HAWAIIAN PLACE NAMES:
STORIED SYMBOLS IN
HAWAIIAN PERFORMANCE CARTOGRAPHIES

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DEDICATION

In loving memory of Aunty Moana Kapapakealiioka'alokal “Mona” Kapule-Kahele.
ACKNOWLEDGEMENTS

There are numerous people that must be acknowledged as instrumental to the completion of this manuscript. However, naming all of them would be a manuscript of itself. So, I will identify only a handful and humbly ask forgiveness for those not included here. First and foremost is Aunty Moana Kapapakealiloa'alokai “Mona” Kapule-Kahele. She spent many hours sharing her memories with me. She breathed life into her kūlāwī with stories some of which are shared in this text. Her complete work can be found in her book Clouds of Memories. I must also acknowledge the help of Kumu Pono Associate Kapā Maly and Kona resident Sparkie Ewing. Without their help I could not have gathered the field data or met the key community members necessary to complete this work.

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Lastly, I must acknowledge the support of friends and family who provided the emotional strength and stamina I needed to succeed. My parents, Allen and Gloria Louie, and my life partner, Arna Goldstein, patiently listened to all my trials and tribulations and ultimately attended the defense of my dissertation. Thank you. My Native American friends, Jay Johnson and Margaret Pearce, engaged me academically and provided a sense of comfort in knowing that I am not alone in the struggle to bring the Indigenous voice forward. Thank you. My close friends Julie Kaneshiro, doctor of Chinese medicine, and Kukui Borges, licensed massage therapist, treated my body when it was weak from illness and ached from writing. Thank you.
Abstract

This research explores the nature of Hawaiian performance cartographies with a specific focus on place names as storied symbols. It also presents the cartographic culture clash as two dissimilar spatial knowledge systems come together on the shores of Kealakekua, Hawai'i at the turn of the nineteenth century. Although it is natural to frame the discussion of Western and Hawaiian cartographies dichotomously, this text maintains that all knowledge, including spatial knowledge, is socially constructed according to each culture's ontological and epistemological foundations.

Thus, it recognizes the relationship between the two cartographic traditions as existing in parallel to or in tandem with one another up until Captain Cook's arrival at Kapukapu (a. k. a. Kealakekua Bay). At that point in time, 1798, the interactive presentation of Hawaiian cultural knowing encountered the visual representations of Western archival knowledge. Hawaiian place names were transformed from (re)presenting place as a repository of a multiplicity of meaning to representing place as an objectified and distanced label on the landscape.

This text also recognizes the need for Indigenous methodologies in geographic research. Geographers have been engaging with Indigenous communities for millennia. Yet very little has been developed in regard to geographic research methodologies and Indigenous people. This text embraces Indigenous ontologies and epistemologies and brings them to the forefront of geographic research.
# Table of Contents

Dedication ........................................................................................................ iv  
Acknowledgements ........................................................................................... v  
Abstract ............................................................................................................. vii  
List of Tables ....................................................................................................... xi  
List of Figures ..................................................................................................... xii  
Preface ................................................................................................................ xiv  
Chapter 1 - Relationships Matter ..................................................................... 1  
Concepts .............................................................................................................. 8  
What is cartography? ......................................................................................... 8  
What is epistemology? ...................................................................................... 11  
What does this have to do with place names? .............................................. 21  
Why is this work important? .......................................................................... 24  
Ideas yet to flourish ......................................................................................... 29  
Chapter 2 - Western Cartography ................................................................... 32  
Western mapping origins .............................................................................. 33  
Manuscript maps of antiquity (600 bc – ad 300) ......................................... 37  
  Theoretical cartography (to 300 bc) .............................................................. 39  
  Empirical cartography (300 – 200 bc) ............................................................ 48  
  Revisionist cartography (200 bc – ad 200) .................................................... 51  
Manuscript maps of Middle Ages (ad 350 – 1450) ....................................... 61  
  Mappamundi .................................................................................................. 63  
  Navigational charts ....................................................................................... 64  
Renaissance maps: Inventions and Discoveries (1450 – 1600) ...................... 67  
  Rediscovery of Ptolemy's Geographia ............................................................... 69  
  Engraving and the Guttenberg printing press ............................................... 70  
  The Age of (European) Discovery and Exploration .................................... 72  
Reformation cartography (1600 – 1800) ......................................................... 81  
  Determination of the length of an arc ........................................................... 82  
  Determination of the spheroid ....................................................................... 86  
  Longitude ......................................................................................................... 88  
  National Surveys ............................................................................................. 92  
Mapping the Pacific .......................................................................................... 95  
Closing Remarks ............................................................................................... 103  
Chapter 3 - Hawaiian performance cartographies ........................................ 107  
Hawaiian epistemology ............................................................................... 108  
Hawaiian geography ................................................................................. 116  
Hawaiian language and spatial knowledge .................................................. 122  
Reinforcing Relationships ............................................................................ 130  
  Hawaiian spatial knowledge acquisition .................................................... 130  
  Hawaiian spatial knowledge symbolic (re)presentation ............................ 135  

viii
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hawaiian spatial knowledge transmission</td>
<td>151</td>
</tr>
<tr>
<td>The nature of Hawaiian performance cartographies</td>
<td>153</td>
</tr>
<tr>
<td>Significance of place and landscape</td>
<td>154</td>
</tr>
<tr>
<td>Significance of storied place names and storytelling</td>
<td>157</td>
</tr>
<tr>
<td>Significance of interactively presenting place</td>
<td>160</td>
</tr>
<tr>
<td>Nuances of Hawaiian performance cartographies</td>
<td>162</td>
</tr>
<tr>
<td>Closing Remarks</td>
<td>170</td>
</tr>
<tr>
<td>Chapter 4 - Why Me? Why Here? And How?</td>
<td>173</td>
</tr>
<tr>
<td>Unwrapping place: Kapukapu's cultural and cartographic Heritage</td>
<td>175</td>
</tr>
<tr>
<td>Methodological framework</td>
<td>203</td>
</tr>
<tr>
<td>The nature of Indigenous methodologies</td>
<td>205</td>
</tr>
<tr>
<td>Methodologies: Indigenous and Exogenous</td>
<td>214</td>
</tr>
<tr>
<td>Choosing one another</td>
<td>220</td>
</tr>
<tr>
<td>Chapter 5 - Through their eyes, with their voices</td>
<td>227</td>
</tr>
<tr>
<td>Whose Voices?</td>
<td>229</td>
</tr>
<tr>
<td>Moana Kapapakeal'iioka'aloakai &quot;Mona&quot; Kapule-Kaheiie</td>
<td>230</td>
</tr>
<tr>
<td>William Kalikolehua Pānui</td>
<td>231</td>
</tr>
<tr>
<td>Katie Ke'ali'i Kalā-Andrade</td>
<td>231</td>
</tr>
<tr>
<td>Maili Ka'ohouohou-Mitchell</td>
<td>232</td>
</tr>
<tr>
<td>The places, their names, and significance</td>
<td>232</td>
</tr>
<tr>
<td>Kealakekua-Kalakekua (Figure 59) (Figure 60)</td>
<td>233</td>
</tr>
<tr>
<td>Kapukapu</td>
<td>243</td>
</tr>
<tr>
<td>Kōlou</td>
<td>244</td>
</tr>
<tr>
<td>Kapahukapu</td>
<td>247</td>
</tr>
<tr>
<td>Hali'ilua</td>
<td>251</td>
</tr>
<tr>
<td>Lualii'ioa</td>
<td>252</td>
</tr>
<tr>
<td>K'ei</td>
<td>254</td>
</tr>
<tr>
<td>Mokuoka'e</td>
<td>255</td>
</tr>
<tr>
<td>Napo'opo'o</td>
<td>258</td>
</tr>
<tr>
<td>Keawekāheka</td>
<td>261</td>
</tr>
<tr>
<td>Hāwala'au</td>
<td>262</td>
</tr>
<tr>
<td>Kepuhi</td>
<td>263</td>
</tr>
<tr>
<td>Limukoko</td>
<td>263</td>
</tr>
<tr>
<td>Palemano</td>
<td>264</td>
</tr>
<tr>
<td>Kalaemamo</td>
<td>266</td>
</tr>
<tr>
<td>Kapalikapuokeʻōua</td>
<td>267</td>
</tr>
<tr>
<td>Paliomanuahli</td>
<td>268</td>
</tr>
<tr>
<td>Kamaiko Heiau</td>
<td>271</td>
</tr>
<tr>
<td>'Umiwal</td>
<td>272</td>
</tr>
<tr>
<td>Closing remarks</td>
<td>273</td>
</tr>
<tr>
<td>Chapter 6 - Depth of meaning</td>
<td>277</td>
</tr>
<tr>
<td>Naming Discrepancies</td>
<td>279</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table 1. Final place name counts...........................................................................................................280
Table 2. Place names collected and organized.. ..................................................................................328
Table 3. Place names summary breakdown..........................................................................................329
### List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The Ga-Sur clay tablet map, c. 2300 BC.</td>
<td>35</td>
</tr>
<tr>
<td>2</td>
<td>The Ga-Sur schematic diagram</td>
<td>35</td>
</tr>
<tr>
<td>3</td>
<td>Reconstruction of Homer's view of the world</td>
<td>40</td>
</tr>
<tr>
<td>4</td>
<td>Reconstruction of the world according to Hecataeus</td>
<td>42</td>
</tr>
<tr>
<td>5</td>
<td>Reconstruction of Aristotle's climatic zones</td>
<td>45</td>
</tr>
<tr>
<td>6</td>
<td>Reconstruction of Aristotle's system of the winds</td>
<td>46</td>
</tr>
<tr>
<td>7</td>
<td>Reconstructed world map of Dicasarchus</td>
<td>49</td>
</tr>
<tr>
<td>8</td>
<td>Reconstructed map of the inhabited world by Strabo</td>
<td>56</td>
</tr>
<tr>
<td>9</td>
<td>Ptolemy's conic projection</td>
<td>59</td>
</tr>
<tr>
<td>10</td>
<td>Reconstruction of Ptolemy's world map</td>
<td>60</td>
</tr>
<tr>
<td>11</td>
<td>Roselli ornamental Portolan Chart (1466)</td>
<td>66</td>
</tr>
<tr>
<td>12</td>
<td>Reproduction of Europe and North Africa in the Catlaan Atlas by Abraham Cresques (1375)</td>
<td>67</td>
</tr>
<tr>
<td>13</td>
<td>Cross section of a wood block</td>
<td>71</td>
</tr>
<tr>
<td>14</td>
<td>Cross section of a metal plate</td>
<td>71</td>
</tr>
<tr>
<td>15</td>
<td>World map in the Insularium of Henricus Martellius Germanus (c. 1489)</td>
<td>74</td>
</tr>
<tr>
<td>16</td>
<td>World map by Juan de la Coea (1500)</td>
<td>75</td>
</tr>
<tr>
<td>17</td>
<td>Western detail of Juan de la Coea's world map (1500)</td>
<td>75</td>
</tr>
<tr>
<td>18</td>
<td>World map by Diego Ribero (1529)</td>
<td>77</td>
</tr>
<tr>
<td>19</td>
<td>Gerard Mercator's famous world map, 1569</td>
<td>78</td>
</tr>
<tr>
<td>20</td>
<td>Outline drawing/interpretation of Gerard Mercator's famous world map, 1569</td>
<td>78</td>
</tr>
<tr>
<td>21</td>
<td>Map page of the Americas from Ortelius' Theatrum Orbis Terrarum</td>
<td>79</td>
</tr>
<tr>
<td>22</td>
<td>An example of Gemma Friesius' Triangle</td>
<td>85</td>
</tr>
<tr>
<td>23</td>
<td>John Harrison's first marine chronometer, H1</td>
<td>91</td>
</tr>
<tr>
<td>24</td>
<td>John Harrison's prize winning marine chronometer, H4</td>
<td>91</td>
</tr>
<tr>
<td>25</td>
<td>Paris and its neighboring villages and forests are the focus of the 'first sheet' of the Carte géométrique de la France</td>
<td>93</td>
</tr>
<tr>
<td>26</td>
<td>Ramedaen's three foot geodetic theodolite, 1791</td>
<td>94</td>
</tr>
<tr>
<td>27</td>
<td>Map of the world in 1564 by Petrus Plancius (1552-1622), Dutch astronomer, cartographer and clergyman</td>
<td>96</td>
</tr>
<tr>
<td>28</td>
<td>A rare chart by Schmidt showing the route of the Spanish Galleone</td>
<td>97</td>
</tr>
<tr>
<td>29</td>
<td>Map of the world in 1691 by William Dampier (1651 - 1715), an English explorer, author and scientific observer</td>
<td>99</td>
</tr>
<tr>
<td>30</td>
<td>1814 Pacific Ocean map by Adrien Brue (1786 - 1832)</td>
<td>102</td>
</tr>
<tr>
<td>31</td>
<td>Reconstruction of Tuan's schematic diagram depicting the experiential modes from which a person constructs reality. It has been extended to accommodate Meyer's distinctions</td>
<td>131</td>
</tr>
</tbody>
</table>
Figure 32. Reconstruction of Rockaway's cultural filter developed from Jeans (1974) ................................................................. 132
Figure 33. Petroglyph sites in the Hawaiian Islands based on Cox and Stasnak ................................. 140
Figure 34. Magnified images of kapa beaters showing the range of patterns for imprinting during the final stages of making kapa........................................ 144
Figure 35. 'Ohe Kapala designed by Moana Eisele ................................................................. 145
Figure 36. The ahupua'a of Kapukapu ................................................................................ 174
Figure 37. Hawai'i island rainfall ......................................................................................... 181
Figure 38. Amy B. H. Greenwell Ethnobotanical Garden depicting remnants of the Kona Field System on the landscape ............................................. 182
Figure 39. A portion of the USGS Hōnaunau topographic map depicting the Kona Field System rock wall remnants ................................................................. 182
Figure 40. Elevation profile of the ahupua'a of Kapukapu ...................................................... 183
Figure 41. Kapukapu archaeology overlay ............................................................................. 186
Figure 42. Cook's first map of Hawai'i ................................................................................. 192
Figure 43. Photo of the "S.S. Hawaii" waiting off shore for her cargo of cattle being loaded by cowboys from Greenwell Ranch .............................................. 194
Figure 44. Photo of the cattle tied to long boats transporting them to a waiting Inter-island steamship where they will be hoisted aboard and taken to Honolulu ............................................................................................................. 194
Figure 45. Photo of a cow being hoisted aboard an Inter-island steamship for transport to Honolulu ................................................................................................. 195
Figure 46. Photo of an oblique aerial view of Kapukapu during the cattle shipping era. An Inter-island steamship waiting for cattle to be brought out by long boats and hoisted aboard for transport to Honolulu ........................................... 195
Figure 47. The first map of the Hawaiian islands made by a Hawaiian student, Kalama, at the Lahainaluna Seminary in 1838. Only two complete copies exist, one in the Hawaii State Archives and the other in the Royal Geographical Society in London ...................................................... 198
Figure 48. Emerson's sketch of Ke'el from Makolehale station looking southerly .... 200
Figure 49. Emerson's sketch 18 of Kapukapu and bluff from Palemano station ................. 201
Figure 50. Emerson's sketch 21 of the sea coast looking north from Loe o Kanoni station ................................................................................................................................. 201
Figure 51. Parcel map of the area surrounding Kapukapu ....................................................... 202
Figure 52. Place names database sample page ..................................................................... 216
Figure 53. Photo of Moana Kapakakeha'ioka'aioki'i "Mona" Kapule-Kahele ....................... 230
Figure 54. Photo of Kealakekua ......................................................................................... 233
Figure 55. Orthophoto of Kealakekua path ......................................................................... 234
Figure 56. Photo of Kapukapu from Highway ...................................................................... 243
Figure 57. Photo of Kūlou ...................................................................................................... 244
Figure 58. Photo of Kapahukapu ....................................................................................... 250
Figure 59. Photos of Ke'el coastal area ................................................................................. 254
Figure 60. Photo of Mokuoka’e

Figure 61. Aunty Moana’s sketch portraying the two ‘dents’ of Napo’opo’o from her original manuscript.

Figure 62. Photo of Palemanō

Figure 63. Photo mosaic of Kapalikapuoke'ua / Paliomanuahi

Figure 64. Photo of Kapalikapuoke'ua / Paliomanuahi from Kapukapu

Figure 65. New names shown on the USGS 1983 topographic map series

Figure 66. USGS topographic map spelling discrepancy

Figure 67. Atlas of Hawaiian general reference map spelling discrepancy

Figure 68. Place name locational discrepancies

Figure 69. Orthographic photo of Kūlou and Palemanō

Figure 70. Hawaii Board on Geographic Names Hawaiian place name orthographic correction statue map
Preface

In the following pages I will share with you my passions for Hawaiian place names, Hawaiian spatial knowledge systems and their accompanying knowledge transmission protocols, and the need to utilize indigenous methodologies in geographic research and cartographic design. This research explores the concept of Hawaiian performance cartographies with a specific focus on place names as storied symbols. It also presents the cartographic culture clash as two dissimilar spatial knowledge systems come together on the shores of Kealakekua, Hawai'i at the turn of the nineteenth century.

Indigenous scholarship emphasizes the need to position oneself with regard to the research agenda in order to determine the biases and assumptions the researcher brings into the dialogue, description, reflection, and analysis portions of the research. As part of Hawaiian cultural protocol the introduction of genealogy and familial homelands was necessary at the start of chiefly speaking engagements and often provide the audience an opportunity to find either familial relations or homeland connections to you. It is, in a manner of speaking, a way of establishing both your identity and authority to speak; a way to place you in the scheme of all things. With that said, let me share with you my Hawaiian genealogy and academic training.

I am Hawaiian through my father's mother's mother's father, Kainoakupuna Kaheananui. I am also mostly Portuguese with a little Puerto Rican, Japanese, and Tahitian. My family homelands include the ahupua'a of Na'alehu, Punalu'u, and Pāhala in
the moku of Ka‘ū on the island of Hawai‘i. I have been told recently that through
Kainoakupuna Kaheananui, my family lineage can be traced to Kihaapi‘ilani of Maui.

I think it is important to note that it was through this research that I learned
much more about my genealogy. Prior to starting this research I only knew my Hawaiian
genealogy up to Kainoakupuna Kaheananui. I have much to learn about my ancestors
and at this point am relieved to know my Hawaiian genealogy is no longer dangling but
part of a connected path; a path I intend to humbly walk and know intimately.

Announcing or claiming genealogy is a decidedly political practice. It is tangled
together with the debate about identity and authenticity because performing your
genealogy was more commonly associated as a preoccupation of the ali‘i. Maka‘alinana
were not as concerned with remembering their genealogy back to cosmogonic1 origins.

Today, more people with Hawaiian ancestry are claiming Ali‘i lineages and are being
scrutinized by fellow Hawaiians for doing so, especially those considered to be late
corners to the Hawaiian sovereignty movement.

I am an urban Hawaiian. I was born and raised on the island of O‘ahu and have
lived for the majority of my childhood in ‘Aiea. Although I am an only child, I had the good
fortune of a close family system and spent many holidays with my cousins, aunts, and
uncles. Occasionally I would spend time on the big island with my paternal grandparents
in Pāhala and my maternal grandparents in Hilo.

1 “Cosmogony is the study of the origins of the world.” (Stevenson, 2005, 40)
While in Pāhala, I would sometimes stay at my Uncle’s ranch; arising in the morning to various chores and playing in the afternoons with my cousins. On other occasions, I’d ride in a jeep as we hunted wild pigs in the sugar cane fields. In Hilo, my grandmother taught me to make Portuguese sweet bread, pounding the dough until it was soft and pliable. My grandfather let me work on some of his woodworking projects around the house and I became proficient with various carpentry tools at a very early age.

My academic quest has been shaped by many successes and failures. I started my college career in electrical engineering and, after failing miserably, enrolled in Hawaiian studies and, after failings of my own design, switched to geography where I flourished. Since I had the majority of my core undergraduate courses already completed, it only took me three semesters to complete the geography undergraduate requirements.

I started my Master of Arts thesis looking into the ‘lost’ ceded lands hoping to put all the land titles into a GIS database. After about 6 months of research, I realized this was not a GIS project. It was a project for an archivist and would take much longer than I alone could carry out. Along the way, though, I started reading about the stories associated with various places and ended up writing a Master’s thesis on Hawaiian place names on maps. It turned out to be a quantitative look at the decreasing existence of
Hawaiian place name on government maps while both non-Hawaiian and hybrid\(^2\) place names increased.

My initial PhD research had to do with community based mapping and public participation geographic information systems (PGGIS). After three years of reading planning theory, and failing to embrace it, I found myself drawn again to Hawaiian place names. At this point in time, two seminal works stimulated my desire to work with Hawaiian place names. Both Meyer’s work on Hawaiian epistemology and Woodward and Lewis’ work on Indigenous cartography was becoming well known.

The term, Hawaiian performance cartographies\(^3\), is an applied concept born out of my passion for Hawaiian place names. It is derived from Woodward and Lewis’ seminal work on the History of Cartography. In their last edition as co-editors entitled *Cartography in the traditional African, American, Arctic, Australian, and Pacific societies* (1998) they introduced three categories of non-Western cartographic representations including (1) cognitive cartography (the internal experience of spatial constructs), (2) performance cartography (an externalized process that presents the internal experience), and (3) material cartography (another externalized process that records the internal experience).

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\(^2\) Hybrid names are made up of a Hawaiian place name and a non-Hawaiian descriptor, such as Kāne‘ohe Beach Park. According to Stewart’s (1970) *American place-names: a concise and selective dictionary for the continental United States of America*, most hybrid names were associative.

\(^3\) As a result of this research, I have come to recognize that there isn’t just one type of Hawaiian performance cartography since Hawaiians incorporated their spatial knowledge into various types of performance and material cartographies. I am also trying to avoid an academic tendency of over universalizing. Thus, henceforth, I will use the plural form unless I am specifically describing one cartographic type.
Meyer’s work on Hawaiian Epistemology was truly enlightening. It allowed me to frame my understanding of performance cartography from a Hawaiian perspective. More importantly, it allowed me to question the reasons why Hawaiians, and many Indigenous peoples, prefer performing their understanding of reality. Prior to reading Meyer’s work I was convinced Hawaiian and Western cartographies were dichotomous — natural dualisms of orality and literacy. However, I now realize the very thought of situating these two cartographic traditions in a dichotomous relationship maintains a Western philosophical context. From a Hawaiian philosophical context, there is no dichotomy. Instead it is a matter of emphasis. Hawaiian cartographies emphasize representations of an oral nature and Western cartography emphasizes representations of a graphic nature. Both achieve their purpose of communicating valuable spatial knowledge to others.

Woodward and Lewis’ and Meyer’s work were inspiring. As I read through their work, I became inspired and, upon the advice of my chair, opened myself to an ‘aha’ moment. It was through my dreams that I was motivated to recognize Hawaiian place names as storied symbols in Hawaiian performance cartographies. Furthermore, these symbols, though similar to those found on maps, have more than one meaning depending on the context of the performance. Now, I just had to provide sufficient theoretical evidence and conduct field work to prove it.

My original study site was to be on the island of Moloka‘i. Unfortunately, unable to explain why I chose the island setting with only a few contacts, some of whom were.
deemed less desirable by committee members, I was encouraged to do my work elsewhere. That was the spring of 2002. I had a summer to find and propose a new study site to my committee.

In the summer of 2002, I spent five weeks in Kūlō, Kona studying at the Hawaiian Massage Academy with Aunty Margaret Machado and her daughter, Nerita. On the second week we had a Hoʻoponopono lesson by Aunty Moana Kahsie, Aunty Margaret’s cousin. After her lesson, someone told her I was interested in Hawaiian place names, and she began telling us several storied place names. I spoke to her later and asked if she’d consider working with me. She agreed to meet me again so I could better express my intent and see if our goals in working with Hawaiian storied place names were comparable.

To my surprise our goals were consistent. Although she didn’t specifically want to prove that Hawaiian performance cartographies still exist. We both shared a passion for place names and she was very interested in ensuring the storied place names she collected from her childhood through her adult years were passed on to someone not only interested in preserving them on tape for future generations, but interested in showing how they conveyed the significance of Hawaiian life in the place where she and her ancestors were intrinsically intertwined.

Thus began our relationship. At first we met long and often. Our average visit was three to four hours every five to ten days. Then we met long and less often, still three to four hours but only once or twice a month and sometimes only on the phone as
other people demanded more of her time. It’s a relationship that I nurtured and
maintained through surprise phone calls and visits when she became a patient at the
Kona Community Hospital in the winter of 2004. Amazingly, even while bed-ridden, she
maintained her passion for telling me the stories of these places; sharing the past as if
it were right in front her.

Although Aunty Moana passed away in March of 2006, the stories she
cherished continue to live on in this text and in her own book, Clouds of Memories. The
main difference between her published book and the stories shared in this text is that
some of the stories in this text are scanned images of her own handwritten work. Other
stories are transcribed word for word from her handwritten text and appear exactly as
she wanted them presented. Nothing has been changed for grammar or publishing
appeal. I hope you enjoy them as much as I did.
CHAPTER 1 - RELATIONSHIPS MATTER

We live in a time of un-naming, in a time when old names for the land, names given in honor, happiness, and sorrow have been set aside for marketing jingles that commemorate little more than a desire for sales, for ka mea poepoe, the round thing, money. We who learn and love these old names are, therefore, people of two worlds, residents of rival geographies. We lead our everyday lives on the conoelium, concrete, and tiff-green creete of Hawaii’s Bay Views, Crest Views, Soda Creeke, and Enchanted Lakes. But when our souls wither and thirst, we seek nourishment in that other, deeper geography where the true names of our ‘āina are sung by the stone themes themselves, in what Ellen Pendergast has called “ka ‘ai kamaha’o o ka ‘āina - the astonishing food of the land,” that we, the stone eaters of this land, find sustenance and comfort, pride and purpose. (DeSilva, 1995)

Hawaiian place names provoke, reveal, and provide attachments to the land, to the past, and to the Hawaiian4 identity. They are powerful cognitive mechanisms that unfold the richness of the Hawaiian landscape incorporating a plethora of cultural values and are a convergence of the Hawaiian cultural, social, political, and economic order.

They are often only understood with the mo’olelo5 (historical account) that accompanies them and usually only by those within its genealogical proximity. As such, they provide a key to the lives and imaginations of Hawaiians. They indicate a holistic and harmonious relationship with the environment and are constant reminders of past events, cautionary tales, and epic tragedies. Knowledge of their meaning provides insight on the

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4 Any words referring to specific peoples, such as ‘Hawaiian’, ‘Native’, and ‘indigenous’ are capitalized in the same manner that words such as ‘Western’, ‘European’, and ‘American’ are capitalized.

5 Although words considered foreign are usually italicized, since the Hawaiian language is an accepted language in the State of Hawaii, they will not be italicized in this text. Each Hawaiian word will be defined on first usage in each chapter.
importance these place names had in shaping Hawaiian cultural identities. Sharing the names and meanings of places was a conscious act of cultural regeneration. Hawaiians incorporated their culture into the landscape and used place names as storied symbols in their cartographic tradition.

