夏威夷語動物詞彙之研究成果。在臺灣，似乎很少聽到有人研究夏威夷語，而此項夏威夷語研究，竟是出自於一位林口康橋十一年級的高中生！他藉由詞彙之研究，發現夏威夷語對於海洋動物之重視，也挖掘諸多有意思之現象。以下從作品的意義與貢獻以及學生研究過程兩方面來推薦。

一、作品的意義與貢獻

不僅在臺灣幾乎沒有人研究夏威夷語，就整個世界來說，研究夏威夷語的研究者亦仍不多。研究夏威夷語詞彙，又更少見。Ethan 從此題切入，能讓大家藉此更認識夏威夷語。具體來說，此研究有三大發現：

（一）夏威夷語海洋動物區分相當細緻

Ethan 發現無論是魚類、珊瑚、螃蟹等，都分得相當細緻，有別於中文與英文。此外，他也發現夏威夷語中海洋動物與陸地動物詞彙同音的案例，即夏威夷語 *loli* 「海參；蛞蝓」、*ōpe‘ape‘a* 「海星；蝙蝠」。由此可見或許是夏威夷人用熟悉的海洋生物來將外形相近的陸地動物連繫在一起。此外，他也發現海洋動物的身體部位稱呼，也與陸地動物有所區別，例如：一般陸地動物的「尾巴」是 *huelo*，然而魚的尾巴是 *hi‘u*，而龍蝦/蝦的尾巴為 *huelo*，有所分別。

（二）夏威夷語海洋動物詞彙可構擬至原始大洋洲語以上之階段

根據《南島語言比較辭典》(ACD)，夏威夷語同源詞中共有 25 項動物詞彙。Ethan 從歷史語言學的角度切入，採取 ACD 的資料，進一步發現在這 25 項動物詞彙中，高達 76% 屬於海洋動物，由此可見此語言對於海洋生物之重視。相較之下，在臺灣的南島語言中，多居住於高山，則在語言中較沒有看到這樣的現象。由於夏威夷語音位非常少，語音變化劇烈，Ethan 也很細心提供中原始大洋洲語到夏威夷語之變化。

（三）陸地動物多為借詞

Ethan 仔細爬梳近 100 筆夏威夷語動物詞彙，並發現約有五分之一的詞彙為借詞！在 22 筆借詞中，Ethan 發現僅「鮭魚」一詞屬於海洋動物，其餘則皆為陸地動物。語言來源的部分，有 20 筆借自英語，1 筆可能借自荷蘭語，1 筆借自古希臘語。由於夏威夷語音段數量稀少，因此要判斷是否是借詞其實並不容易，然而，Ethan 做了細膩的考證，證實確實是借詞，且歸納出借詞語音對應規則。

除了借詞之外，Ethan 也發現有一筆譯借詞 (calque)，*ko‘e honua* 「蚯蚓」是英語 earthworm 的譯借詞，此詞正好由 *ko‘e* 「worm」與 *honua* 「earth」組合而成。

二、學生研究過程

Ethan 本身精熟英語，也學習過德語、西語等，更特別的是，Ethan 竟對於夏威夷語非常著迷，自學夏威夷語。在臺灣，學習英語、德語、法語、西語、日語都很普遍，但很少聽過學習夏威夷語的，況且還是自學，面臨的挑戰更大。Ethan 也不僅是運用網路的學習資源，Ethan 今年寒假，甚至搭飛機遠赴夏威夷實地走訪兩週，而過去在課堂上，Ethan 也曾做過夏威夷歷史的課堂報告。由此種種，都可見 Ethan 對於夏威夷之熱情。

在一開始指導 Ethan 時，當時要研究什麼語言、研究什麼議題都還未明時，Ethan 即表示想要探究夏威夷語！而他更是在短短兩天內，獨自整理了 27 頁夏威夷語的語料，且不只是複製貼上羅列而已，更有初步的分類與語源分析。我自己曾編纂過族語辭典，知道其中的不容易，對於 Ethan 的積極、主動、熱忱，感到相當讚嘆！

在初期的研究，Ethan 並不先預設某立場，而是非常踏實地，將近百筆的動物詞彙，逐一從構詞學、語意學、音韻學、歷史語言學、生物學等角度進行分析。光是這近百筆的詞彙，Ethan 就撰寫了將近 16 頁的分析筆記！且除了起初由我帶領他進行分析之外，之後都是他獨立自主進行分析，再報告給我聽，而他每一次都可以帶來很多的進度；到了研究的中期，他才從 16 頁的分析筆記中，進一步歸納夏威夷語動物詞彙的特點，並整合成有意義、有組織性的討論。我認為 Ethan 這樣由下而上（bottom-up）的方法，更能掌握夏威夷語詞彙的精髓。

雖然此為語言科學科展之作，然而，Ethan 在論述事情時，除了從語言學進行分析之外，也會輔以歷史、地理、生物等學科進行跨領域之綜合分析，讓討論更為全面性。此點在諸多詞彙的討論上，都可見一斑。例如「狐狸」一詞，從語言學的角度，Ethan 將之語諸語言進行比較，發現是借自古希臘語，並透過地理、歷史、生物、族群研究等，發現是透過聖經。我認為這樣全面性的討論，可以讓真相更為明朗，也更具說服力。由於夏威夷語音段較少，因此動物詞彙的語源，究竟是固有詞抑或外來詞，都必須要有客觀的推理分析，才能避免語音巧合偶然之因素。在論證推理上，Ethan 會主動附上薩摩亞語、毛利語等諸多語言進行對比，也會觀察是否符合原始大洋洲語到夏威夷語之音變、是否符合夏威夷語英語借詞的語音對應規則等，再加上會輔以歷史、地理等背景作為支持，從其論述來說，可謂相當精彩，也具有一定的說服力。

綜上所述，Ethan 獨到的觀察力，挖掘出諸多精彩有意義的語言現象，有諸多具體的發現，加上縝密的推理分析，將夏威夷語動物詞彙的內涵研究透徹。夏威夷語本身是南島語系的語言，而臺灣作為整個南島語系的原鄉，Ethan 提供的方法以及發現的結論，未來可進一步用以與臺灣南島語言做比較。感覺這位高中生的潛力無窮，表現甚至超過不少語言學研究生。據此，本人極力推薦 Ethan 的科學科展作品，盼讓他能有進一步海報宣讀的機會。

指導老師 林鴻瑞謹誌 2023/09/23

林鴻瑞