Hawaiian cartographic traditions⁶, like Western cartographic traditions are social constructions of spatial knowledge systems; however, they evolved along a different course. Hawaiians did not only encode their knowledge of the environment into archival graphic forms. They prefer to privilege performances and processes over products. Hawaiians incorporated their spatial understandings into various cultural practices such as mo’olelo (historical accounts), ‘ōlelo no‘eau (proverbs), mele (song), oli (chant), mo‘o kū‘auhau (genealogy), and hula (dance). This is a form of cartography categorized by Woodward and Lewis as ‘performance or ritual cartography’⁷ and may “take the form of a nonmaterial oral, visual, or kinesthetic social act … [in order] … to define or explain spatial knowledge or practice.” (Woodward and Lewis, 1998, 4)

With the introduction of the Western cartographic tradition, many Hawaiian place names became the (un)intentional victims of a cartographic culture clash. The place names used on Western maps are meant to give a generalized knowledge of

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⁶ The terms ‘tradition’ and ‘traditional’ can be problematic in that they are often perceived pejoratively. The main problem with that perception is that it fails to treat the products of the culture on their own terms. In this research these terms are used to imply a “continuity, the handing down of skills over generations, rooted in longevity.” (Woodward and Lewis, 1998, 2)

⁷ It is one of their three categories of non-Western cartographic representations and is considered an externalized process that presents the internal experience. The other two categories are ‘cognitive cartography’ (the internal experience of spatial constructs), and ‘material cartography’ (another externalized process that records the internal experience). (Woodward and Lewis, 1998, 3)
location and relative proximity to other features. By adopting Western cartographic techniques and accepting them as better representations of physical reality, Hawaiians unwittingly lost many place names of cultural significance in these alien cartographic products. This is not an easy thing to declare when Hawai‘i is the only State in the United States where a majority of place names are in the native language. Over 90% of the place names found in the U. S. Geographic Names Information System (GNIS) database for the State of Hawai‘i has a Hawaiian component to them. (Louie, 2004, 12)

However, exactly what type of place names have been preserved?

In scanning the place names for the State of Hawai‘i in the GNIS, a majority of them are ‘associative⁸ meaning they share the same ‘specific place name⁹ and have a different ‘generic place name¹⁰. For example, there are eleven entries with the specific place name ‘Honolulu’ in GNIS. Honolulu is listed twice, once as a ‘civil’ feature type and again as a ‘populated place’ feature type¹¹. Then there is the Honolulu Academy of Arts, Honolulu Channel, Honolulu Community College, Honolulu Harbor, Honolulu Junior

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⁸ In his classic text, American Place Names, Stewart classified place name origins based on ten language devices or mechanism including: (1) descriptive – name given due to some distinguishing characteristic, (2) association – name related to a descriptive name “by association”, (3) possessive – name conceived from the idea of ownership by a person or group, (4) incident – name that identifies a place with an event, (5) commemorative – name given to honor a person or an abstract value like liberty, (6) commendatory – name projecting a certain type of image (growth, progress, beauty) in order to be attractive to settlers, (7) manufactured – name made out of parts of other names, (8) transfer – name that has moved from one location to another, (9) folk- etymology – name that has been modified through the change in language and/or consequent linguistic reshaping, and (10) mistake – name generated from simple human error such as misspelling or the “telephone syndrome” where the person recording the name hears the pronunciation incorrectly and inadvertently records something else. (Stewart, 1970, xxviii)

⁹ A ‘specific place name’ is unique and identifies the particular place, feature, or area.

¹⁰ A ‘generic place name’ is usually a topographic term such as bay, hill, peak, or point.

¹¹ The term ‘feature type’ is a GNIS category. GNIS lists 66 different feature types. There are 51 feature types in Hawai‘i.
Academy, Honolulu Observatory, Honolulu Stadium, Honolulu Watershed Forest, and the Honolulu Zoo. It doesn't appear as though the types of place names in GNIS were meant to preserve names of Hawaiian cultural significance. So, where did the place names for the State of Hawai‘i in GNIS come from?

The U. S. Geological Survey (USGS) used maps compiled from surveyors' notes during the Hawaiian monarchy, 1795-1893, to record the place names for Hawai‘i currently in the GNIS. At that time, the Hawaiian government was interested in surveying land boundaries for a conversion to private land ownership. Only a few place names collected by the surveyors were selected for inclusion on Hawai‘i government maps even though these surveyors may have collected numerous place names while in the field.¹²

So, if the place names we now find on maps of Hawai‘i have more to do with the conversion to private land ownership, what happened to those other place names, the ones DeSilva describes as nourishment? How have maps affected the nature of Hawaiian cartographies? Any discussion on the nature of Hawaiian performance cartographies must address the natural tendency to frame the discussion dichotomously comparing it with Western cartography. This is especially brought to light with chapters two and three entitled Western cartography and Hawaiian performance cartography, respectively, and with use of terminology like incorporate/inscription and performance/product.

¹² Monserrat maintained numerous place names in his journals during his survey of Moloka‘i.
It is natural to compare Hawaiian and Western cartographies. How are Hawaiian performance cartographies similar to Western cartography? How are they different from Western cartography? However, this text maintains that all knowledge, including spatial knowledge, is socially constructed according to each culture's ontological and epistemological foundations. Thus, it will not present a dichotomous relationship. Instead it recognizes the relationship between the two cartographic traditions as existing in parallel to or in tandem with one another up until Captain Cook's arrival at Kapukapu (a. k. a. Kealakekua Bay). At that point in time, 1798, the interactive presentation of Hawaiian cultural knowing encountered the visual representations of Western archival knowledge creating a cartographic culture clash.

This cartographic culture clash was the catalyst in the creation of a new spatial knowledge space. Hawaiian landscapes were being 'mapped' for the first time by a Western cartographic discourse that valued the presentation of measured accuracy with an epistemological framework that privileged vision as the dominant way by which all humans conceive reason. By focusing only on what is seen, how was the sensuous nature of Hawaiian spatial knowledge systems and Hawaiian performance cartographies affected by encountering Western cartography? Likewise, how was the nature of Western cartography affected by encountering Hawaiian performance cartographies? How has this new spatial knowledge space evolved? How have Hawaiians used or adapted Western cartographic practices? How has Western cartography adapted to Hawaiian
cartographic practices? How (or Can) Western cartographic techniques be better utilized to represent Hawaiian (and other Indigenous) cartographies?

This research presents an illustrative case study of storytelling, a particular form of Hawaiian performance cartography. It identifies the role place names play in Hawaiian cartographic practices. It traces the affect Western cartographic discourse played in transforming a Hawaiian cultural landscape, particularly the ahupua'a surrounding Kapukapu. It presents examples of how Hawaiians encapsulated an intimate and sensual experience in the storied place names they share and notes the problems that occur when one culture attempts to cartographically represent the cultural symbols of another culture’s spatial knowledge. You cannot assume each culture relates to places and place names in the same way. There are ontological and epistemological differences that frame the way each culture relates to places and (re)presents place names in their cartographic tradition.

The field research was conducted in the land area surrounding Kapukapu on the island of Hawai‘i because it is historically significant as a point of contact between Hawaiian and Western cultures and it is cartographically significant as the bay inset in the first ‘accurate’ map of the Hawaiian islands compiled by data collected by Captain Cook. It is a place where a new knowledge space was created and cartographic practices from differing cultures blended. The blending of cartographic practices is responsible for much of the confusion community members experience when looking at their cultural landscape.
The field research began in the summer of 2002. I intended to experience and digitally record the Hawaiian performance cartography of storytelling through an illustrative case study of a prominent community collaborator. At that time I believed I would use mostly qualitative methods (specifically archival research and exploratory and open-ended interviews) to acquire and interpret Hawaiian place names, their meanings, and associated stories from both textual sources and key persons; and some quantitative accounting to statistically compare the cataloged place name lists and compile graphical representations.

However, as I continued my field research, I learned this was more than just doing qualitative research...it is about doing Indigenous research. It is about recognizing the political rhetoric that accompanies research and Indigenous peoples worldwide. It is about advocating alternative epistemologies and methodologies. It is about valuing and bringing forth Indigenous voices instead of continuing to marginalize them as ghostly presences.

So while I went out and conducted open-ended interviews of various knowledgeable community members, I realized I would not be able to digitally record the storytelling sessions because it was not culturally appropriate. The knowledge shared by a storyteller is carefully chosen. My main contact, Aunty Moana Kahele, had already shared her knowledge of various storied place names on tape and instead decided to share the Hawaiian performance cartography of storytelling according to traditional practices where recordings were not welcome.
I continued working with Aunty Moana until she died in March 2006. Her knowledge of the storied place names of her homelands was deeply personal and the sharing I was witness to was an intimate portrayal and reenactment of her understanding of the past. It was an honor and a joy to sit at the foot of her wheelchair and listen as she maneuvered through the fabric of time revealing sensual relationships and moral guidelines for socially appropriate behavior.

**Concepts**

This section outlines a theoretical framework needed to deal with the interrelationships between cartography and epistemology and specifically focuses on the effect of distinct epistemologies on cartographic development. It provides a foundation that will allow us to understand two different, yet functionally similar cartographic systems. It begins with a broad definition of cartography and epistemology and elaborates on the way spatial knowledge is acquired/stored, symbolized/represented, and shared/transmitted.

**What is Cartography?**

Cartography\(^5\) is social enterprise specializing in the representation, production, and study of various forms of spatial knowledge communication. According to Tuan (2001), spatial knowledge is not the same as spatial skill or spatial ability which is

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\(^5\) When the term 'cartography' was coined in the mid-19th century by Manuel Franciscato de Barros e Sousa, Viscount of Santarem it specifically referenced the study of maps. However, the meaning of cartography has broadened since then to include the art and science of contemporary map making as well as the study of maps. (Harley and Woodward, 1987, xvi-xvii)
necessary to survive. Spatial skill precedes spatial knowledge and has to do with our ability to perform our daily routine. It is what our bodies are capable of doing and, in that sense, is similar to agility, dexterity, and mobility. Spatial knowledge enhances our spatial ability whether it has to do with athletic prowess or cultural achievement such as ocean navigation. It allows us to confidently increase our range of mobility beyond our local geography.

Societies vary in their spatial skill and knowledge; however, it is not a foregone conclusion “that large integrated societies will have greater spatial knowledge than small, loosely organized groups.” (Tuan, 2001, 76) In fact, the sedentary nature of some integrated societies may localize their spatial knowledge. Whereas, the roaming nature of some loosely organized groups of people necessarily broaden their spatial knowledge to include, among other things, astronomical or heavenly points of reference.

Although the precise nature and use of spatial knowledge may vary significantly from one society to the next, all societies must be able to communicate their spatial knowledge to future generations in order to flourish. Mapping is one of the techniques people use to interpret and represent the world they perceive. Although everyone participates in mapping processes, not everyone actually makes maps. Map making is that part of the mapping process that deals with the physical creation of maps which embody the worldview of a particular society. Furthermore, not everyone that makes maps is a cartographer; just like “not everyone becomes a recognized navigator in island society, but almost everyone has gone on ocean-crossing trips.” (Tuan, 2001, 81)
A cartographer is more than a map maker, map aficionado, or map lover. A cartographer is highly skilled, technically trained, academically educated and/or professionally mentored. Cartographers use cognitive psychology to ensure their symbols effectively convey information. They learn geodesy and mathematics to understand how the shape of the Earth and various projections distort those map symbols. They are masters at blending both artistic and scientific principles together to produce contextual defined works. Cartographers also show an interest in the history and development of their craft and understand the strengths and limitations of their tools. Some cartographers are even necessarily aware of the impact their work has on the greater global communities whether or not their purpose was locally defined and vice versa.

While it is true there have been many students that have taken cartography classes at various universities or trades people that work at mapping design studios, in my opinion, that does not make all of them cartographers. I'm not exactly sure when a person that enjoys studying and making maps becomes a cartographer, but it certainly takes more than a few classes. Perhaps it has to do with receiving a mentor's acknowledgement that you have completed all those 'rites of passage' necessary to be considered a cartographer.

The main difference between cartography and mapping is that mapping is a cartographic process but cartography is not a mapping process. This definition of cartography makes it is easier to acknowledge differing spatial representations based
on world views and modes of communication. In the Western world, the main cartographic form of spatial representation and communication is a map. However, not all cultures use map-like artefacts the way the Western world does. (Rodaway, 1994, 133) This universal need to communicate spatial knowledge does not mean there is a universal cartographic process or product.

Maps are symbolic abstractions of experienced phenomena, “constructions of reality, images laden with intentions and consequences that can only be studied in the societies of their time.” (Andrews, 2001, 36) Maps symbolically present otherwise perplexing or confusing phenomena in manageable portions through socio-cultural lenses. Most of the time people take these lenses for granted and consider their world views common sense reality. However, different cultures impose very different lenses with which to experience the world and don’t necessarily experience the same world with different labels. (King, 1996, 42; cf. Rodaway, 1994)

For example, Western maps generally share three key features: symbolic abstraction, perspective from above (a. k. a. bird’s eye view), and scale. However, Hawaiian cartographic performances emphasize cognitive abilities and symbolic relationships. This difference has to do with the affect each culture’s epistemological view imposes on its cartographic development.

**What is epistemology?**

Epistemology is a branch of philosophy that studies the theory of knowledge and looks at the overall origin, nature and scope of knowledge. It has to do with
...who can be a knower, what can be known, what constitutes knowledge, sources of evidence for constructing knowledge, what constitutes truth, how truth is to be verified, how evidence becomes truth, how valid inferences are to be drawn, the role of belief in evidence, and related issues. (Gegeo and Watson-Gegeo, 2001, 57)

If cartography specifically focuses on the representation and communication of spatial knowledge, then epistemology (a culture's overall origin, nature and scope of knowledge) determines the way each culture develops cartographically (modes of representation and communication for spatial knowledge). To see how distinct epistemologies affect cartographic development, we must ask some fundamental questions about the areas of overlap such as how does epistemology affect acquisition, symbolization, and transmission of spatial knowledge? This next section briefly defines those areas of overlap, spatial cognition and cognitive cartography, and delves into those fundamental questions about spatial knowledge acquisition, symbolization, and transmission.

**Spatial cognition**

Cognition deals with knowledge acquisition, storage and retrieval, manipulation, and use. Cognitive processes include “sensation and perception, thinking, imagery, memory, learning, language, reasoning, and problem-solving.” (Smelser and Bates, 2001, 1477) Cognitive systems receive stimuli from our socio-cultural and physical world via our nervous system and brain. Sensation is the nervous system’s first response to stimulation. Perception is a process by which data is collected via our sensory
systems\textsuperscript{14} and ordered. It is situated in and mediated by our geographical and cultural environment. (Rodaway, 1994, 13)

Spatial cognition is "knowledge and beliefs about spatial properties\textsuperscript{15} of objects and events in the world." (Smelser and Bates, 2001, 14771) It is concerned with the acquisition, organization, utilization and revision of knowledge about spatial environments, be it real or abstract. (SFB/TR, n.d.) In relation to geography and cartography, spatial cognition provides insight on

...how spatial knowledge and beliefs are acquired and develop over time; the nature of spatial knowledge structures and processes; how people navigate and stay oriented in space; how people use language to communicate with each other about space; and how aspects of spatial knowledge and reasoning are similar or different among individuals and groups. (Smelser and Bates, 2001, 14772)

Thus, from a geographic perspective, spatial cognition is obviously fundamental to human life. Almost everyone moves around on a daily basis negotiating a wide range of geographic concepts, features, and/or hazards. However, on a more subtle scale, spatial cognition also helps shape our understanding of various spatial metaphors. (Mark, 1993)

\textsuperscript{14} Our sensory systems include "vision, hearing, smelling, tasting, pressure and texture, temperature, kinesthesia (limb position and movement), and vestibular senses (gravity and body acceleration)" (Montello, 1997)

\textsuperscript{15} "Spatial properties of the world include location, size, distance, direction, shape, pattern, movement, and inter-object relations." (Montello, 1997)
Cognitive cartography

Cognitive cartography is a dynamic, flexible, and internal process “covering those cognitive or mental abilities that enable us to collect, organize, store, recall, and manipulate information about the spatial environment.” (Downs and Stea, 1977, 6) It is a mental process that involves a set of operations that allow people to translate environmental knowledge into organized representations. These representations can be either internally or externally stored.

Internal representations are stored in our memory and are sometimes referred to as cognitive maps or mental maps. Cognitive maps allow us “to give someone directions, to picture our hometown, and to describe the places we visited on our last vacation.” (Downs and Stea, 1977, 62) External representations include material forms such as street maps and non-material forms such as verbal expressions and gestures.

Cognitive cartography must be contextually functional regardless of its mode of representation. We use cognitive cartography to solve specific spatial problems such as locating the things necessary to survive, navigating to those things safely and efficiently, navigating to unknown destinations, determining where to locate cultural features, and establishing how to act appropriately in various settings (a. k. a. spatial behavior). (Downs and Stea, 1977, 12-20)

\[\text{\textsuperscript{16} This is also referred to as mental cartography or cognitive mapping. However, cognitive mapping is actually a much broader term that encompasses more than cartographic representation. It is concerned with understanding the development of basic spatial concepts not necessarily geographic or topographic in nature. (Hart, 1973, 248-249)}\]
The most important characteristic of both spatial cognition and cognitive cartography is that they are interactive processes. We have to interact with the external stimuli so we can adapt, augment, or otherwise modify our stored spatial knowledge in order to keep up with the dynamic, fluid, and rhythmic nature of the world around us. Adaptability is a way of “creating and maintaining a dynamic compatibility with [our] environment.” (Tirana, Caras, and Geminiani, 2000, 20) As we grow from childhood into adulthood, our perspective of the world changes as our body’s size changes; and our relationship with other people changes as our social role changes.

**Spatial knowledge acquisition**

Spatial knowledge is acquired empirically through our sensory systems. These systems provide us with information about the world around us. They mediate our experiences both through their structure and through the way we use each system. Our sensuous experience and perception of the world “is grounded on previous experience and expectation, each dependent on sensuous and sensory capacities and educational training and cultural conditioning.” (Rodaway, 1994, 5)

All human beings have similar sensory receptors with about the same physiological capabilities in which to receive information about the world. However, different cultures in different times mix the information received in varying proportions placing greater emphasis on different sensory systems. As a result, each culture’s concept of reality and their associated representations of their spatial environment are
tremendously different. In fact, these representations need not be visual pictures; often times a sound or a smell will suffice. (Downe and Stea, 1977, 23)

Thus, while Western educated people acquire their spatial knowledge from many sources including maps; Polynesian educated navigators acquire their spatial knowledge from among other things, the rhythm and direction of ocean movements. These non-visual stimuli help the navigators plot courses to islands, such as Rapa Nui in the Pacific Ocean. As Gels states,

Micronesians have been accustomed to make voyages in small canoes over distances of 400 miles and more, aiming at targets not more than a few miles across. These extraordinary feats are achieved by a combination of techniques involving dead reckoning, following the stars at night, and making use of detailed knowledge of conditions encountered at sea (wave patterns, bird movements, cloud formations, winds, etc.). Navigational lore is passed on by master navigators as a theoretical discipline, on land rather than at sea, and the effectiveness of the system can be gauged by the fact that properly instructed individuals think nothing of attempting voyages to distant islands where neither they themselves nor their instructors have ever sailed. (Gell, 1985, 283)

In another example, Inuit hunters determine direction in their icy landscape by the smell and direction of the wind. But with the magnitude of information we receive about the spatial environment from our sensory receptors, how do we select what type of information to store?

There are two major selection criteria that have to do with functional importance and distinctiveness. People don’t necessarily store everything about the route from one place to another. Instead they store information about crucial points along the way...
according to their functional importance (e.g. traffic signals) and their distinctive features (e.g. building forms). (Downs and Stea, 1977, 77-78) Personal and social value systems contribute largely to both selection criteria. What is functionally important to one person may not be to another.

When a couple from out of town was lost and asked me for help, I agreed. They asked me if it was better to take Highway 61 or 63 to get to the Polynesian Cultural Center from Waikiki. What? How many people in Hawai'i know that Highway 61 is the Pali or that Highway 63 is the Likelike? I certainly didn’t commit that to memory even though the numbers are posted on all the signs. However, for this couple, who were familiar with driving in the continental U. S., using highway numbers to drive long distances is functionally important.

Likewise, what is considered distinctive features varies from one society to the next. For example, when a Maori friend of mine, who had never been to the U. S. before, visited Oklahoma for a week, he mentioned not being able to orient himself. He said it was because there were no large mountains or water features to help him get his bearings and that he literally felt like a fish out of water. He had to change his cognitive mapping structure to accept buildings and roads as distinctive features. Although he tried to make sense of various buildings and roadways, he could not with any confidence form a cognitive map to help him navigate back to the office after being driven to lunch.
**Spatial knowledge symbolization**

A symbol is a repository of meaning. Meanings arise out of the more profound experiences that have accumulated through time. Profound experiences often have a sacred, other-worldly character even though they may be rooted in human biology. Insofar as symbols depend on unique events they must differ from individual to individual and from culture to culture. (Tuan, 1990, 145)

Symbols encapsulate our attempts to cognitively organize our spatial knowledge. They can be material objects related by nature or convention to the thing it represents; or, they can be an icon, a pattern, color, or a detail within an image. They take a written or printed graphic form known as a glyph. However, they can also take immaterial forms like sounds, words, and gestures. In fact, every word is a symbol for some concept or relationship between concepts.

Symbols are only useful if people recognize them as standing for specific places or concepts. They are usually only recognized within specific cultural communities, religious groups, or academic disciplines; however, there are a few hundred symbols now recognized internationally. For example, a heart shape, ❤️, usually stands for love, and a skull and crossbones, ☠️, usually means poison or something dangerous.

Many cultures develop complex symbolic systems which assign certain attributes to specific things, such as types of animals, plants or weather patterns. Although they may be highly abstracted, frequently generalized, and may even change their meaning over time, they are essential to that culture's everyday communication, so much so, that the meaning and value of any particular symbol may go well beyond the recognition
of the identity of the thing, or place, itself. Symbols are capable of calling to mind a
“succession of phenomena that are related analogically or metaphorically to each other.”
(Tuan, 1990, 23) Within any particular culture, a symbol can act “as a trigger to help us
recall the characteristics of that place, the specific whatness, whereness, and whenness
information that gives it a unique identity. Given the symbol, we can fill in the necessary
detail.” (Downe and Stea, 1977, 91-92)

Attempting to decipher meaning from other people’s symbols requires
acknowledgement that “local understandings of external realities are fashioned from
local cultural materials, and that, knowing little or nothing of the latter, one’s ability to
make appropriate sense of ‘what is’ and ‘what occurs’ in another’s environment is bound
to be deficient.” (Baseo, 1996, 72)

**Spatial knowledge transmission**

Spatial knowledge transmission has to do with those external processes people
use to share or transmit their spatial knowledge to another person. So far as we know,
human beings are the only species capable of representing their own subjective
representations, thereby making it possible

...to attach abstract labels (that is, symbols) to existing
entities, to imagine non-existing entities and treat them as if they
were real, to use symbols for referential purposes or as place-
markers. ... to formulate theories about the world, to reason
formally, to reason in a certain type of interaction the features of
the world that were relevant to a different type of interaction ...
(Tirasea, Carasea, and Geminiani, 2000, 28)
These representations of spatial environments can take either an internal or an external form. Recall that cognitive maps are internal, organized representations of the spatial environment. Cognitive maps are unique to everyone. There is absolutely no way two people can share the same cognitive map because they are representations based on personal experiences viewed through socio-cultural lenses. However, people do share similar external representations whether they take material forms such as a street map or stick chart or non-material forms such as a verbal expression or gesture. One of the most commonly studied non-material forms is a verbal expression. Verbal expressions contain two notable characteristics; they are mostly qualitative and contextual.

Qualitative, ‘fuzzy’, imprecise statements revealing the relationship and approximate location of other objects or features are more important than precise statements. For example, it’s more appropriate to say, “turn right at the second stop light where the post office and the supermarket are located”, than it is to say, “turn 78 degrees after you have traveled 2.1 miles.” It’s not necessary to be that precise and it can even be quite confusing. Of course, both are functionally correct given today’s Global Positioning System (GPS) technology. Nonetheless, a statement providing relative location to other features is more common than a statement providing precise or absolute coordinates. (Smelser and Bates, 2001, 14773)

Context is also necessary, if not critical, to making and understanding verbal expressions of spatial knowledge. It has many variables including knowing who is your audience, where your audience is located, what are the physical features in the situation,
what was the previous topic of conversation, and so on. (Smelser and Batea, 2001, 14773-14774) Depending on the situation, you can take certain liberties with people familiar with the area you are speaking of that you wouldn’t take if they were from another place.

Consider how many different ways you could portray the city where you live from simple schematic diagrams and street directories to more complex tape recorded walking tours. These are all functionally similar in that they all represent your city. However, they are all formally different requiring you to store, organize, retrieve, and use your spatial knowledge in very different ways depending on your mode of communication. (Downs and Stea, 1977, 62)

**WHAT DOES THIS HAVE TO DO WITH PLACE NAMES?**

Thus far, we’ve established that cartography is social enterprise specializes in a fundamental societal need - a shorthand method for characterizing and communicating spatial knowledge of the environment. We’ve also acknowledged that the most important feature of cartography is that it is contextually functional. Each society develops cartographic practices according to their world views and does not necessarily experience the same world in the same way. A mountain may mean quite different things to different societies. One need only look at the struggle between Hawaiians and astronomers over the building of another telescope on Mauna Kea to realize this difference.
In the section on epistemology, spatial knowledge was identified as a social construction from how it is acquired, selected, and stored to how it is symbolized and transmitted to others. What we learn about the place where we grow up is conceptually represented and communicated according to our cultural nuances and personal experiences. This includes the value, meaning, emphasis, and use of place names in different cartographic practices. As such, place names have varying degrees of importance according to their cartographic purpose which is inevitably linked to cultural context.

Western cartography inscribes place names onto maps and gazetteers. These place names were not as highly valued as the documents themselves. The documents contained more functionally important information than the names themselves represented. While certain place names may have great symbolic value such as Hollywood, Chicago, or New York, they are not necessarily included in cartographic designs because of their symbolic value. More likely than not, they are included to indicate relative location, proximity, and direction thereby creating an accurate or functional representation of physical reality.

Hawaiian cartography incorporates place names into, among other things, mo'olelo (historical accounts), 'ōlelo no'eau (proverbs), oli (chant), mele (song), mo'o kū'auhau (genealogy), and hula (dance). Furthermore, Hawaiians greatly admired persons with extraordinary memory and performance skills because they valued memory and performed recitation. A skilled narrator would weave in as many place names of an
area as possible as “witness both to the story’s veracity and the teller’s memory.”

(Pukul, Elbert, and Mo'okini, 1974, 272)

The distinctions made here between inscribing and incorporating practices are not meant to create a dichotomous relationship between Western and Hawaiian performance cartographies. They are not meant to essentialize either Western or Hawaiian performance cartographies. For it is certainly the case that Western cartography contains elements of incorporating practices and Hawaiian performance cartographies contain elements of inscribing practices. These distinctions are much more about presenting the emphasis of a particular practice rather than creating a cartographic divide.

The Hawaiian cultural landscape is covered with networks of Hawaiian place names that often evoke important cultural information about places, people of note, or events of significance. While many Hawaiian place names have been maintained on Western maps17, perhaps this is a result of the U.S.G.S inheriting names from a time when the Hawaiian monarchy took part in cartographic production. Unfortunately, many of the names maintained on topographic maps are remnants of the conversion to private property and are not reflective of places of Hawaiian cultural significance.

Place names are found in all forms of Hawaiian cartographic traditions from mo'olelo to hula and can thus be characterized as a basic symbolic element. Whether they are descriptive or commemorative, Hawaiian place names are situating devices that

17 In fact, there have been more Native names maintained in Hawaii than across all of the continental U.S.
spatially anchor and locate narrated events rendering the landscape intelligible. (Baseo, 1996, 40-47) Studying Hawaiian place-name systems may very well tell us a great deal about Hawaiian spatial cognition such as how environmental phenomena are organized and understood. (Baseo, 1996, 44)

**Why is this work important?**

There are three reasons why this work is important; it recognizes the role place names play in Hawaiian cartographic traditions, it encourages the need for cartographic research to provide for indigenous cartographies, and it acknowledges that Indigenous methodologies matter. I am passionate about each of these reasons and they will be a substantial part of my life’s work for Hawaiian communities, Indigenous peoples, and the academy.

Hawaiian place names record culturally significant historical events. They are shorthand symbols given to geographic features for the purposes of finding them again, referring to them in casual conversation and sacred rituals, and passing on the knowledge of ‘what happened here’ to other people. They developed organically and became coherent local mnemonic devices allowing for long term storage of significant cultural teachings. They are also a key factor in understanding the differences between two seemingly disparate cartographic traditions. “Clearly, though there are significant differences between Polynesian and European modes of knowledge assembly, there is no great cartographical divide. The salient point is that the Polynesian methods were basically performative, not representational.” (Turnbull, 2003, 122-124)
Another reason this work is important is to identify a need for indigenous cartographic research and development that best represents and provides for indigenous cartographies; especially in light of the number of indigenous and cultural mapping projects, conferences, and guidebooks emerging all over the world. Indigenous and cultural mapping projects began in the 1960s and have become a movement whereby maps are used to visually represent and defend various cultural uses of territory, including determining and reconciling boundary conflicts between neighboring indigenous communities, negotiating co-management agreements, managing natural and cultural resources, and settling treaty claims. (Chapin, Lamb, and Threlkeld 2005; Crawhall 2003; Fox, Suryanata, and Hershock 2005; Poole 2003; Tobias 2000) Many of these projects share a fundamental concern of “preserving cultural knowledge for future generations while also protecting such knowledge by controlling access and establishing research protocols in indigenous communities.” (Pearce and Louie, in review) However, many of these projects have not focused on the compatibility of indigenous and Western cartographic systems.

The increased number of indigenous and cultural mapping projects has generated numerous conferences and forums in the last decade.¹⁶ Many of these conferences and forums include but are not limited by the following: Urban and Regional Information Systems Association (URISA) Public Participation GIS (PPGIS) Annual Meeting (Rutgers University, 2002; Portland State University, 2003; University of Wisconsin-Madison, 2004; Cleveland State University 2005; Vancouver, British Columbia, Canada, 2006) the International Forum on Local Cultural Expression and Communication (Dominican Republic, March 2003), International Forum on Indigenous Mapping (Canada, March 2004), the Intertribal GIS Indigenous Mapping Conference (Cherokee Nation, March 2005), International Conference on Participatory Spatial Information Management and Communication (Nairobi, Kenya, September 2005), and Indigenous Mapping and Representation Politics (Cornell University, March 2006). (Pearce and Louie, in review)
forums have addressed the translational losses that have occurred in representing another culture’s spatial knowledge and have begun discussing the methodological approaches needed to ethically work with indigenous communities. These projects and conferences have spawned the publication of numerous guidebooks that establish ethical practices and procedures for international and non-Indigenous groups working with indigenous people on community mapping projects. (Pearce and Louis, in review) In fact, Chapin suggests that the quantity and diversity of these guidebooks is now so extensive they can be reviewed as a body of literature. (Chapin, Lamb, and Threlkeld, 2005)

Although these guides cover such important issues as the ethical and political issues of data collection, field techniques, information access and storage, and project design, there is as yet no guidebook which addresses the differences between Western and Indigenous cartographic representation, the potential for misunderstanding arising from those differences, or techniques for overcoming those differences. (Pearce and Louis, in review)

Unfortunately, even with the multitude of mapping projects, conferences and forums, and guidebooks, a majority of cartographic development is still currently focused on technological progress as opposed to epistemological evolution. As a result cartographers and map makers have had to work around the limitations of cartographic technologies that focus on visual representations and linear data structures. Research and development based on a different ontological and epistemological framework has yet to be acknowledged.

Lastly, this research emphasizes the importance of using indigenous methodologies when working with Indigenous communities. Although geographers have
been engaging with Indigenous communities for millennia, as part of this research, a
greater understanding was needed in regard to research methodologies and Indigenous
people. Since the mid 1990’s international and interdisciplinary scholars have been
writing about Indigenous perspectives on research.

In March 2004, Poreanger highlighted eleven issues relating to research and
Indigenous people including,

critiques of previous research, conducted by outside researchers
(Smith 1999; Rigney 1999; Gage 2001); indigenous approaches,
the decolonization of methodology and the human mind (Crazy
Bull, 1997b; Smith, 1999); Indigenous epistemologies and
epistemological racism (Bishop 1996, 1999; Scheurich and Young
1997; Gage and Watson-Gage 2001); culturally safe research,
protection from misinterpretation (Archibald, 1992; Moody, 1993;
Warrior, 1999; Stover, 2002); mystification and fragmentation of
Indigenous knowledge (Kawagley, 1995; Deloria, 1995; Grenier,
1996; Nakata, 1998; Struthers, 2001); the invention of tradition
(Deloria, 1995, 1999; Mi'kmaq, 1999); the notion of objectivity
(Heehuelue, 1994; Rigney, 1999); legitimation, power and control
over research on Indigenous issues (Cook-Lynn, 1997; Bishop and
Glynn, 1999; Harrison, 2001; Harvey, 2003); intellectual property
and ownership of Indigenous knowledge (Everitt, 1994; Mead,
1995; Abdullah and Stringer, 1999); mutual benefit between the
researcher and the studied Indigenous community (Irwin, 1994;
Crazy Bull, 1997a, 1997b; Bishop, 1996); interdisciplinarity and the
accountability of Indigenous research (Champagne, 1998;

Unfortunately, there appears to be little engagement with these issues by geographers.

For example, those “publications registering the term ‘Indigenous/Indigenous’
squared only
1.67% (91 of 5418) from 1997 to July 2004, and 3.5% (32 of 913) articles registering
the term ‘Aboriginal/Aboriginal’ found their way into journals with ‘Geographical/Geographical’ in
their title.” (Shaw, Herman, and Dobbs, 2006, 269)
My own crude Ingenta search of journals with
‘Geograph(ical/ical/ies/y)’ in their title from 1995-Jan 2007
revealed a total of 108 publications with the term
‘Indig(eu/ety)’. None, 0, of the journals with
‘Geograph(ical/ical/ies/y)’ in their title from 1995-Jan 2007 had
publications with the term ‘Indigenous Methodolog(ies/y)’. (Louis,
2007)

Furthermore, there are only two books with a chapter, both co-authored by Rundstrom,
that engage the topic area, “Reciprocal appropriation: toward an ethic of cross-cultural
research” (Rundstrom and Deur, 1999) and “American Indian geography.” (Rundstrom et
al., 2003)

As geographers, we cannot be lulled into a false belief that criticisms directed at
anthropologists as indicated by Deloria and Gegeo and Watson-Gegeo shown below do
not also apply to our own work.

An anthropologist comes out to the Indian reservation to make
OBSERVATIONS. During the winter these observations will become
books by which future anthropologists will be trained, so that they
can come out to reservations years from now and verify the
observations they have studied. (Deloria, 1988)

Anthropological accounts of other people’s cultures are not
Indigenous accounts of those cultures, even though they may be
based on interviews with and observations of Indigenous
communities, individuals, and societies. All of the foregoing
activities, while they draw on Indigenous cultural knowledge, are
imagined, conceptualized, and carried out within the theoretical
and methodological frameworks of Anglo-European forms of
research, reasoning, and interpreting. (Gegeo and Watson-Gegeo,
2001, 58)

This is especially true for cartographic representations of Indigenous cultural knowledge
where a loss of translation occurs due to differing ontological and epistemological
cartographic modes. (Crawhall, 2003; Fox, Suryanata, and Herschok, 2005; Johnson, Louis, and Pramono, 2005; Pearce and Louie, In review; Rundstrom, 1993, 1995)

IDEAS YET TO FLOURISH

In the next few chapters I share my growth process and connection to a cartographic dimension not yet explored. I begin with what I know best, Chapter 2 - Western cartography. Although there are many ways to highlight the development or progress(ion) of Western cartography, I present Western cartography through its epistemological underpinnings, revealing how spatial knowledge acquisition, symbolization, and transmission changes over time. It is important to note that while many cultures developed and refined map making techniques and technologies, this chapter emphasizes a Eurocentric view of the history of Western cartography because it reflects the traditions Captain Cook brought with him when he arrived at the shores of Kealakekua.

I take the same approach in my presentation of Chapter 3 - Hawaiian performance cartographies. I first identify a Hawaiian epistemological framework using Meyer’s work on Hawaiian epistemology, Andrade’s work on Hawaiian geography, and Oliveira’s work on Hawaiian language and spatial knowledge. I then reinforce this framework with other geographic and social science works adding the detail necessary to understand Hawaiian spatial knowledge acquisition, symbolization, and transmission. All of this is necessary before a discussion on the nature of Hawaiian performance cartographies can begin.
Once the two cartographic traditions have been described through an epistemological lens, I address the coming together of these two traditions on the shores of Kealakekua, Hawai‘i in Chapter 4 – Why me? Why here? And How?. I first establish the connection between myself and Kapukapu Bay and then describe the methodological approach I used to complete this research before presenting the cultural and cartographic heritage of the land area surrounding Kapukapu. The cultural and cartographic heritage presented is the backdrop necessary for the performance to begin in the next chapter.

Chapter 5 – Through their eyes, with their voices provides an opportunity for kūpuna intimate with the storied place names in their cultural landscape to share their experiences. The twenty stories selected for inclusion in this chapter illustrate the sensual component of Hawaiian performance cartography. It is accompanied by a DVD composed of interviews from a Kamehameha Schools Land Asset Division project on Ke‘el, South Kona and a portion of a video entitled Kona Hema. Both videos were filmed by Nā Maka o ka ‘āina. The DVD adds the dimension of performance to this text as we can listen to the tempo of their story and delight in their facial and bodily gestures.

Chapter 6 – Depth of meaning peels off the layers of representation starting with the discrepancies encountered with the selected place names, both naming and storied. Some of the naming discrepancies are grammatical; some of them are a result of muddled practices; and others are just new non-Hawaiian place names superimposed over existing Hawaiian place names. The storied discrepancies illustrate differences
between kūpuna experiences. I then look at how storied place names reveal important cultural lessons before ending with a look at those storied place names that provide a deeper understanding of sensual nature of Hawaiian performance cartographies.

This manuscript has been an amazing awakening. It is an experience I wish to share with you in the same way it unfolded for me. In the next five chapters, I begin with an academic voice of an urban Hawaiian with mastery in a Western discipline, cartography. As the piece progresses, as I examine texts written to express indigenous understandings, my voice reflects the learning, the awakening I experience. The only way to know how it ends is to take the journey yourself.
CHAPTER 2 - WESTERN CARTOGRAPHY

Curiosity about space—no less than about the dimension of time—has reached from the familiar immediate surroundings to the wider space of the earth and its celestial context. On another plane, men and women have explored with the inward eye the shape of sacred space and the realms of fantasy and myth. As visual embodiments of these various conceptions of space, maps have deepened and expanded the consciousness of many societies. They are the primary medium for transmitting ideas and knowledge about space. (Harley and Woodward, 1987, xv)

Western cartography did not start out as a well developed science or even an art. It progressed slowly and sometimes fitfully, marked by points of rapid acceleration, followed by periods of standstill and even retrogression, taking shape under the influence of various social, philosophical, and technological impetuses. (Skelton, 1972, 5) The history of Western cartography is usually portrayed as a chronological study often within a Darwinian paradigm that considers progress a function of cartographic accuracy, "accuracy of geodetic and planimetric systems, and also of content and representation." (Dorling and Fairbairn, 1997, 8; cf. Brown, 1979; Coeegrove, 1999b)

Other indicators of progress include,

the narrow meaning of maps and their graphical rendering – their use as documents to communicate specific messages to the reader; the use of maps in a wider societal context, in particular as tools of oppression, governance, policy-making and regulation; the intellectual endeavor required to create and reproduce maps, looking at mapping from viewpoints as diverse as psychological investigations into ancient views of the earth and the history of the technology required to print and disseminate maps; the artistic representation on the map face, reflecting on the map as

32
decorative objet d’art or an adjunct to artistic output. (Dorling and Fairbairn, 1997, B)

This chapter will present a brief summary on the history and development of Western cartography taking into account those major social, philosophical, and technological changes that directly influenced a Western understanding of how the world should/could be known, symbolized/(re)presented, and shared with others. It chronologically traces how various social, philosophical, and technological changes affected the manner in which Western spatial knowledge has been acquired, symbolized, and ultimately transmitted from the origins of Western mapping to the mapping of the Pacific Ocean in the late eighteenth century. It is meant to provide a background for the Western cartographic system that entered Kapukapu when Captain Cook anchored his ships. This presentation of the history of Western cartographic development frames each ‘epoch’ by those ontological and epistemological ‘truths’ that provided the foundation that Western cartography grew out of and the framework by which the world could be known.

Western Mapping Origins

(Re)presenting one's perception of the world is now generally recognized as a cultural universal and the ability to graphically translate it is considered an acquired skill that pre-dates virtually all other forms of written communication. There are artifacts proving maps are “older than history itself, if we think of history as beginning with written records.” (Ralez, 1948, 3; cf. Short, 2003; Dorling and Fairbairn, 1997) The
earliest map artifacts, prehistoric rock art, have been traced to the Paleolithic period of 30,000 BC. Although prehistoric rock art images are considered proto-cartographic features, they demonstrate a need and ability to communicate and record spatial information. Later, as hunter-gatherer societies settled, large scale local maps were made for inventory, navigation, and social regulation while small scale local maps portrayed particular worldviews situating man's place in and relationships with nature and the earth. (Dorling and Fairbairn, 1997, 6-7)

The earliest known map-like artifact, a clay tablet from Babylonia, is a large scale map depicting a type of social regulation. Shown below are a replica, Figure 1, and a schematic diagram, Error! Reference source not found., indicating that “Babylonian cartographers of the third and second millennia BC may be held to have practiced two essential principles of geographical mapmaking,” (Millard, 1987, 113) scale and orientation. Reducing a landscape to a seven centimeter clay tablet is evidence that scale transformation was practiced and orienting symbols for the cardinal directions was important. The schematic diagram also shows that a planimetric perspective and specific abstract symbols for topographic features, river and mountain, had also been developed by this time.
Western spatial knowledge in this era can be tied to astronomical developments.

"The first steps in acquiring knowledge about the earth came by indirections, through the
study of the heavens." (Brown, 1979, 18) As such, geographic knowledge was highly
developed in Babylonia. Babylonians maintained meticulous written records of
astronomical events passing them down "from generation to generation for well over two
thousand years so that, at the time of Alexander the Great, it had become enormous in
volume and amazing in quality." (Brown, 1979, 20) They were capable of advanced
mathematics such as "square and cube roots, reciprocal numbers, solutions for
quadratic and other equations, and ... calculating areas of rectangular, circular, and
irregular figures and the volumes of prisms and cylinders." (Millard, 1987, 109) They are
also credited with dividing the circle into 360 parts, now known as degrees. (Raiez, 1948,
5; Millard, 1987, 109; Thrower, 1996, 18)

Geographic knowledge was also highly developed in early Egypt, especially in
regard to land surveys. The land boundaries were carefully marked, measured, and
registered for purposes of taxation. Although Babylonians were also noted for mapping
land boundaries for taxation, the Egyptians perfected a system of surveying largely due
to the periodic flooding of the Nile. The Egyptian measurements in land surveying were
made by means of a knotted rope.

Babylonian records of astronomy contributed to their development and
refinement of advanced mathematics which in turn affected their understanding of
geography and cartographic representation. The same can be said about Egyptian land
surveying systems. Both cultures developed cosmogonic understandings of the world
that was separate from a physical representation of the landscape long before these ideas surfaced in Greek society.

**Manuscript Maps of Antiquity (600 BC – AD 300)**

While it is natural to assume these geographic concepts flowed from East to West by the sixth century BC. Approximately the same time as Thales of Miletus (624 – 547 BC) founded a place for philosophers to gather in Ionia. The extent to which the Ionians were influenced by earlier astronomical, geographical, or mathematical findings of the Babylonians and surveying methods of the Egyptians remains a matter for conjecture.

While there is some circumstantial evidence for both the transmission and the reception of important mathematical concepts relevant to cartography — and even for the descent of the basic design of the world map — direct documentary proof for such connections is lacking. (Harley, Woodward, and Aujac, 1987, 150)

Nonetheless, abstract thinking about the nature of the world and its relationship with human life is a common activity for many cultures worldwide. The origin and nature of Greek spatial knowledge can be traced to the mythological and religious notions described by Hesiod’s (c. 8th c BC) Theogony, a progression from chaos to cosmos.

Chaos is a boundless abyss of infinite space without order. Cosmos is a relative state of order consisting of political and natural components whereby the world in not

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19 Ionia was a center of Western philosophy, however it is a misnomer to state it was a specific school of philosophy because the scholars it produced had such diverse viewpoints.
considered a unified whole. It is a “multiplicity of unconnected pieces, or territories, and discrete events. ... The idea of a connected world develops in later mythologies, as exemplified in the works of Homer.” (Peuquet, 2002, 13)

The Greek theoretical thinkers in the sixth century BC moved their discussions about the world beyond superstition and toward explanations via speculative, practical and critical paths of philosophical thinking.

- Speculative thinking expresses human curiosity about the world, striving to understand in natural (rather than super-natural) terms how things really are, what they are made of, and how they function.
- Practical thinking emphasizes the desire to guide conduct by comprehending the nature of life and the place of human beings and human behavior in the greater scheme of reality.
- Critical thinking (the hallmark of philosophy itself) involves a careful examination of the foundations upon which thinking of any sort must rely, trying to achieve an effective method for assessing the reliability of positions adopted on the significant issues.
  (Kemerling, 1997-2006)

The rest of this section is arranged chronologically according to cartographic contributions from theoretical ponderings and empirical calculations to Greco-Roman revisionism culminating in the works of Ptolemy. It is during this era that Western spatial knowledge systems become intertwined with mathematical measurement and accuracy, so much so, it became the driving force of Western cartographic development.
Theoretical cartography (to 300 BC)

This early period in Greek cartography poses particular problems for presentation due to a lack of direct evidence. Nearly all of what is known about these Ionian philosophers comes to us by way of second or third party accounts, such as Strabo’s Geography. (Brown, 1979; Coeagrove, 1999a; Harley, Woodward, and Aujac, 1987a; Jacob, 1999; Ralez, 1948) Through men like Strabo, we learn the early Ionian philosophers regarded Homer as their authority of geographical sciences (Harley, Woodward, and Aujac, 1987a; Brown, 1979)

In Homer’s Iliad, there is a description of a map on Achilles shield forged by Hephaestus, god of fire and metallurgy. The description suggests Greek theoretical cartography began as “a cosmological map showing the earth as an island that is maintained and defined by human activity.” (Short, 2003, 46) Thus, as shown in Figure 3, Homer believed the world was a flat circular disc...
...surrounded by Oceanus, the world river, and from its periphery rises the fixed dome of the sky. The sun, the moon, and the stars rise from the waters at the edge of the dome, move in an arc above the earth, and then sink once again into the sea to complete their course beneath the Oceanus. The atmosphere above the mountain of the earth is thick with clouds and mist, but higher up is the clear Ether with its starry ceiling. (Davis, 1998)

Homer's description of this map was intended to communicate, conceptualize, and codify early Greek reflections on the nature and constitution of the world. (Harley, Woodward, and Aujac, 1987a, 132)
However, several philosophers grew skeptical of Homer’s description and mythical explanations for natural phenomena and began forming hypothesis about the natural world based on personal experience and deep reflection. They continued “asking more systematic questions about the world in general and trying to give more naturalistic rather than supernatural explanation for the phenomena they observed.” (Harley, Woodward, and Aujac, 1987a, 133) Thales asserted that all things comes from water, Anaximander of Miletus (610 – 546 BC), called attention to cyclical interaction of elements arising from a primal turbulent mass, and Anaximenes (c 550 BC) believed breath or spirit constituted the highest representation of life. (Kemerling, 1997-2006) Although the Ionian philosophers disagreed with one another, it is here that a “scientific attitude” about nature begins to take form and the beginnings of the separation between cosmology and coemogony becomes apparent 20.

As a result, cartographic contributions from the Ionian philosophers include theoretical ruminations of a spherical earth, taking into account the poles, tropics and an equator; the creation of globes of the known world, later allocating astronomical pathes; the conceptualization of latitude and longitude; and the calculation of the size of the earth. (Kaiser, 1948, 7; cf. Bagrow and Skelton, 1985; Brown, 1979; Coagrove, 1999a; Dorling and Fairbairn, 1997; Harley, Woodward, and Aujac, 1987a; Skelton, 1972; Thower, 1996)

20 “Cosmology is the study of what the world is made of and how it is ordered. Coemogony is the study of the origins of the world.” (Stevenson, 2005, 40) By extension, cosmology includes humanity’s place in the world.
Anaximander, an astronomer, geographer, and disciple of Thales, is credited with drawing one of the first maps of the known world and constructing the first globe. (Short, 2003; Raisz, 1948; Harley, Woodward, and Aujac, 1987a; Brown, 1979; Bagrow and Skelton, 1985) Unfortunately, no notes of the construction of either the map or the globe has been found and we are left with the graphic contribution of another Ionian philosopher who agreed with and defended Anaximander’s disc-shaped world, Hecataeus of Miletus (550 – 490 BC), Figure 4.

Figure 4. Reconstruction of the world according to Hecataeus. (Image from http://www.henry-davis.com/MAPS/AncientWebPages/108.html)

Pythagoras of Samos (588 – 500 BC), the mathematician credited with several scientific hypotheses, theorized a sphere-shaped earth. However, his rationale was anything but scientific. His hypothesis was justified theologically according to his followers, as he believed “the sphere is the most beautiful of solid figures.” (Brown, 1979,
It wasn't until much later, about 350 BC, that Aristotle of Stagirites (384 – 322 BC) was able to prove via logical arguments that the earth was a sphere.

Democritus of Abdera (460 BC – 390 BC), noted for his thinking in atomos, proposed the world was not circular but ovular with “its length one and a half times its breadth.” (Harley, Woodward, and Aujac, 1987a, 136) It is this concept of the oblong shaped world that provided the terms 'latitude' and 'longitude', from “latitudo – breadth, width, extent, size ... [and] ... longitudo – length,” respectively. (Harper, 2001)

Up until the time of Socrates (469-399 BC), Greek philosophical thinking remained speculative and practical. Rather than describing the world in supernatural terms, Thales, Anaximander, and Anaximenes speculated the world in natural terms, i.e. water, the cyclical interactions of elements, or the breath of spirit, respectively.

Theoretical discussions about the nature of the world focused more on what it is made of and how it is ordered (including the 'place of humankind'). Discussions on the origins of the world were still the purview of a supernatural character. Socrates was the first to shift the focus of theoretical discussion on humans not nature and introduce the use of critical thinking toward an unwavering commitment to truth. Since the majority of his life was spent investigating the development of moral character his direct effect on the development of cartography is influential at best. However, there is a distinct difference

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21 Atomos is the belief that all matter is made up of various imperishable indivisible elements from which we get the term atom.
in the Greek philosophical ruminations of the world after his critical thinking was applied to cartographic development.

Aristotle of Stagirus (384 – 322 B.C.) developed a method of critical reasoning that he believed made it possible to learn everything there is to know about reality relying heavily on sensory observations as his starting point for philosophical reflection. He believed this methodology would unify all human knowledge of the world into a coherent system of thought and would thus serve any discipline. For Aristotle, logic was the instrument by which we come to know anything.

Aristotle further supposed that this logical scheme accurately represents the true nature of reality. Thought, language, and reality are all isomorphic, so careful consideration of what we say can help us to understand the way things really are. Beginning with simple descriptions of particular things, we can eventually assemble our information in order to achieve a comprehensive view of the world. (Kemerling, 1997-2006)

He is the first such philosopher to apply critical thinking to cartographic development via demonstrative reasoning; the goal of which is “to provide an account of why things happen the way they do, based solely upon what we already know.” (Kemerling, 1997-2006) Using this model of reasoning, he theorized the spherical shape of the earth, the zones of the habitable world, and the relative position of the winds significantly affecting the underlying principles of map construction.

He proved the earth was a sphere using observation and reason; studying the shape of the shadow of the earth on the moon during an eclipse and noting the rising location of the North Star is further from the horizon the farther North one travels.
(Harley, Woodward, and Aujac, 1987a, 145) He was one of the first persons to attempt climate classification, hypothesizing that the earth was divided into three types of climatic zones, Torrid, Temperate, and Frigid, each based on distance from the equator.

Figure 5.

![Diagram of climate zones](image)

He believed the area near the equator was too hot for habitation and the areas above and below the Tropics was too cold for habitation aptly naming them the Torrid Zone and the Frigid Zone, respectively. The only area that Aristotle believed was habitable and capable of allowing human civilization to flourish was the Temperate Zone.
Aristotle also charted and named the directions of the winds providing the beginning of what is now known as a wind rose, Figure 6. Except for the SSE and SSW, all “the winds are named according to the direction from which they blow and are diametrically opposed.” (Harley, Woodward, and Aujac, 1987a, 146)

Alexander the Great (356 – 323 BC), arguably one of Aristotle’s most famous students, was no doubt influenced by Aristotle’s teachings. Through his conquests of the Eastern world, Alexander expanded Greek geographic knowledge of the habitable world providing increased realism and strengthening the empirical content of maps. (Harley, Woodward, and Aujac, 1987c, 149-150) He also established a library in Alexandria providing philosophers and scholars a place to gather and share ideas, read

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22 Half a century later, Timotheus of Rhodes (fl. 270 BC) added the two missing winds and provided a rudimentary schematic map of nations. (Harley, Woodward, and Aujac, 1987c, 153)
from existing texts, and compile new maps and texts "in parallel with the growth of empirical knowledge." (Harley, Woodward, and Aujac, 1987c, 149)

Although Greek cartography may have had cartographic encounters with Babylonians and Egyptians, since it is impossible to determine exactly which ideas and methods were shared at this point in time, the history of Western cartographic development credits the Ionian Greek scholars as the architects of a scientific view that separated the study of the origins of the world from the study of what the world is made of and how it is organized. In other words, spatial knowledge of how the world came to be, cosmogenesis, and the production of particular places with which the world becomes a place-world to be populated, topogenesis, became distinct cartographic thoughts. (Casey, 1997, 76)

The primary treatment of place in relation to cosmogenesis has to do with where place comes from and where it is tending to move toward or what it is evolving into whereas with topogenesis place has to do with form and embodiment or how place operates in the present. Cosmogenesis includes man in an overall worldview and topogenesis paved the path for theorizing and conceptualizing a measured and calculated earth based on observable phenomenon. (Casey, 1997, 76)

In the centuries that followed, the political and cultural climate of Hellenistic Greece discouraged many varieties of philosophical thinking. In a political arena where a highly centralized state is established and maintained primarily through military force, philosophers devoted less attention to the critical examination of an ideal state that
would facilitate the achievement of a happy life and began focusing on how a person
could live well despite their socio-political conditions. (Kemerling, 1997-2006)

**Empirical cartography (300 – 200 BC)**

The explorations of Alexander the Great and his establishment of a Library in
Alexandria encouraged the growth of formalized knowledge. Greek philosophers began to
developed theories about the world that directly influenced cartographic development.

Indeed, one of the salient trends in the history of Hellenistic
cartography is the growing tendency to relate theories and
mathematical models to newly acquired facts about the world —
especially those gathered in the course of Greek exploration or
embodied in direct observation. (Harley, Woodward, and Aujac,
1987c, 148)

Dicaearchus of Messana (fl. c. 326 – 296 BC), student of Aristotle, provides the
earliest evidence of an empirical approach to cartography by inserting orienting lines or
'diaphragma' on the world map, Figure 7. (Bagrow and Skelton, 1985; Brown, 1979; Harley,
Woodward, and Aujac, 1987c) This figure also depicts greater geographic realism as the
known world has been lengthened in an eastward direction and land masses appear more
elliptical rather than circular or disc-shaped as previously illustrated.
Euclid of Alexandria (c. 325 - 265 BC), considered father of geometry, played a significant role in the development of cartography. He created an abstract space. It is a world of points, lines, and circles. It is a rational geometric world which was then applied to the physical world by Ptolemy. He arranged and perfected a formal mathematical understanding of the earth based largely on Babylonian mathematical expertise. (Short, 2003, 48; Brown, 1979)

Eratosthenes of Cyrene (c. 275 - 194 BC), African mathematician, expanded Dicaearcus' orienting lines constructing a world map based on several parallels and meridians. (Bagrow and Skelton, 1965, 32) Although the final map of the known world was more symmetrical than accurate; however, its partitions of the world were forerunners of our parallels and meridians. (Brown, 1979, 51) Eratosthenes greatest
cartographic contribution was using Euclid’s geometry to provide a scientific method of measuring the circumference of earth with remarkable accuracy.

The method he used was based on spherical geometry and the following four assumptions, 1) one day every year the noon day sun was directly overhead in the city of Syene, confirmed by observation of a gnomon casting no shadow and the reflection of the sun’s rays in the deepest wells at noon on the summer solstice; 2) Syene and Alexandria were on the same meridian; 3) the distance between the two cities was 5,000 stades; and 4) the sun’s rays were parallel. (Harley, Woodward, and Aujac, 1987c, 155) Using the geometric principle of similar triangles with known distances, he calculated the earth’s circumference to be 250,000 stades or approximately 25,700 miles / 40,250 kilometers. He was within 15% of the true value, 24,900 miles / 40,070 kilometers.

This calculation had profound effect on the size of the known habitable world at its relative location in relation to the spherical surface of the earth. Eratosthenes placed the known world completely in the Northern hemisphere. The lower boundary was set on the northern half of the distance between the equator and the Tropic of Cancer and the upper boundary was the Arctic Circle. Since this contradicted Aristotle’s notion of habitable climatic zones, later Greek philosophers rejected this nearly accurate placement. (Harley, Woodward, and Aujac, 1987c, 155-6)

In this era of Greek cartography the origin of the grid that allows for exact placement of every place on earth is developed. “When perspective, geometry, and the
grid of latitude and longitude were combined, it was possible to calculate accurately the
location of any spot on earth.” (Turnbull, 2003, 113) Place begins to be taken on
characteristics of “limit and boundary” and “location and surrounding”. It is something
that lies within a container or vessel of some sort. Space on the other hand comes to
connote something undelimited and open-ended in three dimensions. (Casey, 1997, 77) It
provides three roles or functions, “location (place), with the gaps between them (void),
and with room to move (room).” (Casey, 1997, 83)

Place becomes subsumed by concepts of infinite space paving the way for the
incorporation of mathematical explanations into cartographic representations of
location via the grid. Western philosophy begins to relate to place as a component of
space. The multiplicity of truths that place is capable of representing is reduced to a
singular representation – a three dimensional characteristic known as location. Place
can be known by its location and distinguished from its surrounding thereby bounding it
in an infinite space.

Revisionist cartography (200 BC – AD 200)

While the Hellenistic period saw a substantial growth of empirical
representations of cartography, the Roman republic’s practical application of maps
provided “a considerable blending – and interdependence – of Greek and Roman concepts
and skills.” (Harley, Woodward, and Aujac, 1987b, 161) Alexandria was no longer the
center of intellectual activity as Roman society provided additional educational venues
promoting, “the diffusion and development of Greek knowledge about maps.” (Harley,
Woodward, and Aujac, 1987b, 161) Exploration and conquest, this time by Romans, once again provided new empirical knowledge requiring adjustments to existing theories. However, by and large, this era is marked by the critical examination of earlier cartographic works as writers were far more "revisionist in their line of argument."

(Harley, Woodward, and Aujac, 1987b, 161) It is important to note that revising exiting theories based on new ‘data’ enlarges the knowledge pool. It does not alter what is considered knowledge or the way knowledge is learned or assimilated.

Polybius of Megalopolis (c. 200 – 118 BC) is an example of this revisionist trend. Using rigorous applications of geometry, he proved the distance between the Straits of Gibraltar and Peloponnesus was 18,700 stadia instead of the 10,000 stadia Dicaearchus estimated. He also aggressively criticized Eratosthenes’s placement of the known habitable world as too far North into the Torrid Zones defined by Aristotle because he "refused to believe that inhabited places could exist at the high latitudes."

(Harley, Woodward, and Aujac, 1987b, 162)

Another example of the reinterpretation of Greek empirical cartography is shown in the works of Crates of Malloa (fl. 150 BC). Eratosthenes calculation of the circumference of the world made the area of the known world rather small. It hardly covered one quadrant of it. Such an unbalanced world ran contrary to the Greek sense of symmetry. Crates attempted to solve this problem of the unbalanced world by adding three more balancing continents, thereby anticipating the Americas and Australia.

(Raisz, 1948, 11)
He represented four inhabited worlds on the surface of his terrestrial globe. Two were in the Northern Hemisphere — the one where Greeks lived, occupying far less than half of the Northern Hemisphere, and another symmetrically situated in the other half. Two other inhabited worlds are found in the Southern Hemisphere, symmetrically with the two north of the equator. These four worlds were separated by oceans along the equator (occupying the torrid zone made uninhabitable by heat) and along a meridian. (Harley, Woodward, and Aujac, 1987b, 163) Crates' globe was far from realistic, yet maintained considerable influence in cartographic thought for some time.

Hipparchus of Nicaea (c. 190 – 126 BC) was an astronomer and mathematician who made fundamental contributions to the advancement of astronomy as a mathematical science and to the foundations of trigonometry. He also wrote critical commentaries on some of his predecessors and contemporaries including Eudoxus and Eratosthenes. He was particularly interested in celestial cartography, exposing and correcting the errors made by Eudoxus (locating the celestial pole in the wrong place and in inaccurately drawing constellations on the globe). He determined the precise position of 850 stars.

The latitudinal position of a star was indicated, in Hipparchus's Commentary, by its distance from the pole. For the longitude, its position was noted in relation to the signs of the zodiac, that is, by the degree of the zodiacal sign that is on the same meridian circle as the star, or what is sometimes defined as the polar longitude. (Harley, Woodward, and Aujac, 1987b, 165)

He was also interested in improving terrestrial cartography and criticized Eratosthenes for inaccurately placing various countries according to hearsay.
Hipparchus touted the only way to accurately locate any place on earth was through astronomical observation and mathematical computation. He further stated it was inadvisable to draw a map of the world until such observations had been made in every country. (Harley, Woodward, and Aujac, 1987b, 166)

Hipparchus did more than critique and correct the work of previous scholars. He formulated the foundation of both plane and spherical trigonometry providing astronomers with tables of chords, similar to tables of sines and cosines, for use in their computations. (Brown, 1979, 53) He was also one of the first to suggest the creation of the modern graticule. He noted that all climata$^{23}$ should be truly parallel with the equator and at equal intervals from the equator to the poles. Likewise, he suggested "a series of lines at right angles to the parallels, great circles passing through the two poles, equally spaced along the equator, thus forming an orderly, geometrical pattern or grid for the spherical earth." (Brown, 1979, 52)

Hipparchus was one of the first philosophers to compile his various treatises specifically for educational purposes. As the Roman Empire expanded, new schools and libraries were founded. Many of Hipparchus' treatises "presented compendiums of astronomical and geographical knowledge that help to illuminate our understanding of the diffusion of a knowledge of maps in Greek and Roman society." (Harley, Woodward, and Aujac, 1987c, 167)

$^{23}$ Literally, climata is a slope or inclination. It was used in the mathematical geography of the Greeks with reference to the inclination of various parts of the earth's surface to the plane of the equator.
Theodosius of Bithynia (c. 150 – 70 BC) followed in the footsteps of Hipparchus by contributing his own textbook treatise emphasizing the geometry of the celestial sphere and its various circles with the earth at its center to provide a mathematical background for astronomy. Through this celestial geometry, he proved the longest day at the 66°N latitude lasted twenty-four hours. (Harley, Woodward, and Aujac, 1987b, 168)

Posidonius of Apamea (c. 135 – 51/50 BC), a contemporary of Theodosius, is best known for his revised calculation of the Earth's circumference based on astronomy. Although he intended to improve Eratosthenes' computation, his figure, depending on the source, was much smaller and more inaccurate. Unfortunately, this inaccuracy was adopted by Ptolemy and used until the sixteenth century.

Strabo of Amasia (c. 63/64 BC – AD 21) “epitomizes the continuing importance of Greek intellectual heritage – and contemporary practice – to the development of cartography in the early Roman world.” (Harley, Woodward, and Aujac, 1987b, 173) Most of the works by Greek and Roman scholars presented up to this point have been related to us through his Geography. His own world map was based on Eratosthenes' map and the criticism of the revisionist Roman influences greatly reducing the size of the Earth and the Northern extent of the inhabited world.

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24 Cleomedes (c. 50 BC) reported Posidonius calculation as 24,000 miles and Strabo, using a different value for distance between Alexandria and Rhodes, reported the calculation as 18,000 miles.

25 Seventeen (17) books composed near the end of his life and considered the key to our whole knowledge of the history of Greek cartography as well as to the history of science in general. (Harley, Woodward, and Aujac, 1987b, 173)
He based the size of the earth on Posidonius calculation and agreed with Polybius that the northern extent of the known world was at 54°N. He used Crates' globe to locate that portion of the earth that was known to be inhabited. He preferred to construct the map on a globe but provided instruction on the necessary transformations to draw a map of a spherical Earth on a plane surface with a rectangular network of parallels and meridians recommending dimensions for the rectilinear map of seven feet by three feet with a scale of one foot equal to 1,000 miles.

Figure 8. (Harley, Woodward, and Aujac, 1987b, 173-4)

Although these revisionists didn't advance any new concepts in relation to spatial knowledge, their criticisms and critiques of other people's works are all mathematical in nature correcting distances and locations according to their more popularly held beliefs of their time. This indicates that the separation between cosmogenesis and topogenesis was now complete and cartographic development focused
on empirical advances of mathematical accuracy owing much to the increased activity in astronomy and mathematics.

**Ptolemy - basis of modern cartography (2nd century AD)**

It is often stated that “the culmination of Greek cartography is most often associated with the name Claudius Ptolemy of Alexandria.” (Ralez, 1948, 10; cf. Brown, 1979; Dilke and Editors, 1987; Short, 2003) Indeed, much of Western cartography’s 1,200 year heritage can be found “in the writings of two men: Strabo and Claudius Ptolemy; one furnishing the key to the past and the other a pattern for the future.” (Brown, 1979, 58) Ptolemy influenced the development of both Western and Arabic cartography through his two literary works entitled, *Almagest* and *Geography*.

The *Almagest* related instructions for the construction of a celestial globe and *Geography* described how to draw a map of the inhabited world either on a globe or on a plane surface. Both works contained a series of coordinates not unlike a modern day gazetteer. The *Almagest’s* coordinates was a star catalog derived largely from Hipparchus and grouped according to forty-eight constellations. In another part of the *Almagest*, Ptolemy takes on the task of “establishing the position of the inhabited world on the terrestrial globe, and its relation to the celestial sphere, together with the distribution of the climata.” (Dilke and Editors, 1987, 182)

With the eight volumes of *Geography*, Ptolemy intended to provide a handy manual for mapmakers offering systematically organized coordinate tables of towns and characteristic features of countries. Volume one begins with the criticisms of Marinus
of Tyre, instructions for map-making, and proposals for map projections. Volumes two through seven contain locational tables for different regions of the world including Europe, Africa, and Asia. The last volume, eight, contains more instruction for map-making and a series of twenty-six maps. (Bagrow and Skeiton, 1985; Dilke and Editors, 1987; Short, 2003)

Marinus of Tyre (fl. AD 100) would probably be another obscure geographer had it not been for Ptolemy dedicating a great deal of space in his first volume of Geography to a comprehensive criticism of his cartographic work. The criticism encompassed three areas of cartographic contention: size and position of the inhabited world, map projections, and errors related to the accumulation of geographic detail from written records. (Dilke and Editors, 1987)

Marinus was the first geographer to expand the known world to include the Eastern part of Asia and a part of Africa lying south of the Sahara extending the world from 24° S to 63° N latitudinally and approximately 15 hours longitudinally, or 4,350 miles by 9,000 miles. Ptolemy criticizes him for making the inhabited world too large. He rejected the southern limit relocating it to 16° 25' and reduced the length from to 12 hours, or 4,000 miles by 7,200 miles. (Dilke and Editors, 1987)

Marinus used a rectangular projection of the world represented by a grid of rectangles for parallels and meridians. Although Ptolemy used this projection for some of his regional maps, he rejected the system for the world maps. According to his calculations, the maps cause severe deformation away from the central parallel (the
length of a parallel at the northern limit is less than half the length of the equatorial parallel, yet it is represented by a line of the same length. To correct this deformation, Ptolemy provides detailed descriptions for three other map projections - a conic projection, Figure 9, a pseudo-conic projection, and a third projection described as arising out of an armillary sphere.

![Figure 9. Ptolemy's conic projection. The inhabited world is shown as a conic graticule with straight converging meridians and parallels as arcs of circles. Although Ptolemy explained that it was easier to construct and use than his second projection (see next figure), it did not reflect the spherical shape of the earth as effectively, and only two parallels (as well as all the meridians) maintained their true lengths. (Dikke, 1987, 187) (Image from http://www.henry-davie.com/MAPS/AncientWebPages/118C.html)
Through Geography, Ptolemy provided a new image of the world, Figure 910.

Figure 10. Reconstruction of Ptolemy's world map. Ptolemy used a pseudo-conic projection constructed with curved meridians and parallels. It was designed to alleviate some of the problems associated with Ptolemy's conic projection (see previous figure). It was especially popular with later editors of the Geography in the Renaissance. (Dilke, 1987, 187) (Image from http://www.henry-davis.com/MAPS/AncientWebPages/119G.html

...the inhabited world was no longer an island in the ocean. It was limited eastward by an unknown land occupying the territory of the East Asian peoples; southward by an equally unknown land surrounding the Indian Sea and the part of Ethiopia south of Libya called Agisymba; westward by an unknown land circling the Ethiopian Gulf in Libya and by the Western Ocean surrounding the western parts of Libya and Europe; and northward by the contiguous ocean, surrounding the British Isles and the northern part of Europe, and by the unknown land stretching along northern Asia, Sarmatia, Scythia, and the silk land. (Dilke and Editors, 1987, 189)

Ptolemy was the first person to write a manual for cartographic production, a manual that promulgated the Western concept of place as a location in a grid of abstract space. Western spatial knowledge acquisition was now acknowledged as
observable phenomenon. The representation or symbolization of this knowledge via projected grids was firmly grounded in mathematics and applied astronomy. At this point however, maps had not become the dominant form of spatial knowledge transmission as written descriptions were far easier to acquire than map documents.

Perhaps Ptolemy’s work marks the culmination of Western cartography because the continuity of technological achievement was disrupted by the influence of Christianity. According to Raisz, Western cartography during “the Middle Ages was forced to depend for its geographic knowledge on an inferior source, the tradition of Roman cartography.” (Raisz, 1948, 12) As the rise of Christianity and dependence on Roman cartographic knowledge influenced cartographic production in the Mediterranean, Ptolemy’s treatises were forgotten by all but the Arab world. They corrected positions and updated place names, but by and large the texts were maintained in original form.

**Manuscript Maps of Middle Ages (AD 350 – 1450)**

Progress in cartographic accuracy during the middle ages was slight as intellectual life was centered on the Church and scientific doctrines became unnecessary, even dangerous. There was no need to stimulate scientific development of cartography as it was deemed “enough for mankind to draw both his mental and spiritual sustenance from the Church.” (Brown, 1979, 83)

Human experience, close observation of natural phenomena, no longer mattered; recorded history was deprecated, and if it conflicted with the Holy Word it was branded as pagan and therefore untrue. The lamp of scientific knowledge, a tremulous
flame at last, was obscured for a time by the blinding light of religious ecstasy. (Brown, 1979, 83)

Spatial knowledge and specifically the infinity of space becomes a primary philosophical preoccupation and is derived solely from within a religious context.

If God is limitless in power, then his presence in the universe at large must also be unlimited. Divine ubiquity thus entails spatial infinity. It further follows that the physical universe itself must be unlimited if it is to be the setting for God's ubiquity as well as the result of His creation. Not surprisingly, the increasing hegemony of Christianity supported both forms of infinity: that of God as the ultimate monotheistic being and that of His universe as the ultimate monothetic entity. (Casey, 1997, 77)

Theology and physics became closely aligned in the Middle Ages as both attempted to conceive the infinity of space. Isaac Newton is a perfect example of this era as his physical and theological writings are, “universalist in its aims, why should not the new physics — standing on the shoulders of this ambitious theology — proclaim truths that hold for every material object in the universe?” (Casey, 1997, 77) It is no accident that the obsession with space as infinite and ubiquitous coincided with the spread of Christianity.

Cartographically speaking, spatial knowledge was shaped by religious doctrine and graphic images were generated for a general audience of mostly Christians. The cartographic advances of the Greco-Roman revision late were not completely discarded. Although a few map characteristics remained, such as orientation and a bird's eye view perspective, maps of the Middle Ages were generally oriented with the East at the top
because it was the direction of the Garden of Eden and the origin of humankind from a Christian worldview.

The maps of the Middle Ages were regularly used as metaphors to express abstract ideas. However inaccurate they may seem to us, they were efficient vehicles for the transmission of certain worldviews. They were accurate charts of the beliefs of their time. Maps accompanying encyclopedic histories included features such as the location of the Garden of Eden and the landing of Noah’s Ark. The cartographic image became 'a multivalent symbol capable of expressing a host of different moral and religious meanings. (King, 1996, 31)

This era was not completely devoid of map making as evidenced by an abundance of Christian maps (a.k.a. Mappaemundi26) and various Navigational charts. However, while teleology of increased measured accuracy is not present for Mappaemundi, it certainly is necessary for making navigational charts. As a result the two cartographic enterprises developed quite separately until late 14th and 15th centuries.

**Mappaemundi**

The Mappaemundi were cosmologies that deeply reflected a Christian view of the world recording significant events in Christian history rather than locations. They brought a very different perspective to Western cartography. Some would argue the maps from this era are not significant in regard to the development of Western cartography especially since the intellectual discussions about measured accuracy came to a halt. “Knowledge of the physical world was considered secondary to the required

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26 This is the plural form of the Latin term *mappamundi* meaning *mappa* (drawing or painting) and *mundus* (world).
knowledge of the spiritual realm: maps were unimportant artefacts with little direct use beyond decoration.” (Dorling and Fairbairn, 1997, 15)

Nonetheless it is quite telling in regard to the shift in spatial knowledge symbolization away from representing location on the earth and toward a presenting Christian narrative. “The essence of the story was to demonstrate the dominion of Christ over the face of the earth or to illustrate certain Old Testament Biblical tales.” (Dorling and Fairbairn, 1997, 14) However, by the fifteenth century, serious cartographic scholars like Fra Mauro showed a significant break away from religious influences with the influx of new information.

NAVIGATIONAL CHARTS

One of the earliest and most important uses of maps in medieval Europe was to enable the sea farer to reach his destination quickly and safely. While short voyage routes, could be easily remembered and passed on via oral tradition, those longer voyages that were frequently undertaken to supply the demand in increased trade along the Mediterranean coastline, were greatly aided by sea charts. Two traditions came out of this era, the Portolan charts, of Italian origin chiefly from Genoa, Venice, and Ancona, and the Catalan atlas charts, from Majorca and Spain. (Bagrow and Skelton, 1985, 65)

The origin of the Portolan27 charts is still in much contention. Some believe they were designed to accompany the Greek fifth century periplus, others deem they were a

27 The name comes from the italuan word for a ship's 'pilot book', portolano. (Short, 2003, 62)
collaborative effort rising from medieval sea farers needing accurate routes to trade destinations in order to accommodate the booming mercantile industry, and yet others support a single master copy origin. The most plausible is that it was a collaborative effort. Central to this argument is the use of the compass in the thirteenth century. (Campbell, 1987, 380)

The Portolan charts most striking feature is a network of interconnecting rhumb lines. They first appear to be a jumbled mess, but upon closer examination a coherent pattern emerges. This pattern is made up of an “elaborate system of compass roses and rhumb lines which crisscross their entire surface. Usually one or two central compasses are shown, each with 16 peripheral compasses with 32 lines of varying color radiating from each.” (Raisz, 1948, 18) Other characteristics include north orientation, lettering confined to coastal features, and land areas largely left blank. (Raisz, 1948, 17-18) Subsequent Portolan charts included ornamental embellishments and were decorated with regal insignia (coat of arms, flags, and pictorial images of Kings), Figure 11.

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28 This is also known as a loxodrome. It is line on a sphere that cuts all meridians at the same angle. It is also the path taken by a ship that maintains a constant compass direction. On a Mercator projection, this is a straight line.
As demand for these nautical charts increased, the chart making profession spread to Majorca and Barcelona where "Arabs and Jews introduced fresh ideas and new energy to the craft. They brought with them a knowledge of eastern and African geography, supplementing the knowledge of northern and western shores being gathered by the increasingly vigorous Catalan seamen." (Wilford, 2000, 65)

The differences between the Catalan atlas charts and the Portolan charts are mainly stylistic. The Catalan chart makers were just as concerned with revealing the nature of the land. Their charts include rivers, mountain ranges, discursive notes, and names of provinces and kingdoms. Also, the Catalan charts were never bound in volumes and the Catalan 'atlas' of 1375 is no exception as it was originally mounted on wooden panels, Figure 12. (Campbell, 1987, 392-3)
The navigational charts from both the Portolan and Catalan traditions represented "the most geographically realistic maps of their time." (Campbell, 1987, 445) The outlines of the Mediterranean and Black Sea were so well made they were not improved upon until the eighteenth century. Their exclusive interest in real world distances and direction made them indispensable to sailors. However, their scope was limited. The techniques used to create such detailed maps of European coastlines made the possibility of delineating, within a single framework, the coastlines and geographical boundaries for the entire globe, including the unexplored world, a desired reality.

**Renaissance Maps: Inventions and 'Discoveries' (1450 – 1600)**

In the fifteenth century, a renewed surge of intellectual activity revived old ideas and stimulated new ones. "Educational practice was revolutionized by the recovery of
ancient documents, the rejection of institutional authority, and renewed emphasis on individual freedom.” (Kemerling, 1997-2006) There was renewed confidence in humanist philosophical thought in regards to reason as a means of understanding human nature and our place in a natural order without reference to divine revelation.

The rise of the new science also offered a significant change in the prospects for human knowledge of the natural world. Copernicus argued on theoretical grounds for a heliocentric view of the universe, for which Kepler provided a more secure mathematical interpretation. Galileo contributed not only an impressive series of direct observations of both celestial and terrestrial motion but also a serious effort to explain and defend the new methods. By abandoning explanation in terms of final causes, by emphasizing the importance of observation, and by trying to develop quantified accounts of all, renaissance scientists began to develop the foundations of a thoroughly empirical view of the world. (Kemerling, 1997-2006)

These empirical methods permanently transformed human relationships with the natural world. The natural world was now an object of study whereby extensive use of sensory observation led to the development of new instrumentation enabling the quantification of every phenomenon.

In regards to the development of Western cartography, three key events distinguish the Renaissance from other eras: the rediscovery, translation, and subsequent printing of Ptolemy’s Geographia; the creation of the printing press; and the ‘Age of (European) Discovery’. (Brown, 1979, 150; cf. Raiez, 1948) These developments spawned even more exploration which in turn provided a venue for rapid dissemination of accurate maps reflecting newly discovered lands and nautical charts revealing safe and optimum routes.
Rediscovery of Ptolemy's Geographia

Ptolemy's Geographia was discovered by a Christian monk who frequented secondhand bookshops in Constantinople in the early fourteenth century. (Wilford, 2000, 66) Although, it had been preserved during the Middle Ages by Arab scholars, the maps were missing. Byzantine scholars completed translating it into Latin by 1406 and maps based on this translation followed independently within twenty years. (Bagrow and Skelton, 1985, 77)

It became one of the most popular manuscripts among Renaissance scholars of the fifteenth century assuming

...an authority once accorded only to Holy Writ, and for all their shortcomings (the Mediterranean was too long, Italy sloped too easterly, Ceylon was bigger than India, and Eurasia was much too extensive) the Ptolemy maps offered a much more realistic and useful view of the world than the medieval Mappaemundi. (Wilford, 2000, 67)

It served as a prototype for geographical atlases through modern times as newly discovered lands were added to Ptolemy's original maps extending the boundaries and adding more detail. Unfortunately many "armchair cartographers were ready to discard much of the sound information that had been added to the world map." (Raisz, 1948, 19)

For example, the elongated Mediterranean, correctly represented in Portolan charts, was consistently distorted in sixteenth century reproductions, due to Ptolemy's

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29 While it may be incorrect to use the term 'Arab scholars' since it includes scholars from Persians, Syrians, and other nationalities, all the texts were written in Arabic and thus the term is indicative of texts not religious region. (Bagrow and Skelton, 1985, 53)
underestimate of the length of an arc, and it was not corrected on maps until eighteenth century. (Ralesz, 1948, 19)

Although the rediscovery of Ptolemy’s work had profound effects on the burgeoning appetite of fifteenth century scholars, it was his mistake in underestimating the size of the earth, due to a miscalculation in the size of an arc, that provided the desire for explorers such as Christopher Columbus and his royal sponsors to brave an expedition across Ptolemy’s Western Sea en route to Asia’s riches. (Brown, 1979, 73)

**Engraving and the Gutenberg Printing Press**

Cartographers in the fifteenth century were not necessarily geographers. “They were recruited from pictorial artists – painters, miniaturists, and illuminators.” (Skelton, 1972, 10) Not only were hand drawn artistic renditions of maps laborious and expensive, it led to variation in the final map product and dissemination of unreliable data. Wood and metal map engravings provided less opportunity for map variation by standardizing the map impression. However, any error, should it exist, would be repeated on every map printed. (Bagrow and Skelton, 1985; Skelton, 1972)

Wood block engravers had been turning out their products since the beginning of the fifteenth century. Woodblock printing involved cutting out a design in relief on a block of wood. This means that the design was left on the surface after the spaces were cut away, Figure 13. Ink was applied to the woodblock surface and a moistened paper (or vellum) was then pressed onto it. Maps or prints made in this way are called ‘wood cuts’.
Woodcut engraving eventually gave way to copperplate engraving since it was capable of reproducing an image with fine details. Copperplate printing involves reverse engraving a design into metal, usually copper or steel. The ink is spread onto the metal plate and the excess is wiped off leaving ink only in the engraved lines, Figure 14. Moistened paper, pressed onto the metal plate with great force, picks up the ink in the grooves. This method of printing is called "intaglio".

By the time Guttenberg’s movable type printing press was invented between the 1440’s and 1450’s, map engravings in wood and metal had been well established and successful. Yet it took nearly three decades for the first map, a T-O map from Saint leadore, to be printed in 1472 extending the life of medieval map models well into the sixteenth century. (Bagrow and Skelton, 1985, 91) Ptolemy’s Geographia was first printed in Bologna in 1477 using the copperplate printing method.

The success of the printing press for the transmission of maps was not immediate because there were a limited number of people in Europe capable of reading.
However, “humanity was beginning to show the first symptoms of an unquenchable thirst for knowledge. By the year 1500 more that 238 towns in Europe and England had one or more printing presses.” (Brown, 1979, 151) Eventually, people could find books in places other than churches, monasteries, or schools. Publication topics expanded from religious literature and textbooks to history, biography, and medical and legal texts and publishers soon realized that readers enjoyed reading texts illustrated with pictures or maps.

A surge of intellectual activity provided Europeans an opportunity to begin scrutinizing the world they lived in and exploring the world beyond their own village. It stimulated an era of travel and exploration which in turn provided fodder for further intellectual ideas. (Brown, 1979, 152)

THE AGE OF (EUROPEAN) DISCOVERY AND EXPLORATION

The Age of (European) Discovery and Exploration began in the late fifteenth century and lasted more than 200 years. During this time, European ships traveled around the world in search of new trade routes to supply an ever escalating European economy and, in the process, encountered peoples and mapped lands previously unknown to them. This era was rooted in technological advances in shipbuilding that provided explorers the ability to travel greater distances. Much of the groundwork for the advancement in the fields of ship design and instrumentation can be attributed to Henry the Navigator (1394 – 1460), a Portuguese prince whose ‘school of navigation’ at Sagres, Portugal, provided training for hundreds of seamen.
Prince Henry 'the Navigator' of Portugal

Prince Henry established himself at his Vila do Infante ("Prince's Town") at Sagres, on the southwestern tip of Europe. He assembled around him the best and brightest navigators, map-makers, and instrument-makers. Henry's 'school of navigation' rapidly grew into the technological base for exploration where more precise maps were created, sailors trained in new navigation techniques, and a new type of ship was developed, the caravel, capable of traveling longer distances further from shore. Portuguese mariners that studied at Prince Henry's school were the first to enrich the content of maps by probing south along the western coast of Africa providing cartographers the information necessary to draw more precise coastal outlines of Africa.

In 1488, Bartholomeu Diaz de Novaes, rounded the Southern extent of Africa proving the Indian Ocean was not an enclosed sea as Ptolemy had depicted and an ocean route to the India was accessible, Figure 15. (Brown, 1979, 112) Less than ten years later, in 1497, Vasco da Gama successfully established a sea trade route from Europe to India.
European discovery of America (AD 1492)

Christopher Columbus (1451 – 1506), a navigator and maritime explorer, believed a shorter route to the Indies existed and based his expedition for a westerly passage on the study of maps. He used Ptolemy’s miscalculated length of a degree of arc combined with new information from the travels of Marco Polo and a map drawn and endorsed by Paolo del Pozzo Toscanelli, a noted scholar, to propose his fantastic scheme. Their Royal Highnesses Ferdinand and Isabella of Spain funded his expedition in 1492. However the objective of finding a shorter westward sea route to the Indies went unfulfilled. Nonetheless, within nine years the discoveries of the Western Sea were painted by Juan de la Cosa, Figure 16 and Error! Reference source not found..
Figure 16. World map by Juan de la Cosa (1500). (Image from http://www.henry-davie.com/MAPS/LMwebpages/305.html)

Figure 17. Western detail of Juan de la Cosa's world map (1500). (Image from http://www.henry-davie.com/MAPS/LMwebpages/305.html)

It is the oldest known European cartographic representation of the New World. It portrays North and South America as one large land mass separate from the Asian continent. However, the fact that world map shows Cuba as an island and not part of
the continent as Columbus believed, has many believing the map was actually drawn
much later, c 1508. (See Nunn, 1934)

**Circumnavigation of the earth (AD 1519-1522)**

The first circumnavigation of the globe was led by Ferdinand Magellan (1480 –
1521), a Portuguese explorer in service to Spain. Like Columbus, Magellan’s idea of
circumnavigating the earth was also built on false information. He had studied nautical
charts of South America that indicated the presence of a strait between the Southern
tip of South America and what was depicted as Terra Australis. Since all the charts
indicated the earth was much smaller than it actually was, Magellan believed he could
get to the Spice islands by sailing west through the strait at the southern tip of South
America. Although he died in the Philippines before completely circumnavigating the
earth in a single expedition\(^\text{30}\), this expedition had profound and immediate effects on
cartography. First and foremost, “it proved, once and for all, that the Earth was round
and could be sailed around.” (Wilford, 2000, 85) It also led to the first truly scientific
world map by Diego Ribero, Figure 18, because it is based on empirical observations of
latitude.

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\(^\text{30} \) Juan Sebastián Elcano (1476 - 1526) completed the expedition after its Magellan was killed
and is, thus, the first European explorer to circumnavigation of the globe in a single expedition.
Cartographically speaking, the ‘Age of (European) Discovery’ inundated mapmakers with new information and increased demand for a quick turnaround time. Explorers like Columbus and Magellan profoundly increased geographic knowledge during the fifteenth and sixteenth centuries providing a broadened awareness of the true scope of the earth as both latitude and longitude expanded. “Many newly found lands and seas had to be represented on maps, as swiftly, thoroughly, and accurately as possible, for a place is not truly discovered until it has been mapped so that it can be reached again.” (Wilford, 2000, 86) This led to a growing concern about how to adequately represent and quickly reproduce this new found knowledge.

It was Gerhard Kremer, known as Gerardus Mercator, (1512 – 1594) of Flanders that responded to the challenge by ‘squaring the circle’. He set out to create a map projection with the navigator in mind such that a straight line drawn between two points provided the constant compass bearing a ship needed to follow to reach its destination.
(Wilford, 2000, 87-90) His map of world, Figure 19 and Figure 20, published in 1569, and the development of the projection that bears his name made him famous.

Figure 19. Gerard Mercator's famous world map, 1569. (Image from http://www.henry-davis.com/MAPS/Ren/Ren1406.html)

Mercator also encouraged his friend, Abraham Ortelius (1527 – 1598), to publish the first European world atlas entitled, Theatrum Orbis Terrarum (Theater of the World).

Figure 21. Ortelius was inspired by a merchant complaining about his office being strewn with maps and charts of all sizes and descriptions, “the balky ways of the big ones that had been rolled up a long time, and the eyestrain a man suffered from trying to decipher the print on the very small ones.” (Brown, 1979, 161) Ortelius had been traveling throughout Europe collecting maps, coloring them and selling them at fairs, so he had a vast network of cartographic connections. He collected maps from various cartographers, reworked them to be the same scale and fit them on a standard sheet size.

Figure 21. Map page of the Americas from Ortelius' Theatrum Orbis Terrarum. (Library of Congress)
Ortelius’ atlas, published in 1570, was a huge success and exceeded everyone’s expectations requiring two more editions within the same year. It did more than just standardize the page size and scale of maps making it far easier for a general audience to access cartographic information in one place. It was proof the “conquest of the world as picture” was becoming a viable commodity. However, the very means by which we attempt to structure the world “also generates the modern experience of world as a process of representation.” (Mitchell, 1988, xiii)

In the rush to disseminate more accurate maps, place names were copied from various explorers’ charts and replicated from a variety of cartographic mediums. Explorers generally paid little attention to existing place names. Instead they fixed their own place names on maps and charts. Oftentimes the place names they recorded reflected the names of Monarchs and financiers.

There are quite a few other European explorers during this era that helped to gather more geographic information about the world thereby filling in the empty spaces and/or correcting the cartographic blunders and errors of previous explorers. More importantly, cartography and exploration were now concomitant activities in the global spread of western power. Maps from this era absolutely reflect the universalizing mindset of this era as those in power used cartography and maps to control spatial knowledge acquisition, symbolization, and transmission.

It is important to remember, Renaissance scientists were working in absolutist socio-political settings. They were the guests of the sovereign and their work in
advanced mathematics, optics and other forms of instrumentation used by surveyors
and cartographers without question was to benefit the economic standing of those in
power. In this sense, because of the socialization of cartographic knowledge, this era of
cartographic development highlights its function as appropriation of place at the cost of
other forms of spatial knowledges and their representations. It is by no means the first
time Western cartographic development is aligned with the appropriation of place,
because European cartographers practiced at home before they went overseas.

Reformation Cartography (1600 - 1800)

The fundamental differences between Renaissance cartography and what Raiez
describes as Reformation cartography is a ‘more scientific attitude’ noted in the
introduction of blank spaces where information is doubtful. “Gone are the monsters,
elephants, lions, and swash lines; a cartouche around the title is the only decoration.”
(Raiez, 1948, 33) This attitude was fostered by the philosophical writings of René
Descartes (1596-1650). Descartes was consumed with the concept of ‘certainty’. He
believed mathematical descriptions of the world were the key to ‘valid’ knowledge.
Quantifiable characteristics made up the essence of what could be known about the true
nature of things. He believed that relationships of one thing to another could be
quantifiably measured. Other qualitative properties of things only existed in the mind.

Descartes pursued a secure foundation for the advancement of human knowledge
through the natural sciences. He based his model for progress in human knowledge on
mathematical reasoning.
Expressing perfect confidence in the capacity of human reason to achieve knowledge, Descartes proposed an intellectual process no less unsettling than the architectural destruction and rebuilding of an entire town. In order to be absolutely sure that we accept only what is genuinely certain, we must first deliberately renounce all of the firmly held but questionable beliefs we have previously acquired by experience and education. (Kemerling, 1997-2006)

This led to the concept of the mind-body dualism establishing absolute independence between the material and spiritual realms. It provided scientists a rationale to rely exclusively on observation for their development and explanations of physical events. The significance of this dualism from a cartographic point of view is the very means by which we attempt to structure the world using maps “also generates the modern experience of meaning as a process of representation. ... the world is experienced in terms of an ontological distinction between physical reality and its representations – in language, culture, or other forms of meaning.” (Mitchell, 1988, xiii)

The most important technological advancement in this era was the telescope. When mounted on a tripod such that it can be rotated (transited) about a horizontal and about a vertical axis, along with spirit levels and graduated circles supplemented by vernier scales this new survey instrument, known as a transit or theodolite was essential for trigonometric surveys. This new technological advancement supported and enhanced the empirical observation and mathematical reality rationale.

**DETERMINATION OF THE LENGTH OF AN ARC**

After Ptolemy's *Geographia* was widely published, maps and globes were being produced using his incorrect calculation for the circumference of the earth.
approximately 28,800 kilometers. When Columbus returned from his expedition, he estimated the earth to be 30,000 kilometers. And let us not forget Eratosthenes calculation of 46,250 kilometers. This meant the length of an arc, one degree of latitude, ranged from approximately 80 to 128.4 kilometers. It took a curious French physician, Jean Fernel (1497 – 1558), to devise an experiment in 1525 that measured the length of a degree of latitude using the newly rediscovered astronomy and mathematics.

Using a quadrant\(^{31}\), he determined the latitude of two cities that were almost exactly one degree of latitude apart, Paris and Amiens, measured the circumference of his carriage’s wheels, and counted each revolution between the two cities. This could not have been the most accurate computation, “considering the unevenness of terrain, the twists and bumps in the road, the quadrant’s lack of precision, and the many opportunities for human error. But, by an astounding series of compensating errors, Fernel ... came very close to the truth.” (Wilford, 2000, 113) His calculation, approximately 111.4 kilometers, was within 0.1% of the true value, 111.3 kilometers. Yet, it would be another century before anyone else attempted another more precise measurement using triangulation and trigonometric surveying.

**Trigonometric surveys**

Although surveying existed throughout much of recorded history, prior to the early in the 16\(^{th}\) century, surveys in Renaissance Europe were written documents. While

\(^{31}\) A quadrant is an instrument for measuring the altitude of heavenly bodies.
the coastlines of the world were being recorded and mapped, progress on land coincided with need for accurate land surveys to satisfy the growing commodification of land. “An important stimulus to surveying was the need of large landowners to have an inventory of their holdings. ... It is against this background of increasing land values that new surveying techniques were introduced and adopted.” (Short, 2004, 132)

Surveying was codified in 1533 by Gemma Frisius (1508 – 1555), a Dutch mathematician, cartographer, and instrument maker. His publication, Libellus de locurum, not only described the theory of trigonometric surveying, it is the first publication to propose the use of triangulation as a method of accurately locating places, Figure 22. (Bagrow and Skelton, 1985, 159)
In 1615, Willebrord Snellius or Willebrand Snell (1580 – 1626), a Dutch astronomer and mathematician most famous for the law of refraction now known as Snell’s law, executed a plan to find the radius of the earth using Frieius method of triangulation.

He ran a network of 33 interconnecting triangles 126 kilometers across the frozen meadow between the Dutch towns of Alkmaar and Bergen op Zoom. He measured the base line with an odometer. At the terminal points of the network, he made astronomical measurements.
observations with a quadrant to determine the amplitude, or
breadth, of this particular arc of the meridian; it was considerably
more than one degree. Taking the amplitude of the arc and the
triangles, Snell made his calculations. (Wilford, 2000, 117)

According to his computations, Snell determined the length of an arc to be
approximately 107.4 kilometers, more than 3.4% less than the actual figure. Regardless
of the accuracy of the measurements and computations, the real genius of Snell’s work
was that it became the standard for conducting more accurate cartographic and
geodetic surveys.

Jean-Felix Picard (1620 – 1682), a French astronomer and priest, used Snell’s
procedure and improved his calculation using a telescopes and logarithmic tables in
1669 – 70. He measured an 11.4 kilometer base line from Paris to Fontainebleau using
“well-seasoned varnished wooden rods, laying them end to end.” (Wilford, 2000, 118) He
then attached telescopes to a quadrant to acquire angle measurements between
points, and computed distances using logarithmic tables. His result, 110.46 km for one
degree of latitude, was too large by only 0.7%. Nonetheless, the determination of a
degree of latitude was still not laid to rest as other theories about the shape of the
earth were developed in the late seventeenth century.

Determination of the Spheroid

By the sixteenth century Ptolemy’s geocentric system had accrued many
astronomical ‘problems’. The position of the sun and planets were not as Ptolemy had
predicted and there was dispute in the order of the planets. Mikolaj Kopernik or Nicolaus
Copernicus (1473 – 1543), Polish astronomer, resolved the ‘problems’ by placing the sun in the center of the system. The heliocentric system changed how scientists, such as Newton, viewed the workings of the planet.

In 1687, Isaac Newton (1643 – 1727) theorized the earth was an oblate spheroid, bulging at the equator and flattened at the poles, because of the centrifugal force created by the Earth’s rotation. Thus, the length of a degree of latitude would be slightly larger near the poles. The French scientists were not convinced and decided to test the theory by extending Picard’s triangulation network northward. Giovanni Domenico Cassini (1625 – 1712) and his son, Jacques Cassini (1677 – 1756) conducted the experiment. According to their measurements the earth was a prolate ellipsoid, bulging at the poles.

This merely intensified the scientific dispute between the academies of London, the Royal Society, and Paris, Académie Royale des Sciences, about whether the earth is of the shape of a lemon or of that of an orange. The only way to put the matter to rest was to measure a degree of latitude near the Equator and compare it to a degree of latitude near the Arctic Circle. Pierre Louis Moreau de Maupertuis (1698 – 1759), French mathematician and philosopher, persuaded King Louis XV (1710 – 1774) to send expeditions both to the equator in Peru and to the Arctic Circle in Northern Sweden.

Although the first expedition left for Peru in 1735, it was the Maupertuis expedition to North Sweden the following year, 1736, that produced definitive measurements. In 1737, Maupertuis reported to the Académie Royale des Sciences in
Paris that the earth was flattened at the poles. He measured a degree of latitude near the Arctic Circle as 111.094 kilometers. Nearly nine and a half years later, in 1744, after a most painstaking survey, the Peru expedition, led by Charles Marie de La Condamine (1701 – 1774), French geographer and mathematician, and Pierre Bouguer (1698 – 1758), French mathematician and astronomer, the calculation of the length of an arc near the equator was determined to be 109.92 kilometers. (Wilford, 2000, 120-129)

This new knowledge of the shape of the earth marked an important point in the development of cartography. Scientifically defined measurement of a degree of latitude based on survey triangulation networks and emerging knowledge on the shape of the Earth, enhanced the foundations of scientific cartography providing explorers, navigators and surveyors an opportunity to provide more reliable measurements of latitude which resulted in more accurate maps. Cartography became a systematic practice of fixing relative positions of distant places with increasing accuracy.

The pursuit of accuracy transformed the character of mapmaking. Cartographers left the printing shops and cloisters and went into the field. They fanned out, soldiers and adventurers, navigators and scientists, to survey the land and the sea. Their surveys helped define the known and encompass the unknown. (Wilford, 2000, 131)

Longitude

Where latitude can be easily determined using the altitude of the noon day sun or the polestar at night, the determination of longitude requires knowing the differences of time in two locations. Terrestrial longitude had been determined astronomically using
the lunar eclipse method since the second century BC by Hipparchus. Ptolemy continued Hipparchus' work of cataloging stars and supplementing it by cataloging places according to their latitude and longitude in the second century and Al-Biruni (973-1050), an Arab scholar, improved them in the tenth century. (O'Conner and Robertson, 2002)

The determination of longitude became an increasing urgent need for both land, to settle boundary disputes, and sea, to safely chart and negotiate the oceans. Starting in 1567, Spain offered substantial rewards to the inventor that could determine longitude at sea within half a degree. Sometime later Holland, France, and England followed suit. (O'Conner and Robertson, 2002)

In 1610, Galileo discovered Jupiter's first four satellites, the Jovian planets, and two years later, after extensive observations, he proposed the movement of the Jovian planets could be used as a universal clock making it possible to determine longitude. Unfortunately he was not able to convince the Spanish monarchy of his theory, since his method proved impractical at sea. Decades later, in 1676, Giovanni Domenico Cassini improved and expanded Galileo's work and successful trained surveyors and astronomers in the Jovian method for determining longitude on land opening the door for

32 Since a lunar eclipse can be seen on half of the Earth, the difference in longitude between places can be computed from the difference in local time when the eclipse is observed. This approach does give accurate results. However, without accurate time pieces this method was impractical.

33 Half a degree, 0.5° = 30' on a spherical grid or 2 minutes of time.
large scale accurate National surveys. Unfortunately this did not solve the problem of
determining longitude while at sea. (Wilford, 2000, 135)

The invention of the pendulum clock, patented in 1657 by Christiaan Huygens
(1629 – 1695), a Dutch mathematician, astronomer and physicist, was the first step
toward a reliable calculation of longitude at sea. He knew that a mariner’s timekeeper
that could keep accurate time for several months in any climate regardless of the ship’s
motion would solve this problem. It wasn’t until 1735 when John Harrison (1693 –1776) a
British carpenter and cabinet maker, finished the first chronometer, H1. It was an
enormous 66-pound (30-kilogram) invention, Figure 23. A sea trial across the
Mediterranean proved the chronometer was worthy of further experimentation. H2 and
H3 were also large and never taken to sea due to the war between England and France.
In 1761, Harrison completed the design of the H4, Figure 24. It was the size of a large
pocket watch. After the trans-Atlantic sea trial to Jamaica, it was determined to be
accurate within 5 seconds or 1.25’ of longitude. The H1, H2, and H4 chronometers are all
still running in Greenwich, England.
Figure 23. John Harrison's first marine chronometer, H1. (Image from http://www.solarnavigator.net/history/john_harrison.htm)

Figure 24. John Harrison's prize winning marine chronometer, H4. (Image from http://www.solarnavigator.net/history/john_harrison.htm)
Eighteenth century Europe was a besieged battleground as power-conscious national states employed standing armies with professional soldiers and engineers. The need for the military to plan and strategize attacks created a demand for accurate detailed surveys that stimulated an outburst of cartographic activity. Many European countries began systematic topographic surveys of their countries. In some countries, like France and England, these surveys originated as exclusive military projects that evolved into a more civilian character. (Raiez, 1948, 35-39)

The French national survey, organized by the Académie Royale des Sciences, began in 1745 by César-François Cassini de Thury (1714–1784) and his son Jacques-Dominique, the third and fourth generation Cassini, respectively. In 1789, the first multi-sheet\textsuperscript{34} topographic map series prepared largely with the aid of the military was completed, Figure 25.

\textsuperscript{34} it was 182 pages in all at a scale of 1:86,400 measuring 11 meters by 11 meters. (Wilford, 2000, 146)
The British were encouraged to engage in a national survey at the behest of César-François Cassini who proposed a cooperative mapping venture.

He suggested that the two countries join in a triangulation survey extending across the English Channel. As an astronomer, Cassini cited the advantages of knowing more precisely the difference in latitude and longitude between the observatories at Paris and at Greenwich. As a cartographer, he recognized the necessity of laying a mathematical framework for tying the map of one country to the map of adjoining countries. (Wilford, 2000, 140)

The Royal Society, the English counterpart to the French Académie Royale des Sciences, assigned William Roy (1726 - 1790), a Scottish surveyor and military draftsman, to the task in 1784. He measured an eight kilometer baseline on Hounslow Heath outside of London and waited three years for Jesse Ramsden (1735 - 1800), an English astronomical and scientific instrument maker, to deliver the instrument Roy had
ordered, Figure 26. It was the first theodolite ever built and was instantly put to use in the summer of 1787. In 1790, Roy completed the cross channel survey and delivered his formal report to the Royal Society beseeching them to begin a National survey. In 1791, the Ordnance Survey was launched as a military project and ten years later, in 1801, the first sheet of Kent was published.


While France and England dealt with various practical and political problems of completing their National survey, the rest of Europe watched from a distance.
recognizing the importance accurate maps and charts had on the political and economical interests of the nation.

Not only governments were beginning to see the light, but private citizens as well. The merchant and manufacturer, the agriculturalist and the professional man began to think of maps in terms of prosperity and security instead of just another burden to be borne by the taxpayer. Government surveyors began to assume the role of emissaries in the cause of civic improvement and national solidarity instead of trespassers against the personal rights and civil liberties of the small landholder. (Brown, 1979, 265)

Denmark, Sweden, Norway, Russia, Austria, Switzerland, Germany, Spain all began their trigonometric surveys in the late 18th – early 19th centuries as topographic mapping became an accepted project for planning infrastructure and exploiting resources. (Brown, 1979; Wilford, 2000)

**Mapping the Pacific**

Even after Magellan led the first European expedition through the Pacific in the early sixteenth century, the vast size of the Pacific Ocean could not be conceived until a more accurate scientific measurement of the Earth’s circumference was calculated in the mid seventeenth century. Cartographic representations of the world in the late sixteenth century continued to depict the last of Ptolemy’s errors to be removed from the world map, the existence of a southern continent, Terra Australis, Figure 27.
The case for a southern continent was as old as geographical science, for Ptolemy in the second century had argued that there was a huge counterbalancing landmass in the Southern Hemisphere; and believers in the concept were not unduly depressed by the failure of the explorers of the sixteenth and seventeenth centuries to bring back conclusive evidence. Since vessels tended to follow a track which slanted away from high latitudes as it left Cape Horn, mapmakers merely had to shift their continent a degree or two farther south. Geographers found compensation for this limited retreat by hinting that the islands (or cloud banks) sighted by the explorers to port were in fact the outlying capes and promontories of a continent lying just over the horizon. (Howse, 1990)

As Europeans were surveying and mapping other parts of the world, bringing them into their consciousness throughout the sixteenth and seventeenth centuries,
Pacific exploration remained relatively quiet. The Spanish were the only active countries sailing in the Pacific Ocean during this time period as the Portuguese concentrated on establishing trade in the Indian Ocean. By the late sixteenth century the Spanish had established a trade route to the Philippines crossing the Pacific in their 'Manila Galleons' from Acapulco. In this process, the Spanish encountered several of the Caroline Islands in Micronesia, the Solomon Islands in Melanesia, and the Marquesas Islands in Polynesia. After the trade route was established they seldom stumbled upon any other island groupings unless they were blown off course, Figure 28. (Kjellgren, 2000)

In the seventeenth and especially the eighteenth centuries, European curiosity about the unknown expanse of the Pacific intensified. Explorers, merchants, and privateers from Holland, France, and England began to explore and chart the Pacific Ocean for the purpose of finding a more efficient route to the Spice Islands via the Northwest Passage and locating the vast undiscovered southern continent, Terra
Australia, possibly rich in gold, spices, and other trade goods according to a careless reading of Marco Polo. (Howes, 1990; Kjellgren, 2000; Wilford, 2000)

In the early seventeenth century the Dutch struggle for independence became an aggressive global maritime war. They ignored the Spanish 'legal' claim to the Pacific, forced the English out of the Spice Islands, and kept the Portuguese trade to the perimeter. By the 1620's they had established their maritime dominance and were ready to put together expeditions to

learn more about the "Southland" (Australia), whose coasts and adjacent sea passages were only slightly known; second, to find and claim for the States General any unknown lands which might lie east of the Southland; and, third, to be "better assured of any eventual passage from the Indian Ocean into the South Sea, and to prepare the way for ultimately discovering a better and shorter route from there to Chile" (shorter because of the favorable prevailing wind in southerly latitudes). (Kjellgren, 2000)

The Dutch exploration of the Pacific culminated in 1642-1643 with the voyages of Abel Janezoon Taeman (1603 - 1659), a Dutch seafarer, explorer, and merchant. Taeman sailed south of Australia and encountered Taemania, New Zealand, Tonga, Fiji, and the Bismarck Archipelago.

After Taeman's voyages, European exploration of the Pacific practically came to a halt. Nonetheless, world maps near the end of the seventeenth century reflected the findings of the Dutch and other explorers up to that time, Figure 29.

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35 Spain considered the entire Pacific Ocean from the Philippines to the New World as their exclusive Spanish preserve because of the Treaty of Tordesillas that divided the world between Spain and Portugal along a north-south meridian 370 leagues / 1550 kilometers / 965 miles or 46° 37' west of the Cape Verde islands off the west coast of Africa.
To the north Japan was roughly charted, but the ocean to the north and east remained unexplored. The Pacific coast of America was known only as far as California, a peninsula on some maps, an island on others. In the South Pacific a fair knowledge had been obtained of the island groups lying on the diagonal course between the tip of South America and New Guinea, but their exact position and extent were largely a matter for conjecture. The western fringes of Australia, the southern coast of Tasmania, and a stretch of the New Zealand shoreline were known from the Dutch explorations; but the relationship between these lands was far from clear. (Howse, 1990)

European curiosity about the Pacific Ocean suddenly intensified at the end of the seventeenth century and reached its zenith with the British in the eighteenth century.

The preeminent explorers of this era include four Englishmen – John Byron, Samuel Wallis, Philip Carteret, and James Cook. John Byron (1723 – 1786) explored the Pacific between 1764 and 1766 and despite his assurances to the Admiralty that he intended to cross the Pacific by a new track, Byron followed the customary route west-northwest from the
Strait of Magellan and consequently made no discoveries of note as he passed through the archipelago of the Tuamotu, Tokelau, Gilbert, and the Northern Mariana Islands. (Howse, 1990)

Samuel Wallis (1728–1795) accompanied Phillip Carteret (1733–1796) in 1766 on an expedition to search for Terra Australis in the southern latitudes. They were separated sailing through the Straits of Magellan and took different routes through the Pacific. Carteret crossed the Pacific farther south than any other explorer making considerable progress demystifying Ptolemy's imaginary southern continent. In the process he sighted both the Solomon Islands, almost two centuries after they had first been sighted by the Spaniards, and Pitcairn Island. Wallis showed little initiative in his track across the Pacific taking a W-NW route coming across Tahiti, Moorea, and Maiao. (Howse, 1990)

James Cook (1728–1779) was the first European explorer capable of accurately mapping the Pacific as he was methodical and trained in mathematics and astronomy.

On his first voyage in 1768, he was assigned to...

...report on all aspects of new lands discovered and to bring back specimens, drawings, and surveys. Joseph Banks followed the precedent set by the French (Bougainville had on board the astronomer Veron and the naturalist Commerson) to argue that artists and scientists should accompany the discovery expeditions. Though the scientific equipment seemed primitive by modern standards, the ships were in eighteenth-century terms floating laboratories. (Howse, 1990)

He first set sail for Tahiti to make astronomical observations of the Transit of Venus in 1769. When Cook arrived in the Tahiti, he learned that Polynesian navigators, such as
Tupaia, were capable of carrying extremely large warehouses of cartographic knowledge.

Tupaia was familiar with over 70 islands in the Pacific, most of which he visited himself prior to joining Cook's crew. He joined Cook as he headed south to demystify the myth of Terra Australis and map the entire coastline of New Zealand and the eastern coast of Australia proving they were not part of the mythical continent and settling the dispute as to whether Australia and New Guinea were joined. His first voyage was a feat of detailed exploration precisely mapping more than 5,000 miles of previously unknown coastline using the lunar distance method for determining longitude.

On his second voyage in 1772, Cook used a chronometer made by Larcum Kendall (1719 - 1790), the K1, a copy of Harrison's H4, to record longitude. In this three year expedition he irrefutably dismissed the conjectural southern continent having reached the shores of Antarctica and mapped, for the first time, Easter island, the Marquesas, Kanaky, Vanuatu, and South Georgia. In the process he “confirmed, located, and connected many of the uncertain discoveries of earlier explorers which had brought so much confusion to the map of the Pacific.” (Howse, 1990)

In Cook's final voyage in 1776 he set out to solve another long standing perplexing geographic mystery, the existence of a Northwest Passage. Russian explorers, like Vitus Jonasen Bering (1681 – 1741), a Danish-born navigator in the service of the Russian Navy, gained a considerable amount of knowledge of the area during his explorations. However, failure to publish his charts quickly led to much speculation and uncertainty

\[36 \text{ Kendall was apprenticing with Harrison at the time.}\]
about what lay between California on the western coastline of North America and Kamchatka on the eastern coastline of Asia. Cook initially set sail for Tahiti and then took an unfrequented route to the northwest coast of America where he stumbled upon the Hawaiian Islands. He spent the summer of 1778 mapping the Alaskan coastline closing the gap between the Russian and Spanish expeditions.

On his three voyages Cook had established the salient features of the Pacific, solved major cartographical 'problems', and provided Europeans with more than just accurate maps, Figure 30.

He fanned the flames of their scientific curiosity adding to the growth in Europe's knowledge of the substance and character of the Pacific and providing a new mechanism for learning; a way to show things as they were, from a distinctly European point of view, and to dispelled myths and illusions by way of empirical observation and prompt publication.

His three voyages, following each other in quick succession, revealed the Pacific to Europe in a way no previous explorations had done. As the books, maps, and views came off the presses—not only in England but in France, Holland, Germany, and Italy as well—Cook became a figure of European renown. Other explorers were in the Pacific during the years that Cook's ships were out, but attention was focused on the methodical, comprehensive explorations of the remarkable Englishman. (Howse, 1990)

**Closing Remarks**

Maps have always supported a particular ideological worldview and cartographic techniques and technologies have continually changed in order to meet the demands of new generations of map users. Oftentimes the histories of Western cartographic development, such as this one, present the technical progress of 'accurate representation' by focusing solely on scientific advancement and individual achievement. This chapter attempted to show those cartographic 'advances' correlated with the epistemological changes in Western spatial knowledge acquisition, representation, and transmission.

The origin of Western spatial knowledge systems as it relates to cartographic development was identified in the mythological and religious ruminations of Hesiod in the
eighth century BC. By the sixth century BC, Ionian philosophers embraced Homer’s depiction of the world as a reflection of the Greek understanding of the nature and constitution of the world. However, they began a line of questioning that provided more naturalistic rather than supernatural explanations for their observations.

Notable progress in the development of cartography was subsequently made via critical thinking of post-Socratic philosophers beginning with Aristotle who developed a scientific method of reasoning regarding the rounded shape of the earth; a concept his esteemed predecessors had previously only guessed at. Travel and expeditions have always contributed to the amount of human spatial knowledge. Those of Alexander the Great greatly expanded the amount of Greek geographic knowledge of the habitable world provided vast amounts of information and improving the empirical content of Western cartography.

In my opinion, the most important concept that affected how Western cartography would develop was the advent of geometry formalized by Euclid between the third and fourth century BC. The creation of an abstract space facilitated a focus on accuracy and standardized measurements. It “provided a means for determining the shape and size of the earth, and for determining relative position of environmental features.” (Robinson et al., 1995, 23) After the advent of geometry, locational reference systems such as a rectangular grid became a vehicle with which the rough terrain of the physical world could be transformed into abstract geometric space, “plotted and replotted, mapped and remapped, represented and reimagined.” (Short, 2003, 21)
Geometry provided Eratosthenes the method for calculating the size of the earth and gave Ptolemy the tools necessary to write his seminal works, *Aimagest* and *Geography*. Even when cartographers in the Middle Ages were concentrating on symbolizing religious doctrine, maps were still being produced for navigational purposes using the principles of geometry.

This is not to say that all those other advances in Western cartographic development were not important. Certainly the rediscovery of linear perspectives during the Renaissance and the objective and scientific impartiality of the Enlightenment are very important to the way Western spatial knowledge systems were shaped. However, “the grid system permitted the heterogeneity of the world to be reduced to a geometrical uniformity.” (King, 1996, 45)

It is also vitally important to recognize that while Western spatial knowledge became aligned with mathematical principles eventually blooming with the works of Descartes, Western cartographic knowledge assemblages could not have achieved the level of ubiquity we now take for granted had it not been for the alignment of science, cartography and the state as evidenced by the triangulation of France and England. This “was to be the first international cooperative mapping venture.” (Turnbull, 2003, 119) The eventual success of this venture “set in motion the process whereby the whole of the Earth’s territory could be mapped as one, all sites would be rendered equivalent, and all localness would vanish in the homogenisation and geometrisation of space.” (Turnbull, 2003, 121)
The world could now be ordered, broken down into isolated compartments, and studied according to a reality most suited to mathematical investigations. Other forms of experience were devalued and considered less real such as the spiritual dimension of Native peoples that accounts for many of their cartographies. From the colonizer’s view, these cartographies were “invisible, unmeasurable and therefore non-existent.” (King, 1996, 146) As a result, with Western colonial mapping projects, “these 'strange' lands and their maps become the terrain of rational calculation and the representation of the real: accuracy, correspondence and detail.” (Pickles, 2004, 13-14)

Western colonial mapping projects tend to “extinguish other dimensions of reality in an act of violent appropriation.” (King, 1996, 145) This included the fixing of names onto a map superimposing newly assigned Western names in a “ritual of conquest, an act of conceptual appropriation seemingly inseparable from the seizure of the land itself.” (King, 1996, 28-29) Nonetheless, the maps of many explorers and colonizers could not have been drawn without the help of indigenous peoples.

Even though Polynesian cartographies are mainly performative Tupalaia was able to assist Captain Cook map the locations of 74 islands in the Pacific that he and his Polynesian predecessors had explored and colonized without the use of paper maps. The next chapter examines the nature of a different spatial knowledge system, a spatial knowledge system that developed under a Hawaiian epistemology, an epistemology of expanded sensual awareness and contextually practical applications.
When asked if Hawaiians had a word for “mind” I could not respond because I do not know. We figuratively referred to mind as an ‘umeke or a bowl or calabash. We also referred to mind as mana’o, waihona no’ono’o or na’au. Mind was 1) Mana’o: thought, idea, belief, intention, meaning; and 2) Waihona no’ono’o: depository of reflections, thought and meditations, and finally, 3) Na’au: our seat of intelligence, wisdom, heart and emotion – our stomach. (Meyer, 2003a, 14)

When asked if Hawaiians had a word for ‘cartography’ I could not respond... not because I do not know, but because I had no idea how cartography was practiced prior to the arrival of Cook in 1798. However, thanks to the efforts of Hawaiian language specialists, a word for ‘cartographer’ was coined and included in the Hawaiian Dictionary as ‘mea kaha palapala ‘ālina’. The literal translation is ‘map maker’. I have a problem with this because the term describes a function of a Western influenced practice – making paper maps. It does not accurately portray the definition of cartography as described in Chapter 1 as an agency within a society that specializes in a fundamental societal need - a contextually functional shorthand method for symbolizing and transmitting spatial knowledge. Maps were also defined as symbolic abstractions of experienced phenomena.

The term ‘mea kaha palapala ‘ālina’ does not acknowledge the cartographic traditions Hawaiians practiced prior to contact with the Western world known as performance cartographies. (Woodward and Lewis, 1998, 4) This chapter discusses the nature of Hawaiian performance cartographies and their use of place names as mnemonic symbols. The next section begins with a discussion of Hawaiian epistemology.
as described by Meyer, Andrade, and Oliveira highlighting the reciprocal relationship Hawaiians have with their kulāwi (ancestral homelands) and their distinct knowledge transmission protocols. These epistemological factors provide the knowledge framework that informs Hawaiian cartographic development and its use of place names.

**Hawaiian Epistemology**

Hawaiian epistemology was introduced to Western academia by Meyer in 1998 in the context of seeking an alternative to the education system many Native Hawaiians are provided by the State of Hawai‘i. Native Hawaiian students are often labeled under achievers and held responsible for an educational system that is not consistent with Hawaiian knowledge systems. Meyer chose to work within a proficiency based model of educating Native Hawaiian students referencing both the Nā Pua No‘eau and Ho‘oulu Lāhui programs and the Kanu O Ka ‘Āina charter school in her work. After interviewing twenty Hawaiian educational leaders, she fashioned a strong cloak with five Hawaiian meta-epistemological threads on which she fastened seven more specific Hawaiian epistemological themes, principles, categories, or ‘vistas of knowledge’. (Meyer, 2003a, 141-142)

Her five threads were key concepts that helped formulate the context for her work. They include,

... 1) the role of place, history and genealogy in knowledge, 2) the idea that culture restores culture, 3) the perceived duality of educational systems, 4) the fact that experience, practice and repetition are fundamental to knowing something and finally, 5)
the role of morality in knowledge production. (Meyer, 2003a, 185, italic in original.)

These five threads are easily applicable to any research involving Hawaiian communities. For example, the first thread, the role of place, history and genealogy, inevitably weaves its way into any research just by asking a community participant the question, “Where are you from?” Since Hawaiians find great value in oratory and memory skills (Pukul, Elbert, and Mo'okini, 1974, 272), this one question will usually garner a long and detailed response about where the person grew up, where they have lived in their lifetime, who their family is, and where their family is from. (Meyer, 2003a, 142)

The second thread, culture restores culture, is vital because any research conducted in Hawaiian communities will encounter Hawaiian cultural mores. Hawaiian knowledge systems reproduce themselves in distinct ways as they are passed from one generation to the next. These distinctions play “pivotal roles in the what, how and why things were learned.” (Meyer, 2003a, 145) If a researcher conducts research within a Hawaiian community using a Western knowledge framework, what, how and why they learn may end up providing more insight about the Western knowledge framework than it will about the Hawaiian community. If, on the other hand, the researcher conducts research using a Hawaiian knowledge framework, what, how and why they learn will reflect a more Hawaiian cultural learning.

This brings us to the third and probably most controversial thread, the perceived duality of educational systems, as it highlights the dichotomies between a “formal education through an American schooling structure, and an informal/cultural education
through experiences and practices at home or in one's community.” (Meyer, 2003a, 147)

However, Meyer is adamant that these educational systems are not dichotomous. They are not exclusive opposites. Each system has different emphases and different modes of knowledge production and knowledge transmission. The American schooling system emphasizes a formal classroom structure but does not exclude experiential learning. The Hawaiian cultural education system does not exclude abstract thinking. It emphasizes functional, practical, experiential, and repetitive learning.

In fact, the core of Hawaiian knowledge derives from “the doing, the practice, the memorizing, [and] the repetition.” (Meyer, 2003a, 150) All researchers conducting research in Hawaiian communities may encounter this fourth thread, experience, practice, and repetition, while doing their field work. Kūpuna (elders) participating in an ‘interview’ process may seemingly repeat themselves. In light of this fourth thread, researchers should not discount this as senility. Instead, it may very well be the kūpuna’s way of sharing their knowledge with the researcher. Memorization and recitation, as stated earlier, are highly valued characteristics and, more importantly, are necessary components of a Hawaiian knowledge system. Furthermore, it is only through practice and experience within a Hawaiian context and consciousness that a deeper meaning can be attained. Entwined in this deeper meaning we find the fifth and final thread, the role of morality. (Meyer, 2003a, 150-152)

Pono is one of those Hawaiian words that really does not have an English equivalent. In a very broad sense, it conveys the meaning of goodness, purity, wellness, integrity, righteousness, perfection and success. It also encompasses the notion of personal and
professional excellence. ... Prior to contact with the West in 1778, individual and collective pono meant establishing and maintaining a balanced, reciprocal relationship among man, nature and the gods. (Kahakalau, 1997, 200)

Pono behavior is a necessary characteristic to demonstrate when conducting research in a Hawaiian community. Displays of humility, patience, and respect are paramount if any researcher hopes to attain the trust of Hawaiian community members.

Furthermore, treating the knowledge shared with respect and humility are also vital to maintaining the reciprocal relationship between man, nature, and the spirit world because not all knowledge shared with the researcher is meant to be shared with the public.

While it is not usually too difficult to figure out what should and should not be shared, each researcher should ask permission before re-presenting that knowledge either in text or orally. I realize this may seem foreign to academia; to ask permission to use knowledge shared in formal or informal interviews, before publishing a word of it. But in doing so, the researcher not only validates the cultural context within which the knowledge was shared in the first place but also maintains a cultural balance between the two knowledge systems. This idea is discussed further in the “Process” section of Chapter 4. (cf. Louis, 2007)

These five Hawaiian meta-epistemological threads provide the framework Meyer uses to discuss seven more specific Hawaiian epistemological themes. These themes are not fixed or bounded. Instead, they are fluid like the subtitle she uses in a later
publication suggests, 'Our Ocean of Understanding'. She offers them as some of the “ways to experience this ocean of knowing.” (Meyer, 2001, 126)

1) Spirituality and knowledge – the cultural context of knowledge
2) That which feeds – physical place and knowing
3) Cultural nature of the senses – expanding notions of empiricism
4) Relationship and knowledge – notions of self through other
5) Utility and knowledge – ideas of wealth and usefulness
6) Words and knowledge – causality in language
7) The body/mind question – the illusion of separation

Within the description of these themes Meyer included several quotations from the mentors she worked with highlighting the importance of each principle. By far the most prevalent theme she encountered was the first, spirituality and knowledge. Every one of the mentors she worked with acknowledged that “knowledge is affected, acquired, and shaped by spiritual forces. These forces included environment, family members long passed, God, the many gods, and ‘aumakua.” (Meyer, 2003a, 154) Mentors also recognized that they were but a link in a chain of cultural continuity that reached far back into the ages and provided them the cultural context, those values, priorities and spiritual beliefs, necessary to evolve and mature. (Meyer, 2003a, 155)

Her second theme, that which feeds, is probably most significant for this work on Hawaiian performance cartographies because of the emphasis on physical place and knowing. It specifically focused on ‘āina as origin, mother, inspiration, and that which feeds. Mentors acknowledged the land, sky, and ocean as a “classroom of their most vivid lessons, the place of metaphors from which they continually draw on.” (Meyer,
2003a, 158) Furthermore, nature is filled with more than just lessons. It also contains the manifestations of our past; our kūpuna, our 'aumakua, and our akua.

The first two themes direct us to the third, expanding notions of empiricism. Meyer presents the specifics of Hawaiian empiricism as outlined in an interview with Rubellite Kawena Johnson. There are “six ‘body-centric’ notions relative to this discussion on how Hawaiians experienced our world.” (Meyer, 2003a, 161) This third theme was greatly expanded upon by Oliveira and will be discussed later in this chapter.

But before moving on to the next theme, it is worth mentioning that Hawaiians maintain an active empirical rapport with the environment. Knowledge and understanding is something we actively cause to happen. Since we learn empirically through our five bodily senses and a sixth sense, Rubellite Johnson identifies as ‘awareness’, “our bodies become instrument of knowing and instruments for cultural expression.” (Meyer, 2003a, 162-164)

The fourth theme, relationship and knowledge, provides insight to the notion of interdependence where Hawaiian practices of reciprocity, balance, and harmony in relation to dealings with nature; and generosity in relation to dealings with other people are vital to learning. Knowledge is considered a gift, a responsibility, “a by-product of dialogue, or something exchanged with others.”(Meyer, 2003a, 167) The key to knowledge advancement, from a Hawaiian standpoint, is to continue this dialogue with others including your kūpuna, your natural environment, and those spiritual elements...
that manifest in nature. Thus, there is a diversity of ways Hawaiians gain knowledge.

However, it is only valued when it has utility. (Meyer, 2003a, 168-170)

The theme of utility and knowledge was important to many of the mentors Meyer interviewed. Knowledge not tied to some function or purpose was not meaningful — it was just information.

However, if information is to mature into knowledge and knowledge into understanding, then it must be practiced. Creative repetition, doing something over-and-over, or thinking about something until it made sense and could be experienced within one’s life was a hallmark of discipline and excellence. (Meyer, 2007)

Knowledge is gained from doing something over and over again and is thus tied to repetition and practice. Every time a craft-person practices their craft provides another opportunity for learning something of value. “The doing, the cultivating, the accomplishing — all verbs to describe how these Hawaiian educators maintain and advance what is worth knowing to them.” (Meyer, 2003a, 173) Furthermore, knowledge of any value is ‘passed on’. It has a historical component, a cultural continuity.

Of all the themes formed from a preliminary review of literature, the sixth, words and knowledge, was the least prominent during her interviews. Mentors did acknowledge the mana (spiritual power, essence) that words carry and that there is an appropriate time to speak out, but there didn’t seem to be as much information about ho’opāpā (a form of word play) or kaona (deeper or hidden meaning in words) as the literature review had anticipated. However, it may also have been that the mentors, aware of Meyer’s language capabilities at that time, were not able to demonstrate this theme. Perhaps,
she was not ready to experience this aspect of Hawaiian epistemology, as it appears a
certain degree of fluency is necessary, whereas she was ready and able to experience the
other themes.

The last theme, the body-mind question, articulates the concept that intelligence
was not separate from feelings. According to the interview with Pua Kanahele, feelings
are instinctual; they are not the same as emotions. Emotions are learned, feelings are
innate. “Knowledge is not carved from anger or joy. Knowing something is feeling
something, and it is at the core of our embodied knowledge system.” (Meyer, 2003a, 177)
it is, in fact, located in the stomach region, the bowels, and the na’au. This concept of
embodied knowledge is at the core of Hawaiian beliefs. It is a cultural view of how
knowledge is acquired and shared. Meyer’s later discussions with Pua Kanahele revealed
that emotion and feeling are part of an experiential continuum that moves toward a
spiritual dimension of awareness.

These five threads and seven themes were never meant to be a comprehensive
accounting of Hawaiian epistemology. Meyer never set out to do that. Her only purpose
in completing this work, in learning the philosophical concepts associated with Hawaiian
knowledge and Hawaiian knowledge systems was to “strengthen our identity as Kānaka
ʻŌiwi (Native Hawaiians) so that we can better direct our educational future in these
changing times.” (Meyer, 2003a, xvi) Since the introduction of Meyer’s text on Hawaiian
epistemology, other Hawaiian academics have wasted no time incorporating and building
upon this foundation.
Hawaiian geography

In 2001, Andrade used Meyer's work to begin a discussion on constructing a Hawaiian geography focusing on the ahupua'a of Hā'ena, Kaua'i as a means to ground his research. Meyer's seven principles provided Andrade the vocabulary necessary, "to explore those elements present in the orature, places, and everyday life of the people, in the concept of ahupua'a and in that specific place, Hā'ena…" (Andrade, 2001, 33)

He presents the various ahupua'a of Hā'ena through the stories, sayings, and songs associated with each of them providing a venerated sense of place. He examines the nuances of language, specifically, the Hawaiian term, māhele, which can mean either to share or divide. Each meaning manifested according to the cultural differences between Hawaiian and foreign interests. He provides Māhele documents associated with the slicing up of Hā'ena in an effort to gain a glimpse into the social interactions, demography, and agricultural output. He even discusses the by-laws of a hui (group) made up of primarily maka'aïaina that recognized the land provided to them by the Māhele was inadequate and seized the opportunity to purchase or lease more land. They formed with the specific intent of organizing themselves to retain some of the traditional lifeways of their ancestors. (Andrade, 2001, 260-265)

In the end, Andrade lays out nine items of a wish list for what a Hawaiian geography might resemble. They all end the sentence, 'A Hawaiian geography is about…'

1) ...being Hawaiian!
2) ...more than just a collection of places.
3) ...genealogy.
4) ...spiritual connections.
5) ...aloha 'āina.
6) ...land.
7) ...tension.
8) ...the struggle for cultural autonomy.
9) ...representing Hawaiian lifeways on the land.

The first item, being Hawaiian, conveys the idea that Hawaiian geography is possible if the geographer is Hawaiian genealogically thereby being disposed to various cultural practices and nuances embedded within a family and in a particular location. Andrade presents the view that a Hawaiian geography is only possible if the geographer not only experiences the place(s) concerned but is intimately linked with the “associations brought about by listening to breezes, watching stars, immersing hands in the soil, interacting with and engaging the po'oe honua (all beings on earth).” (Andrade, 2001, 272) This means that not only are some of our kūpuna Hawaiian geographers, but so are those individuals who are intimately familiar with a specific location as a practitioner for more than one generation.

It also means that a Hawaiian growing up in Texas with no understanding of a Hawaiian epistemology would find it difficult to understand what Hawaiian geography is but a third generation Portuguese living up Waimea would understand these ideas more easily as they may practice them daily in how they respond, interact and know their environment. (Meyer, 2007)

This idea reflects the postmodern notion that there is a diversity of truths and alternate perspectives are just as valid as the mainstream — thereby illuminating universal truth.

The second item, more than just a collection of places, speaks specifically to the cataloguing of places and their names as artifacts. This practice pigeonholes the role of
place as cultural repositories of living knowledge. A Hawaiian geography is not about translating the meaning of the name or reading the stories. It is about experiencing those places, understanding its winds, and being familiar with the rhythmic pulse of its waves. Andrade goes even further with a call for a Hawaiian geography that,

...contributes to the support, perpetuation and regeneration of the traditional techniques that our ancestors used to promote the bond of kinship with the land, our elder sibling. By this I mean that we should promote by use and example the 'ōlelo no'eau, mele (song), 'ōli (chant), ka'aō (informal stories) and mo'olelo (historical stories) which connect us to our ancestral lands in the everyday lives of our communities, in our work and in our own lives. (Andrade, 2001, 273-274)

He stresses the need for a Hawaiian geography to highlight Hawaiian genealogical connections with the third item. He expresses this with a story about the Menehune being a part of the geography of Hā'ena. Although this could be verified with DNA testing, Andrade takes the opportunity to express the need to 'verify' or 'substantiate' Hawaiian oral tradition via Western scientific analysis as evidence that “...Western cultures do not acknowledge the worldview of indigenous people as reality...” (Andrade, 2001, 277) Hawaiian geography accepts the oral tradition as part of the diversity of truths.

He is not saying that Western science is 'bad', he is saying that it is not appropriate to use this technology for this purpose. At best, it verifies the oral tradition. At worst, it refutes it and adds to the fragmentation between people, land, and cultural identity. In this particular case, the possible good does not outweigh the potential harm. Andrade acknowledges that Western science and technology has

118
resources that can be used for the benefit of a Hawaiian geography and should not be overlooked. (Andrade, 2001, 277)

The fourth item, spiritual connections, emphasizes the continued belief in the physical manifestation of traditional cosmological entities such as Pele, Hi'ilaka, and Kamapua'a in spite of a strong community participation in Christian conventions. These beliefs are examples of how embedded these entities are in the geography of Hā'ena. Hawaiian geography provides another perspective for these cosmological or spiritual entities to be contextually represented. Instead of solely considering them Hawaiian mythological characters, it geographically grounds them, binding them to particular 'āina.

The fifth item addresses the concept aloha 'āina as an essential component for a Hawaiian geography. The love Hawaiians have for their kulāwi is the same as love they have for a family member. Andrade calls for a Hawaiian geography that promotes a familial relationship to the world and reminds us that

...it is not just the earth bound family that this familial relationship encompasses. Akua and 'aumakua, all the ancestors that live in wind, rain, and the body forms of the beings with wings, scales, four legs and roots in the soil are connected to us spiritually when we pray for permission, respect them in ritual and celebrate them in songs of praise. (Andrade, 2001, 280)

Andrade also believes that a Hawaiian geography should support the resistance of Western agendas by “proposing more appropriate designations for the use of lands that are more congruent with the traditional, historical, and sacred practices which are
assets that are already a part of the land.” (Andrade, 2001, 285) This leads into his sixth item, land.

Andrade is adamant that a Hawaiian geography needs to articulate the conflicts over land and give voice to “the inconsistencies, irregularities and legal artifices that accompanied the process supporting the subjugation of Hawaiian ways of being in the world.” (Andrade, 2001, 286) It needs to engage with those land and law documents resulting from the Māhele. It needs to present an alternative perspective to understanding the differences between the Hawaiian and Western interpretations of those Hawaiian terms formalized into legal code.

These differences have often led to what the seventh item address, tension. Hawaiian geography needs to deal with thorny issues such as the theft of Hawaiian independence. These tensions will not go away as “more than two hundred years of cultural contact, loss of population and intermarriage” (Andrade, 2001, 291) has proven. Hawaiian people have survived and will continue to preserve and perpetuate Hawaiian lifeways. Likewise, a Hawaiian geography must continue to seek out and present any new information about what really happened with Hawaii’s lands and culture.

Hawaiian geography provides a venue to express different perspectives allowing for the voices struggling for cultural autonomy. Andrade’s eighth item, to be heard. The Māhele did not just physically divide the land into smaller fragments; it also divided the people from the source of their cultural identity. It facilitated the breaking down of the traditional Hawaiian systems of mutual interdependencies. A Hawaiian geography
supports the “maintenance, restoration, and perpetuation of the cultural uses and practices that are bound up in the traditional relationships of the aboriginal people and the land.” (Andrade, 2001, 294)

This last item on Andrade’s wish list for a Hawaiian geography, representing Hawaiian lifeways on the land, is the most important in regard to this thesis because it is about the use of maps in the Māhele process. Lines on Māhele survey maps charted a lifestyle never before seen in the Hawaiian Islands. As a lifestyle of private property ownership ascended with the aid of Western survey and mapping technologies, more Hawaiian people were severed from their responsibility to care for the land. Nonetheless, Andrade stresses that maps can serve to benefit the Hawaiian people and “a Hawaiian geography could deliver the skills and products necessary for this endeavor.” (Andrade, 2001, 296)

I agree that maps can serve to benefit Hawaiian people and hope to take it further than just an autoethnocartographic exercise. I believe that Western mapping techniques and technologies substantiate Western perspectives of the world thereby limiting the level of expression Hawaiians, or any Indigenous people, can attain when using Western mapping techniques and technologies. Since those who design, market, and provide instruction in geospatial technologies (including GIS software) have not truly addressed the ontological and epistemological differences of Indigenous cartographies, Indigenous cultural knowledge is often distorted, suppressed, and assimilated into the conventional Western map. This practice of locating cultural knowledge without expressing the spatial meanings and interrelationships of that knowledge, preserves “only
a superficial cultural diversity through its products, ceremonies, and performances whose meaning will be diluted through secular decontexted performances.” (Razak, 2003) (Pearce and Louie, In review)

It is my hope that Hawaiian geography not only informs people of those limitations but also expresses the possible inherent harm populating maps with knowledge not previously recorded on maps can bring, the most notable being the loss of a cultural resource. Perhaps the best way to understand the limitations of Western cartography in regard to Hawaiian perceptions of the world is to focus on “what a truly Hawaiian sense of place is and how and by whom place is constructed.” (Oliveira, 2006, viii)

HAWAIIAN LANGUAGE AND SPATIAL KNOWLEDGE

Oliveira’s work on a Hawaiian sense of place continues the discussion of Hawaiian epistemology expanding upon both Meyer’s and Andrade’s work. As a Hawaiian language instructor, she is able to delve even deeper into Hawaiian epistemology by expressing sensuous geographic nuances in the Hawaiian language. Most of the examples she uses are from Māui, her kulāwi (ancestral land).

She begins by providing a Hawaiian epistemological framework based on nine senses, “sight, hearing, touch, taste, smell, na’au (intuition), kulāwi (place), au ‘āpa’apa’a (ancestral time), and mo’o (connection to the past, present, and future).” (Oliveira, 2006, 22) She then presents eight Hawaiian cosmogonic genealogies to illustrate the

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37 These are addressed later in this chapter in the section entitled, Hawaiian spatial knowledge (re)presentation.
Hawaiian relationship between the land, humankind, and the gods. She also emphasizes the importance of genealogy in regard to the construction of Hawaiian identities by distinguishing the ways Ali'i and Maka'ainana related to the 'āina and to each other. She even has a chapter that delves into Hawaiian performance cartography.

Naturally this last section of her work is the most pertinent to this thesis. I think it's important to note that Oliveira does not arrange the work the way I am presenting it. However, I saw cartographic groupings within the examples she presented.

From my perspective Oliveira presents four Hawaiian spatial knowledge concepts and six Hawaiian performance cartographic (re)presentations. The four concepts include 1) the depth of place: mapping the elements of nature, 2) boundaries and bounded places, 3) orientation, and 4) place holds memory.

In the section entitled, 'Palena 'Ole ke Akamai o ka 'Ikena Hawai'i', Oliveira introduces the Hawaiian cartographic concept of the depth of place describing it as a heaven-land-ocean continuum. Hawaiians not only named various regions of the heavens, lands, and oceans personalizing their island environment, they recognized various kinolau (physical manifestations of gods) within the continuum. For example,

Lono, noted as the god of fertility, for example, was seen in the skies in the form of dark clouds or lightning. From the 'āina, he would rise back up to the heavens as steam billowing from active volcanoes. On land, Lono would manifest himself as a pig or a kukui tree. In the ocean, he would take the form of the humuhumunukunukuapua'a fish. (Oliveira, 2006, 223)

Related to the depth of place is Oliveira's section on 'the mapping of the elements of nature', specifically, the wind and rain. Each place had distinct names for the various
winds and rains. These names sometimes went beyond describing their individual traits and would also identify specific phenomenon associated with them. For example,

Ka makani kā 'Aha'aha la'i o Niua, for example, alluded to “the peaceful 'Aha'aha breeze of Niua that drives in the 'aha'aha fish.” In this example, 'aha'aha refers to both the fish and breeze of the same name. Fishermen knew that when this breeze blew, it was the right time to launch their canoes in search of the 'aha'aha fish. (Oliveira, 2006, 273-274)

This concept could be expanded to include other elements of nature like stars and other astronomical features, cloud types, lava formations, and ocean wave movements.

Oliveira discusses a second Hawaiian cartographic concept of boundaries and bounded places with her sections on ‘palena ‘ole: the fluidity of profane places’ and ‘wahi kapu: distinct boundaries’. In reading these sections it appears that there are varying degrees of fluid and distinct boundaries depending on where you were situated in both the environment and in Hawaiian society. The most fluid were profane areas and abstract regions within the heaven-land-ocean continuum. There were no distinct altitudes that separated the various layers of the heavens. Land regions were described according to their physical characteristics and the type and size of vegetative growth. Likewise, the regions of the ocean were distinguished according to their physical characteristics and the resources each provided. (Oliveira, 2006, 257)

Unlike, the unmarked imaginary buffered zones of the profane, areas that were clearly marked with natural or man-made features, such as altars and rock walls, did exist. These types of boundaries were usually employed to demarcate some kind of responsibility. Altars along the coastline indicated the political boundary between land
sections. Oliveira uses the island of Māui as an example to describe the various political-economic divisions and sub-divisions Hawaiians maintained. She is also mindful to state that “while certain generalities existed, traditional land divisions did differ from place to place.” (Oliveira, 2006, 229) Rock walls, the other man-made feature, were usually built in agricultural areas to separate garden plots. These types of boundaries let the populace know what resources they could freely partake in, what resources they could ask permission to partake in, and what resources they could not partake in at all. Nonetheless, traveling between these types of boundaries was generally not restricted. Lastly, there were areas with distinct and rigid boundaries known as wahi kapu. These areas were generally places where the Ali‘i resided, where their bones rested, and where the Akua were worshiped. All of these areas were believed to maintain a great degree of mana, usually guarded by royal attendants, and clearly marked by pūlo‘ulo‘u (insignia of chiefly taboo). It was necessary to unmistakably delineate these areas because crossing into them without invitation or proper ritual would be grounds for death. (Oliveira, 2006, 261)

Oliveira’s third Hawaiian cartographic concept, orientation, is discussed under the heading, “ōlo‘ola makuahine: mapping language’ and has two main categories: 1) astronomical orientation – cardinal points on a map, and 2) body-centric orientation – direction, location, and proximity. According to Oliveira, “The four kūkulu (cardinal points) north, south, east, and west known to Kanaka Maoli as ‘ākau, hema, hikina, and komohana, respectively.” (Oliveira, 2006, 262-263) These cardinal directions are not
ninety degrees apart; north and south corresponded to star constellations and east
and west were marked by the rising and setting sun.

The second category involves body-centric orientation and has three sub-
categories: 1) directionality, 2) location, and 3) proximity. There are six terms for
directionality that form three anatomical planes: cross/transverse – a'e (up) and iho
(down), medial - 'ākau (right) and hema (left), and coronal/frontal - mal (forward) and
aku (back). There are nine locatives, terms that indicate location; luna (above), lalo
(below), waena (middle), 'ane'i (here), 'ō (there), loko (inside), waho (outside), mua (front),
and hope (back). They “function like proper nouns that indicate place when they serve as
subjects or direct objects of a sentence.” (Oliveira, 2006, 264) Like other pronouns in
the Hawaiian language, locatives reflect a speaker’s point of reference.

Lastly, Oliveira shared terms that indicate proximity, nei (near) and la (far), apply
to both spatial and temporal location. Other terms such as kēia (this), kēnā (that near
a person being spoken to), and kēlā (that far away from the person being spoken to)
emphasize the importance of clearly defining an object’s physical/temporal location in
relation to the conversation between the person speaking and the person(s) being
spoken to. (Oliveira, 2006, 268)

The final Hawaiian cartographic concept Oliveira describes, place holde memory, is
a discussion of Cajete’s (2000) and Casey’s (2000) works on place and memory.
Essentially, all places hold memories serving as mnemonic devices and all memories are
embodied and grounded in place. Like Andrade, Oliveira believes that; “to truly know a
place is to be able to recite its stories.” (Oliveira, 2006, 230) Some mo‘olelo are considered family treasures and are handed down from one generation to the next via oral tradition. Those chosen to maintain these mo‘olelo “are able to do a walking oral history of the landscape … vividly recall[ing] the mo‘olelo and place names of the area…” (Oliveira, 2006, 230, italics in original.)

All of the concepts and terms Oliveira shares demonstrate that embedded in the Hawaiian language are the necessary oral techniques used by Hawaiian performance cartographies. She did not set out to create an exhaustive list, but has provided ample examples to illustrate each concept. This next section highlights Oliveira’s six Hawaiian performance cartographic representations: 1) wahi pana: the genealogy of place names, 2) mo‘olelo: historical accounts of demigods, 3) ‘olelo no‘eau, 4) mele pana: chanting the landscape, 5) mele ko‘ihonua and mele mo‘oku‘auhau: ‘mapping’ the genealogical connections, and 6) hula: bringing the words to life.

Wahi pana are legendary places that serve as memory triggers of historical events. Hawaiians mapped their environment, symbolically incorporating elements of cultural significance into their island environment. This is not a new idea. Anyone of us can hear a place name from our past and be transported in time and place re-experiencing actual events. However, since Hawaiians valued memorization and recitation skills, “knowing the names of their places was equated with knowledge of one’s own history and heritage.” (Oliveira, 2006, 255)

38 Spelled kolhonua in Pukui and Elbert (1986), it is a genealogical chant or to sing such chants.
Mo'olelo are historical accounts that were memorized and passed down through

generations investing places, real or imaginary, with cultural value and reinforcing familial

relationships. Oliveira highlights this section with the seemingly fantastic stories of

Māui, the demi-god and namesake of the island Māui. “The fact that the island is named

for an Akua bestows much mana upon it...” and reinforces the political importance of

the island. (Oliveira, 2006, 248, italics in original)

Oliveira states that nearly forty percent of the 'ōlelo no'eau found in Pukui and

Vare's book on Hawaiian proverbs and poetical sayings (1983) are associated with place

“illustrating how important one’s sense of place was in traditional Hawai‘i.” (Oliveira,

2006, 268-269) I think of 'ōlelo no'eau as shortened versions of mo'olelo. Thus, I believe

they share many similar qualities and the various examples Oliveira shares provide

ample evidence. Reciting either one provided lessons on moral conduct, incited familial

pride, and described natural phenomena.

Mele pana is literally a song or chant for a celebrated, noted or legendary place.

Hawaiians have many songs honoring beloved places. Like mo'olelo, some mele pana are

passed down from one generation to the next and considered familiar family treasures

that intimately “connect Kanaka 'Oliwi to their kulāwi, thereby, ‘mapping' their

relationship to those places.” (Oliveira, 2006, 231, italic in original) A great many mele

pana have been recorded by local musicians while others are still being composed.

Contemporary haku mele (composer) consciously incorporate various characteristics of
a place often emphasizing natural features and other elements of nature appealing to
the sensuous nature of Hawaiian epistemologies.

Mele ko’ihonua that include cosmogonic origins like the Kumulipo create familial
connections between the Hawaiian people and all things on earth, animate and
inanimate. Nature is part of our genealogy. According to Oliveira, there are different
reasons for performing a mele ko’ihonua depending on your social position. For
maka’alinana39, “genealogy rooted them to their places. Just by knowing one’s genealogy,
it was often possible to know where one’s family was from.” (Oliveira, 2006, 246) For
Ali‘i, oral recitations “were largely political and were often contested by rivals.” (Oliveira,
2006, 246) These performances had to establish an Ali‘i’s right to rule and would often
reveal birthplace, ancestral lands, and current land holdings.

I agree with Oliveira, hula, indeed, brings Hawaiian words to life by tying the mele
to the dance. She emphasizes the deep sense of respect a person demonstrates when
dancing a mele inoa (name chant) in honor of an Ali‘i. Unfortunately, she does not delve
much into this (re)presentational performance in relation to place. However, she does
call attention to the performances as a mechanism for understanding the past. It’s a
means of selectively recording historical events and important people. Those events or
people not included in these types of performances “are forgotten in due time and their
‘place in history’ is erased only to be replaced by the memory of an even more famous
ruler.” (Oliveira, 2006, 247)

39 These are people that made up the largest part of Hawaiian society. The literal translation is
“people that attend the land.” (Pukui and Elbert, 1986, 224)
Reinforcing Relationships

Each of these three authors recognizes that knowledge systems are culturally defined and Hawaiian knowledge systems are tied to our experiences with our environment, including spiritual experiences. Meyer provided the footing by identifying the core of Hawaiian knowledge as experience, practice and repetition and acknowledging the importance of spirituality in knowledge acquisition. Andrade presented practical examples of these ideas by applying them to the ahupua'a of He'eia, Kaua'i laying the groundwork for a Hawaiian geography. Oliveira took both their works to another level by providing numerous examples of Hawaiian spatial knowledge systems embedded in the Hawaiian language.

This next section incorporates those philosophical elements found in the works of Meyer, Andrade, and Oliveira with other geographic and social science works that reinforce the Hawaiian epistemological and geographical claims made hitherto. I begin by adding Hawaiian cultural detail to the foundation generalized in Chapter 1 focusing on Hawaiian spatial knowledge acquisition and storage, symbolization, and transmission. This detail is the framework for understanding the nature of Hawaiian performance cartographic traditions and the role of Hawaiian place names.

Hawaiian Spatial Knowledge Acquisition

The most prominent element in the works of Meyer, Andrade, and Oliveira in relation to spatial knowledge acquisition is that it is obtained empirically, experientially.
Tuan states that “experience is a cover-all term for the various modes through which a person knows and constructs a reality.” (Tuan, 2001, 8) The diagram he provides, shown below in Figure 31, depicts experience as constituting sensation, perception, and conception.

![Experience Diagram](image)

Figure 31. Reconstruction of Tuan's schematic diagram depicting the experiential modes from which a person constructs reality. It has been extended to accommodate Meyer's distinctions. (Louie, 2008)

He also depicts an experiential continuum comprised of both emotion (subjective) and thought (objective) and states that “both are ways of knowing.” (Tuan, 2001, 10) This idea supports Meyer's theme of 'the body-mind question' where intelligence was not separate from feelings. Both Tuan and Meyer begin with emotion as a bodily experience of sensation. However, Meyer does not agree that thought is the final stage of the experiential continuum. For Meyer, thought is part of feeling and stands in the middle ground of the experiential continuum and relates to both perception and conception.

Further discussions with Meyer indicate a third and key element to this experiential continuum, awareness or understanding. This key element was inspired by Spinoza. Thus, to accommodate these distinctions, Tuan's experiential continuum should range from emotion (sensational experiences) and feeling (perceptual/conceptual experiences) through to awareness (enlightened experiences).
Meyer also describes empiricism as culturally defined, invoking "the idea that objectivity is embedded within a milieu of culture, subjectivity, and distinctness found in place. It privileges context as the makings of content. One cannot be without the other." (Meyer, 2007) This is consistent with Rodaway's claim that our "perceptual sensitivity is learnt and forms part of our socialisation into a cultural group...[and]...the priorities, or ways of perceiving, and meanings attached to perceptions vary widely between cultures and over time...." (Rodaway, 1994, 22) He even provides a diagram based on Jeane (1974) summary model of the cultural dimension of human perception and the senses shown below in Figure 32.

![Diagram](image)

Figure 32. Reconstruction of Rodaway's cultural filter developed from Jeane (1974). (Louie, 2008)

The model indicates that there are several elements that contribute to the cultural filter or lens with which we experience or perceive the environment, including socio-economic status. Oftentimes these filters or lenses reflect shared values of a specific society and are taken for granted. Nonetheless, "...we see, hear, smell, taste
and touch the world through the mediation, the filter or lens, of our social milieu, the context within which we have become socialised, educated and familiarised.” (Rodaway, 1994, 23) Thus, our objective understanding is shaped by our distinctly unique subjective situation thereby supporting Oliveira’s argument that the construction of place differed between the Ali‘i and maka‘āinana because of, among other things, their socio-economic status.

Both Meyer and Oliveira recognize the body as an essential part of the sensuous experience. Indeed, all geographical experience is primarily mediated by the human body. It allows us to access our lifelong geographical experiences contributing to both our spatial and temporal perception. In fact, Rodaway believes “without our bodies we would have no geography - orientation, measure, locomotion, coherence.” (Rodaway, 1994, 31) It is through our body that we are able to establish a spatial order or as Tuan states, impose “a schema on space.” (Tuan, 2001, 36) Our body posture and structure orient local geography – up/down, left/right, forward/backward – and each of these are culturally infused with meaning. (Rodaway, 1994; Tuan, 1990, 2001) It is also the standard by which we measure distance and scale things. Our body’s mobility allows us to explore and evaluate our environment. It also provides us with a coherent system to integrate and coordinate our multisensuous experiences giving us a sense of wholeness and relationship between parts. (Rodaway, 1994, 31)

Meyer, Andrade, and Oliveira all agree that Hawaiian spatial knowledge acquisition includes, if not prioritizes, metaphysical sensuous modes. This is similar to
the Gegeo and Wateon-Gegeo statement that the Kwara’ae communicate directly with their ancestors through dreams, trances, and other unexpected phenomena. (Gegeo and Wateon-Gegeo, 2001, 64) Learning through dreams where to find and how to get to a particular medicinal plant or a tree for a canoe is considered a valid mode of spatial knowledge acquisition for Hawaiians. According to Cajete, this type of sensual participation is not ‘supernatural’ or ‘extra-ordinary’, but a naturally conditioned response to nature, a ‘tuning-in’ to the natural world. (Cajete, 2000, 20)

Belief in spiritual forces as a part of Hawaiian reality allows for a deeper, more intimate and heightened sensuous relationship with all parts of nature, especially kulāwi. Tuan believes that attachment to homeland is a common human sentiment and is not necessarily formed by any explicit sacredness or commemorative event. It can in fact, “come simply with familiarity and ease, with the assurance of nurture and security, with the memory of sounds and smells, of communal activities and homely pleasures accumulated over time.” (Tuan, 2001, 159)

According to Oliveira, Hawaiians used mo’olelo and mo’okūauhau to maintain their connection to their kulāwi. Furthermore, cosmogonic mo’olelo and mo’okūauhau provide insight on the genealogical connections and relationships Hawaiians have with their kulāwi. (Oliveira, 2006, 119) For Cajete, a people’s origin stories map and orient them both to the place and to each other integrating key relationships between people and all aspects of their constructed reality (landscape). “Origin stories of a people are presented via symbolic language, story, art, song, and ritual.” (Cajete, 2000, 74-75)
Tuan agrees that premodern man viewed the cosmos and nature as rich in symbolism, "its objects could be read at several levels and evoke emotion-laden responses. We are aware of ambiguity in language. The language of ordinary discourse and a fortiori of poetry, is rich in symbols and metaphor." (Tuan, 1990, 141)

Hawaiian spatial knowledge symbolic (re)presentation

In a richly symbolic world, objects and events take on meanings that to an outsider may seem arbitrary. To the native, the associations and analogies are in the nature of things and require no rational justification. [...] The meanings of most symbols are culture-bound. (Tuan, 1990, 23)

According to Cajete, metaphoric or symbolic modes of expression form the foundations for various processes or components of Native science including perception, physical senses, and intuition. Metaphorical thinking is not restricted to the confines of scientific classification. From a Western scientific perspective, the terms 'mountain' and 'valley' are types of topographic features, but "in metaphorical thought, these words carry simultaneously the value-laden meanings of 'high' and 'low', which in turn implicate the idea of male-female polarity and antithetical temperamental characteristics." (Tuan, 1990, 141) Metaphorical thinking, according to Cajete comes from a metaphoric mind.

A metaphoric mind encompasses the perceptual, creative, and imaginative experience of a child's inner world and develops from birth until she/he learns a language. At that time, a rational mind takes over and a metaphoric mind recedes into the subconscious where it waits until its special skills are needed by the conscious mind, i.e.
creative or imaginative play. The distinction between a metaphoric and a rational mind becomes evident as language becomes literacy.

The transition from an oral culture to a literate culture is a transition from incorporating practices to inscribing practices. The impact of writing depends upon the fact that any account which is transmitted by means of inscriptions is unalterably fixed, the process of its composition being definitively closed. The standard edition and the canonic work are the emblems of this condition. This fixity is the spring that releases innovation. When the memories of a culture begin to be transmitted mainly by the reproduction of their inscriptions rather than by ‘live’ telling, improvisation becomes increasingly difficult and innovation is institutionalized. (Connerton, 1989, 75)

This distinction is more striking in Western societies where a focus on scientific rationalization exists. According to Cajete, “in Native societies, the two minds of human experience are typically given a more balanced regard. Both minds are respected for what they allow people to do; yet the metaphoric mind remains the first foundation of Native science.” (Cajete, 2000, 28)

The Hawaiian cultural landscape is replete with symbolic manifestations and the language abounds with linguistic metaphor. Cultural symbols are not always easy for outsiders to see or understand and unless one is open to metaphoric thinking. Many Hawaiian cultural symbols will remain a mystery because of their kaona (multi-layered, multi-leveled meanings). This next section brings forward a few examples of those cultural symbols that (re)present Hawaiian spatial knowledge including topographic, artistic, and linguistic.
Hawaiians incorporated their cultural symbols into the natural features of the landscape. Meyer describes the natural environment as 'that which feeds', Andrade calls for a Hawaiian geography that promotes familial relationships, Oliveira illustrates the Hawaiian relationship between the land, humankind, and the gods via eight cosmogonic genealogies. They are in good company with Tuan, Cajete, and Baseo.

Tuan describes the cultural landscape as, "personal and tribal history made visible. The native's identity—his place in the total scheme of things—is not in doubt, because the myths that support it are as real as the rocks and waterholes he can see and touch." (2001, 157-158) Cajete refers to this as 'ensoulement'.

This projection of the human sense of soul with its archetypes has been called the "participation mystique," which for Native people represented the deepest level of psychological involvement with their land and which provided a kind of map of the soul. The psychology and spiritual qualities of indigenous people's behavior reflected in symbolism were thoroughly "in-formed" by the depth and power of their participation mystique with the Earth as a living soul. It was from this orientation that Indian people developed "responsibilities" to the land and all living things, similar to those that they had to each other. In the Native mind, spirit and matter were not separate; they were one and the same. (1994, 186)

And Baseo describes it as

...most American Indian tribes embrace 'spatial conceptions of history' in which places and their names—and all that these may symbolize—are accorded central importance. For Indian men and women, the past lies embedded in the features of the earth—in canyons and lakes, mountains and arroyos, rocks and vacant fields—which together endow their lands with multiple forms of
significance that reach into their lives and shape the ways they think. Knowledge of places is therefore closely linked to knowledge of the self, to grasping one’s position in the larger scheme of things, including one’s own community, and to securing a confident sense of who one is as a person. (1996, 34)

Through the use of kinolau, Hawaiians metaphorically recognized various topographic features and elements of nature as representations of deities. In fact, the landscape itself was intimately known as Papahānaumoku, the sacred earth mother that births islands. Every part of the landscape is considered fertile and capable of nourishing both body and imagination. It is Papahānaumoku that provides a Hawaiian ontological and epistemological framework for spatial knowledge. For example, when I asked a person from Hawai’i Island about the significance of Mauna Kea, an immediate response included a discussion of Polihahu (snow goddess) and her intimate relations with Wākea (sky-father) as an astronomical constellation representing his phallus descended upon the freshly fallen snow of Mauna Kea in the morning sky. (Meyer, 2005)

Recognizing the landscape as Papahānaumoku sets the stage for metaphoric understanding of nature. In some cases several topographic features were associated with a single deity like those identified in the Pele lore such as, Haleama’uma’u as the home of Pele; Kauhi‘imakaokalani as a dog demigod (aka Crouching lion); Kohelepelepe as the imprint of Kapo’s vagina, and Nāiwiopel as the bones of Pele.

Hawaiians also recognized multiple manifestations of their gods surrounding themselves with the presence of their akua and ‘aumakua in day to day life. This practice was not reserved for the four major Akua, it was extended to demigods such as
Kamapua'a, who took the form of a "handsome man, single pig and dozens of pigs, cloud (ao), plants (kukui, 'uha-loa, 'ama'u'ma'u fern, kūkae-pua'a grass [literally 'pig excreta']), the small triggerfish humu-humu-nuku-nuku=a-pua'a, as well as that of the great god Lono." 40 (Pukui, Elbert, and Mo'okini, 1974, 260-261) Sometimes a single tree would be the symbolic manifestation of two gods. The trunk of the 'ohi'a lehua tree was the physical manifestation of Kū but the blossoms were sacred to Pele.

**Artistic**

All features on the landscape built or created by Hawaiian artisans were imbued with symbolic meaning from the sacred to the profane. This section provides a few examples of artistic features on the landscape, such as ki'i pōhaku, heiau, and ahu, as well as an array of other art forms from carvings and royal insignia to kapa patterns and tattoo designs.

**Ki'i pōhaku**

One of the most recognizable symbols on the Hawaiian landscape can literally be found on the landscape as ki'i pōhaku. Scientists speculate that the location for ki'i pōhaku must have had cultural significance since a number of rock surfaces suitable for them have no carvings at all. Geographically speaking, a majority of Hawaiian ki'i pōhaku

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40 The equal sign, "=", used in the quotation are meant to separate the words in the names, whereas the hyphen, "-", indicates prefixes or suffixes. (Pukui, Elbert, and Mo'okini, 1974, 225)
are carved in clusters into the pāhoehoe\textsuperscript{41} (smooth lava) along or nearby well-trodden trails or footpaths on the drier sides of each island except Kaho'olawe and Ni'ihau, Figure 33.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{hawaiian_islands_petroglyphs.png}
\caption{Petroglyph sites in the Hawaiian Islands based on Cox and Stasack. (Louis, 2007)}
\end{figure}

While it may appear some ki'i pōhaku are ritualistic in nature, they may also be customary practice. For example, the origin and meaning of some ki'i pōhaku are intimately linked to the place they are carved, such as Pu'uloa, Puna, Hawai'i. Cox and Stasack reveal the literal meaning of Pu'uloa as 'long hill' is interpreted as 'hill of long life' by the Hawaiians of Kalapana. The symbolic nature of some of the ki'i pōhaku found on

\footnote{Cox and Stasack note four other surfaces: "waterworn boulders, cliff faces, cave walls, and sandstone beach shelves." (Cox and Stasack, 1970, 7)}
Pu’uloa relate to a birthing ritual of placing the piko\textsuperscript{42} in a hole and covering it with a stone. The newborn would be assured a long life “if the piko remained overnight (or disappeared – there is conflicting evidence about which would be effective).” (Cox and Staaack, 1970, 23) The proper disposal of the piko is a customary practice among Hawaiians, but not all of them did so in petroglyph fields.

Cox and Staaack postulate other reasons for ki’i pōhaku groupings based on their location including denoting much needed rest spots along a barren, desert-like mountain trail; indicating ahupua’a boundaries along coastal trails for the makahiki ceremony; and signifying areas where sports and games associated with the makahiki ceremony took place. (Cox and Staaack, 1970, 24-35) They admit their speculations on those petroglyphs they associated with the makahiki ceremony may be pure conjecture, and acknowledge that any attempt to understand the location, origin, and meaning of ki’i pōhaku requires an intimate understanding of the integrated nature of pre-modern Hawaiian culture.

Heiau and ahu

Heiau (temples of worship) and ahu (piles of stones) were built places of worship providing Hawaiians a place to appeal to their Akua and ‘Aumakua. Stokes and Dye (1991) identified several different types of heiau and ahu while in the field including luakini

| / po’o kanaka – temples for human sacrifice; heiau ho’omana – temples of the priestly |

\textsuperscript{42} Piko refers to both the umbilical cord and the umbilical stump. Cox and Staaack are unsure which is buried in the ceremony, but assume it to be the umbilical stump because it is smaller in size. (Cox and Staaack, 1970, 23)
clae; heiau hoʻūuluulu ua – temples to induce rain; heiau hoʻoūuluulu ‘ai – temples to cause
good crops; koʻa / heiau kūʻula / heiau koʻa / heiau hoʻoūulu iʻa – temples to secure good
catches of fish; heiau hana aloha – temples to impel love; shrines to aid in childbirth; and
pohaku o Kāne. However, they turn to the works of Malo and Kamakau as the authorities
on the symbolic nature of these places of worship.

Malo (1971) and Kamakau (1976) both agreed that there was a great diversity of
heiau depending on the purpose for which they were made. According to Malo, this was
because

...one man had one god and another had an entirely different god.
The gods of the aliʻi [sic] also differed one from another. The
women were a further source of disagreement; they addressed
their worship to female deities, and the god of one was different
from the god of another. Then too the gods of the female chiefs of
a high rank were different from the gods of those of a lower rank.

(1971, 81)

Kamakau reveals why there were so many different heiau and ahu, “Ka poʻe kahiko
[italics in original] prayed constantly – in the morning, at midday, in the
evening, in the
middle of the night.” (1976, 132) Both men also acknowledged that the heiau and ahu
erected for/by Aliʻi were separate from those erected for/by makaʻāinana even if the
function was the same, e.g. birthing heiau. This is consistent with Oliveira’s approach of
constructing Hawaiian identities by distinguishing the ways Aliʻi and Makaʻāinana related
to the ʻāina and to each other. This separation also existed between men and women
with regard to the hale muʻa (men’s eating house), hale ʻāina (women’s eating house), and
the hale peʻa (women’s menstrual house). (Malo, 1971)

142
The most popularly known ahu is the ahupua'a. The term ahupua'a literally depicts the way the boundary is 'mapped' on the land by an ahu (stone pile) surmounted by the image of a pu'a (pig). Figuratively it refers to sections of land extending from the mountain ridges to the sea with enough resources to sustain a community.\(^{45}\)

Ahupua'a were considered complete ecological and economic production systems ruled by an Ali'i 'ai ahupua'a and overseen by a Konohiki (land manager). It wasn't until the time of year known as makahiki that the ahupua'a was used as a depository of offerings garnered from the maka'a'īlina by the Konohiki. (Malo, 1971, 145-146) The offerings took the form of food products, feathers, cordage, and other items.

**Other artistic forms**

Spatial symbols were not only incorporated into the natural and built features on the landscape. Hawaiian artisans integrated symbolic meanings into various art forms including royal insignia, kapa patterns, tattoo designs, and lei. Using nature for their inspiration, they fashioned wood, bone, plants, flowers, shells, stone and fibers into artifacts. Some of the traditional treasures include hula instruments such as ipu gourds and drums; woven lauhala mats and baskets; and various sculptures and woodcrafts such as Hawaiian calabashes.

The very highest Ali'i and religious idols were distinguished with probably the most ornate of all Hawaiian artistic forms, feather work. Their regalia included 'ahu'ula (feather capes/cloaks), mahiole (helmets), and kahili (royal standard). Even their wa'a

\(^{45}\) It should be noted that not all ahupua'a had access to the mountains or the sea.
canoes) were donned with lei hulu manu (feather lei). These unique and exquisitely
designed visual symbols were an indication of their chiefly status and also, possibly,
added to their mana (spiritual power) "by imbuing it with the spirit and protection of the
bird from whose feathers the lei hulu manu was crafted." (Yuen, 1999)

Kapa (bark cloth) were adorned with a variety of watermarks, dyes, and patterns
of great intricacy and symmetry by highly skilled women in ancient Hawaii representing a
major artistic achievement. The watermarks were added in the final stages of kapa
making with engraved beaters, see Figure 34.

![Figure 34. Magnified images of kapa beaters showing the range of patterns for
imprinting during the final stages of making kapa. (Images from

"Kapa was dyed and pigmented in a wide variety of colors, and elaborate designs were
often added by printing, stenciling, and brushing." (Kane, 1997, 90) 'Ohe kāpala (bamboo
stamp), designs, shown in Figure 35, were carved out of bamboo, dipped in dyes made
from various parts of a variety of local plants, and pressed into kapa in repeating
patterns.
Hawaiian tattoo designs are similar to those seen on kapa in that they are repetitive linear patterns of geometric shapes. They literally represent things in nature. Most, if not all, Hawaiian designs have kaona (hidden meaning), which is generally much deeper and personal. Many tattoo designs represent 'aumakua, demonstrate a warrior's strength, or express grief. Unfortunately, the popular arm band tattoo style was not traditionally Hawaiian. According to Kwiatkowski, "Hawaiians never had bands going all the way around the biceps. That's a Samoan thing!" (Burlingham, 1997)

Perhaps the most readily identifiable symbol of Hawaiian artistry is the lei. It has great cultural significance, fully developed protocols, and deeply symbolic meanings. They are made from many things including feathers, flowers, ferns, vines, petals stripped from blossoms, seashells, and even limu and grasses. By looking at the contents of the lei a person could be identified as coming from the forest, upland, beach side, barren plain or lush river valley, as well as their family class - royalty, priestly, warrior, fisherman or farmer.
Language

Language and its use are the ways a society conditions the mind toward particular ends. Language and its codified meanings are a created structure of culture. Until recently, the power of language to condition thought either toward participation with nature or away from it has been largely ignored. In addition, the power of the written form of language to condition our minds and perception is even more powerful in determining how we view the world. The metaphoric mind on the other hand communicates and relates to the world in the more holistic structures of oral stories, linguistic metaphors, images, and intuitions. (Cajete, 2000, 28-29)

Hawaiian language is far more than codified meanings connected to intellectual pursuits. Hawaiians enjoyed playing with words, “with selecting and arranging them, to achieve patterns aesthetically pleasing to themselves.” (Luomala, 1965, 234) The Hawaiian language is a manifestation of participating with the natural environment, the embodiment of experiencing the world seneuously and imbuing it with metaphoric meaning. Hawaiian poets cultivated “symbolic meanings for the sounds. Often they incorporated two or more levels of meaning into a single word in addition to its more obvious meanings.” (Luomala, 1965, 234)

You may recall that Oliveira reveals how the Hawaiian language is intimately tied to the environment via five well known sensory inputs, sight, hearing, taste, touch, and smell, and four more abstract senses, na’au, place, time, and connection to the past, present, and future.

In regard to the five well known sensory inputs, she provides the following examples:
1) Sight - the term for scenery, "ikea, also means, "view, seeing, knowing, association, knowledge." (Pukul and Elbert, 1986, 97) "Only a people intimately connected to nature could see the connection between the scenery and knowledge." (Oliveira, 2006, 53)

2) Hearing - the term mānaleo was created in the 1970's to refer to a Native speaker. It comes from the words, māna (food, chewed by a parent for a child) and leo (voice). "Mānaleo makes reference to the feeding of the voice to the next generations by Native speakers of Hawaiian." (Oliveira, 2006, 65) Thereby illustrating the importance of listening to our kūpuna.

3) Taste - the phrase, "i mua e nā pōdī i lu i ka 'awa'a'awa. Forward, my younger brothers, until you drink the bitter water of battle." (Pukul and Varez, 1983, 1:34) expressed by Kamehameha to his warriors before battle exemplifies the metaphorical use of the cliché, "the taste of victory"...[taking on a] whole new meaning, far removed from one's palate." (Oliveira, 2006, 72)

4) Touch - Oliveira doesn't provide any terms or phrases that demonstrate how the Hawaiian language is intertwined with the sense of touch, but does express the importance of touch in creating masterful works of art - knowing good kapa from the texture, healing the body - knowing where a person carries their stress, and working the 'ālāna - knowing when the water temperature or flow is harmful. (Oliveira, 2006, 67-68)

5) Smell - the name of the wind, Kūlō'opu, in Waihe'e, Maui is symbolically reminiscent of a time when 'ō'opu were plentiful and "the scent of 'ō'opu being cooked permeated throughout the valley." (Oliveira, 2006, 75)

In regard to the four more abstract senses, she provides the following examples:

6) Na'au: The Sixth Sense - the term na'au'ao44 (enlightened) is derived from the terms na'au45 (intestine/gut) and ao46 (daylight). "It is from the na'au that Hawaiian ancestral knowledge emanates, strengthening the bond with one's ancestors, both known and unknown." (Oliveira, 2006, 79, italics in original)

7) Kulāliw: Sensing Place - the term kulāliw (ancestral land) is derived from kula47 (plain / source) and iwi48 (bone). "It is on the kulāliw that new generations are

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44 Other definitions include, "Learned, enlightened, intelligent, wise; learning, knowledge, wisdom, science," (Pukul and Elbert, 1986, 257)

45 Other definitions include, "Intestines, bowels, guts; mind, heart, affections; of the heart or mind; mood, temper, feelings,« (Pukul and Elbert, 1986, 257)

46 Other definitions include, "Light, day, daylight, dawn; to dawn, grow light, enlightened, to regain consciousness." (Pukul and Elbert, 1986, 26)

47 Other definitions include, "1. Plain, field, open country, pasture. 2. Source; container. 3. Basket-like fish trap. 4. School, academy." (Pukul and Elbert, 1986, 176)

48 Other definitions include, "1. Bone; carcase (as of a chicken); core (as of a speech). ... 2. Shell, as of coconut, candlenut, gourd, egg, shellfish. 3. Remnant, piece, ... 4. Corncob. 5. Stones or 147
born and the bones of one’s kūpuna are laid to rest. ... It is no wonder then that Kanaka Maoli treasure the ‘āina for its ancestral ties.” (Oliveira, 2006, 85)

8) Au ‘Āpa’apa’a: Time and Place – the term Au ‘Āpa’apa’a is defined as, “Passing of much time on a piece of land, as an old family.” (Pukui and Elbert, 1986, 31) Here Oliveira states, “Place does affect time: generally, the farther removed one is from nature, the more important exact time tends to be.” (Oliveira, 2006, 99) She further describes the cyclical, seasonal, and ancestral understanding of time from a Hawaiian perspective.

9) Mo‘o: Tradition as a Path for Succeeding Generations – Oliveira uses the definition from Pukui and Elbert of mo‘o, “succession, series, especially a genealogical line, lineage, and grandchild,” (Pukui and Elbert, 1986, 253) to describe how wisdom is a compilation of knowledge passed down from one generation to the next. She emphasizes that it is,

...indicative of a Hawaiian worldview that privileges the intelligence of the collective body, rather than that of a single brilliant individual. It is no wonder then that mo‘o is the prefix of such words as: mo‘oalii (genealogy of all’s), mo‘omeheu (culture), mo‘ohele (path), mo‘o ka‘ao (story), mo‘okanaka (succession of people), mo‘oku‘auhau (genealogy), and mo‘olelo (history). (Oliveira, 2006, 109-110)

Oliveira thoroughly demonstrates how Hawaiian language, particularly its metaphorical references, symbolizes Hawaiian spatial knowledge of a senseuous reality. She illuminates the relationships between the physical, emotional, intellectual and spiritual aspects of the Hawaiian senseuous reality, revealing the power place ultimately has in influencing life and identity.

earth ridge marking land boundary. 6. Long line, as of surf. 7. Midrib, as of pili grass or ti leaf.” (Pukui and Elbert, 1986-105)
**Place names**

... place-names are arguably among the most highly charged and richly evocative of all linguistic symbols. Because of their inseparable connection to specific localities, place-names may be used to summon forth an enormous range of mental and emotional associations – associations of time and space, of history and events, of persons and social activities, of oneself and stages in one’s life. And in their capacity to evoke, in their compact power to muster and consolidate so much of what a landscape may be taken to represent in both personal and cultural terms, place-names acquire a functional value that easily matches their utility as instruments of reference. (Baseo, 1996, 76-77)

Hawaiian place names constitute a critically important body of traditional knowledge. Understanding how and why Hawaiians named places, what the places are used for and by whom, and how place names are remembered is a complicated endeavor.

“...In actuality, Native teachings electrify each named place with an intimate conglomerate of activities, genealogy, history, memory, belief, moral lessons, and future; it is the amalgam that must be collected and presented as fully as possible.” (Fair, 1997)

An essential function of Native language for both the individual and collective consciousness, is talking, praying, and chanting the landscape into being “naming its places, singing its virtues, and telling its stories.” (Cajete, 2000, 184) Hawaiians, like many other Indigenous populations, use place names symbolically in their daily lives encapsulating and spatially anchoring them to the “happenings” of long ago, yesterday, and tomorrow. Hawaiian place names are prolific,

...a rough estimate is impossible: a hundred thousand? A million? Hawaiians named taro patches, rocks and trees that represented deities and ancestors, sites of houses and heiau (places of
worship), canoe landings, fishing stations in the sea, resting places in the forests, and the tiniest spots where miraculous or interesting events are believed to have taken place. (Fukui, Elbert, and Mo'okini, 1974, x)

However, they are not randomly given. They are often descriptive of the locality or historically referential of legendary events that praise those places hallowed by the ancestors. Herman describes the meaning and use of Hawaiian place names as, “more poetic than political, and represented the organic relationship between the people and their environment.” (1990, 12)

Naming a place humanizes the landscape making it familiar and orderly allowing people to bring it into existence, into their consciousness. (Barry, 1999, 21) Keith Basso refers to this as place-making and describes it as “a way of constructing the past, a venerable means of doing human history; it is also a way of constructing social traditions, and in the process, personal and social identities.” (Basso, 1996, 5-7, italic in original) Hawaiian place names are mechanisms that communicate cultural knowledge. Recall Andrade’s call for a Hawaiian geography that is ‘more than just a collection of places’ it promotes the use of place as a cultural repository of living knowledge.

Long before the advent of literacy, to say nothing of ‘history’ as an academic discipline, places served humankind as durable symbols of distant events and as indispensable aids for remembering and imagining them— and this convenient arrangement, ancient but not out-moded, is with us still today. (Basso, 1996, 7)

Indeed it is ‘with us still today’. Meyer’s discussion on place and knowledge recognizes that we are constantly learning from the ‘āina, that it continues to ‘feed’ not just our bodies, but our intellect.
Knowing and speaking the place names of the land one lives on and travels to is to be reminded of the sacred events that happened at those places and to be connected to those ancestors. Weaving those place names together in a story allows information about the location of food and shelter to be recalled and reintegrated into the communal knowledge base. The landscape of indigenous place names is thus a mnemonic for the geographical information that forms the foundation of both physical survival and cultural identity. (Pearce, 2007)

**Hawaiian Spatial Knowledge Transmission**

To move knowledge from the local site and moment of its production and application to other places and times, knowledge producers deploy a variety of social strategies and technical devices for creating the equivalences and connections between otherwise heterogeneous and isolated knowledges. (Turnbull, 2003, 20)

In this world of high tech information transfer, data exchange, and hypermedia, many of us have become numb to other modes of knowledge transmission; modes with a more performative emphasis that enable local knowledge to move beyond the site of its production. Performative modes of spatial knowledge transmission can occur in a variety of ways including word of mouth, incorporation into a technique, or apprenticeship training via established traditions and protocols. (Turnbull, 2003, 77)

Apprenticeships, formal and informal, are the primary vehicles for learning a particular art form. In such apprenticeship relationships, the mentor often sets up conditions in which the apprentice would learn how to identify with the creation of an artifact. In the making of ceremonial art, these conditions were
extended to include the “transformation” of the apprentice to a requisite level of consciousness. In this way, art became a process of spiritual training. It is no accident that the first shamans can also be considered the first artists. (Cajete, 2000, 47)

This is consistent with both Meyer’s and Oliveira’s works. Meyer maintains the core of Hawaiian knowledge is derived through experience, practice, and repetition. Oliveira also states, “Masters of a trade koho (select) a worthy apprentice to share their knowledge.” (Oliveira, 2006, 80)

Pukui, in describing how legends were taught, states, “Grandparents who were vereed in the lore of their people and their homeland picked out the grandchildren with the most retentive minds to teach.” (Pukui, n. d.) If someone outside the family wanted to learn the legends, they first had to ask permission, and if granted, they were accepted into the household as a family member. Training required uninterrupted silence. Leaving in the middle of a story was forbidden, including bathroom breaks. So, students were mindful to attend to such things prior to the training session. They were also required to quiet their mind and pay close attention to every word because they were expected to re-tell them exactly as they learned them. At this stage, the manner in which it was told was not as important as telling them accurately. (Pukui, n. d.)

Turnbull makes use of the works of Farrall, Goodenough and Thomaes in describing the transmission of knowledge, specifically Pacific island navigation, in oral societies as being “heavily dependent on metaphore, narratives, redundancy, concrete models and communal interaction.” (Turnbull, 2003, 152) Furthermore, incorporating spatial knowledge in songs and rituals, learning and testing knowledge retention in small groups,
using mnemonics, and having overlapping methods that reinforce each other is an effective way to ensure that the vast body of information is not only accurately retained and passed on to future generations but also instantly accessible. (Turnbull, 2003, 153)

**The nature of Hawaiian performance cartographies**

Mapping is a cultural universal. (Blaut et al., 2003) All cultures communicate their spatial knowledge to one another according to their own ontological and epistemological structures. According to Turnbull,

...there are many ways of mapping; different cultures, different periods and different groups within a given culture have produced differing knowledge spaces or ways of assembling knowledge which have simultaneously shaped those cultures, eras and people. (Turnbull, 2003, 92)

The fundamental difference between Hawaiian and Western cartographic practices is that Hawaiian cartographies are performative and procedural. (Rundstrom, 1991; cf. Woodward and Lewis, 1998; Pearce, 2007)

Performative cartographies are incorporative practices. They encode spatial knowledge into "bodily memory by repeated performances until it becomes habitual," (Hayles, 1999, 199) thereby placing more emphasis on the processes rather than the artifacts. Furthermore,

Incorporating cultures traditionally emphasize oral communication and other performance-based modes (e.g., dance, painting) in transmitting all sorts of meaningful information. The actions, lasting hours or days, carry greater meaning than any object they produce. In contrast, inscribing cultures hold and fix meaningful information years after humans have stopped informing, and typically must do so by means of some object (e.g., maps, GIS).
Storage is crucial, and leads to stasis and fixity. (Rundstrom, 1995, 51)

Pearce and Loula identify three similar significant characteristics of indigenous processual cartographies; they often situate mapping in the landscape rather than storing it in an archive; they stress the importance and recitation of storied place names; and finally, they emphasize the interactive presentation of 'experienced space', or place, as opposed to "depicting space as universal, homogenized, and devoid of human experience." (Pearce and Loula, in review; cf. Pickles, 2004; Rundstrom, 1995)

SIGNIFICANCE OF PLACE AND LANDSCAPE

A place tells me who I am and who my extended family is. A place gives me my history, the history of my clan and the history of my people. I am able to look at a place and tie in human events which affect me and my loved ones. A place gives me the feeling of stability and belonging to my family both living and dead. A place gives me a sense of well being and knowledge that I am accepted by all who have experienced my place. (Kanahele, n. d.)

Places are repositories of human experiences that are symbolically and materially constructed. They serve "as durable symbols of distant events and as indispensible aids for remembering and imagining them." (Basso, 1996, 6) Places and their cultural meanings are generated by the constant interaction of people and their environment. Ultimately, from an indigenous perspective, place is a part of a larger order of a living Earth. Native languages, stories, and rituals give meaning to Indigenous peoples' participation with their homelands. (Cajete, 2000, 186) Meyer, Andrade, and Oliveira express place as alive and made up of distinctive sights, sounds, smells, sensations, and
esences. They all agree the only way to know a place, is to interact with it and experience it sensually.

Memmott and Long identify three such interactions including altering the physical environment, enacting special types of behavior, and associating “knowledge properties such as concepts, past events, legends, names, ideals, or memories.” (Memmott and Long, 2002, 39-40) These interactions often form a cultural intelligibility that is “reinforced through feedback from ongoing experiences.” (Memmott and Long, 2002, 40) Cultural landscapes are similar to places in that they are generated by the same types of interactive process between people and environment. In this sense, the difference between them is one of scale.

Casey provides three reasons why landscapes, and by extension places, are perfect for place memory storage, “its variegation, its sustaining character, and its expressiveness.” (Casey, 2000, 198). Landscapes provide a diversity of content, mountaine, streams, trees, etc, and consist of an abundance of irregular features. “What protrudes in the landscape offers us something to grasp at the most basic level of sensory awareness.” (Casey, 2000, 198) Places and landscapes, perhaps ‘placescapes’, are durable and, precluding any natural or man-made disaster, will remain for generations.

Lastly, Casey describes the expressiveness of landscapes as having two dimensions; its inherent emotionality, the memorial evocativeness of placescapes lies in
their ability to both symbolize and embody emotional expressiveness; and its luminosity, that self generating light emitted from within. (Casey, 2000, 199-200)

The memorability of place amounts to more than what the recollection of place can yield; it is the source as well as the reinforced product of experiences of being-in-place. Perhaps the single most fateful such experience, by means of which place comes to be most deeply memorable, is that in which a given place and the lived body as its correlate dissolve as discrete source-points while uniting in a mutual inviability. Then place becomes ours at last, but in remembering it, we remain beholden to its intrinsic power. (Casey, 2000, 200)

Hawaiians have always embraced this “intrinsic power of place” as a source of nourishment for both the body and soul as evidenced in both Meyer’s and Oliveira’s works. Meyer’s theme on the ‘āina as that which feeds the body and inspires the mind corresponds with Oliveira’s abstract sense of na’au as both the intestines, that body part which we feed, and the mind, the source from which ancestral knowledge emanates. Add to this Oliveira’s discussion on the sense of kūlāwi as ancestral lands where the bones of kūpuna rest and it and the metaphor of the land being imbued with ancestral knowledge that feeds our bodies and souls becomes even clearer.

For Hawaiians, the ‘placescape’ was a symbolic archive of those stories that depict the “lives and deeds of the immortal beings from whom he himself is descended, and whom he reveres. The whole countryside is his family tree.” (Tuan, 2001, 158)

Hawaiian storied place names are symbols, repositories of meanings on the landscape that “arise out of the more profound experiences that have accumulated through time.
Profound experiences often have sacred, other-worldly character even though they may be rooted in human biology.” (Tuan, 1990, 145)

**SIGNIFICANCE OF STORIED PLACE NAMES AND STORYTELLING**

Hawaiians did not have long term place name storage devices like gazetteers or paper maps...but they did have a large number of place names to remember.

Hawaiians ... incorporated numerous place names into their narratives. A composer selects place names for his poems which express his emotion in regard to another individual to whom he dedicates his chants. His love poem, whether gay or sad, is chanted in a hula performance; his lament is accompanied by wailing and laceration. Storytellers put their chants into the mouths of the characters in their novelettes. Intensely personal as a chant may be, other poets may adopt it to express their own emotions or they select lines or phrases to use in a new poem. (Luomala, 1965, 238)

In Hawai‘i, people with extraordinary memory capabilities usually inherit their talent.

Thus, “certain select ‘ohana would have been chosen to be the historians, or haku mele, the ‘walking librarians’ of their culture.” (Kanahele, 1986, 268) While no one remembers everything, what is remembered is what has significance. “One of the most remarkable features of human memory is our ability to mentally transform essentially unstructured series of events into seemingly coherent historical narratives.” (Zerubavel, 2003, 13)

Past events are normally recalled as episodes in a story and interestingly enough the term ‘mo‘olelo’ means both history and story in Hawaiian. It is the story that makes past events historically meaningful. (Zerubavel, 2003, 13)

Memorization has always involved some sort of mnemonic device.
The effort of remembering not only the names, but also where the places are that they name, seems enormous to us. We are used to refreshing our memories from written material. People without such aids develop mnemotechnics, systematic mnemonic systems. In such systems, the mnemonic value of the name is important, but it must also be easily memorable as part of a system.” (Hercus and Simpeon, 2002, 11)

Storied place names are used in all forms of Hawaiian performance cartographies “as situating devices...for locating narrated events at and in the physical settings where the events occurred...[and]...are indispensable resources for the storyteller’s craft.” (Baseo, 1996, 47) Place names are an essential part of the story and can be considered a reverse mnemonic. Not only does it act as a memory trigger for locating a place, but it can also act as a memory trigger for those events that happened at that place.

As with the Western Apache, Hawaiians consider the past “…a well-worn ‘path’ or ‘trail’ which was traveled first by the people’s founding ancestors and which subsequent generations of Apaches have traveled ever since.” (31) The path is accessible with the aid of stories. In this sense, storytellers construct the path in the imaginations of active listeners and use place names to situate where past events occurred.

... [W]hat matters most to Apaches is where events occurred, not when, and what they serve to reveal about the development and character of Apache social life. In light of these priorities, temporal considerations, though certainly not irrelevant, are accorded secondary importance.” (Baseo, 1996, pg. 31)
This is true for Hawaiians as well. Where something happened is usually more important than when it happened and “Nowhere do place-names serve more important communicative functions than in the context of historical tales.” (Basso, 1996, 51)

Mo'olelo provided Hawaiians a vehicle to maintain a link between historically separated generations that would otherwise not have direct contact or access to one another. “Stories link human history to place. ...there is a causal link between understanding the names, knowing the stories associated with names, and living in the world as an adequate human being.” (Cruikshank, 1998, 18) As such, the story...

...becomes both a source of content, as well as methodology. Story enables individual and community life and the life and process of the natural world to become primary vehicles for the transmission of Native culture. The culture’s vitality is literally dependent on individuals, in community with the natural world. Indigenous cultures are really extensions of the story of the natural community of a place and evolve according to ecological dynamics and natural relationships. (Cajete, 2000, 94)

One of the ways Hawaiians express their symbolic understanding of nature is through the continuous retelling of mo'olelo. Storytellers animate the past, bringing it into the present with the use of metaphor.

Metaphor plays a key role in descriptions of sensuous experience, and sometimes these are so everyday that we forget that they are metaphor. The use of metaphor to describe sensuous experience also reflects the basic multisensual character of geographical experience and the complex inter-relationship of the senses. (Rodaway, 1994, 36)

The most talented Hawaiian storytellers were “versed in poetry (mele), storytelling (ha'i ka'ao), genealogy (mo'okū'auhau), and oratory (kākā'ōlelo) and found themselves in the
courte of the chiefs.” (Pukul, n.d.) In these settings, storytellers would often include an ‘oli (chant) or ‘ōlelo no‘eau (proverb) as part of the performance.

However, Hawaiians did not talk freely about the lore of their ancestors and before they would “relate the tales of the gods or of the chiefs who ranked next to the gods in sacredness, they first took note of whom they were relating the stories to and the significance of the occasion.” (Pukul, n.d.) Indeed the most gifted story tellers understand the “importance of performance — how performance involves not simply a narrator but also an audience, and how narrator and audience both change with time and circumstance, giving any one story the potential range of meanings that all good stories have.” (Cruikshank, 1998, 28)

**Significance of Interactively Presenting Place**

It is essential for the story teller or any knowledge holder to know who is in the audience — who the knowledge will be passed on to, what the knowledge level of the audience is, and, in some cases, whether or not they can be ‘trusted’ with the knowledge the teller will be imparting. Situating the knowledge holder and active listener in an interactive presence allows for the knowledge to be contextually presented. In the case of storytelling, this usually results in a different presentation of the same story. Stories have different meanings depending on the “situations in which they are used, in interactions between narrators and listeners. Meanings shift depending on how fully cultural understandings are shared by teller and listener.” (Cruikshank, 1998, 40)
However, stories are not the only things that change, so do the narrators and the listeners. At some point in time the storyteller was once the listener. In Hawai‘i, children showing the most retentive minds were chosen to learn the craft of storytelling and those with exceptional talent usually found themselves in the courts of the Ali‘i. In more modern times, Hawaiian storytellers were very conscientious to whom they told their stories. Pukui relates two incidents in this regard. Both occurred while gathering information with Handy and Handy.

In the first instance, her cousin refused to speak in front of old friends and neighbours because it was not their right to listen and there was a concern it would be repeated elsewhere. In the second instance, a woman from Hawai‘i island refused to participate in the research until Pukui answered a question. According to Pukui, “she was trying to ho‘opapa to find out how much folklore I knew. The ho‘opapa was a form of riddling or asking questions as a ‘feeler’, to see whether the other person knew the answer or not.” (Pukui, n. d.) The correct answer garnered Pukui the privilege of learning many storied place names, stories of healing with herbs, and stories of Pahua, Lot Kamehameha’s pet parrot.

Knowing the audience is essential for a storyteller to make sure the story’s message is fully received and can therefore induce a deeply powerful understanding that transfixes space and time and becomes a real teaching/learning experience. (Cajete, 2000, 95) Traditional Hawaiian audiences were mindful to listen attentively and focus completely on the storyteller. Speaking in low murmurs in the background was
considered rude as Pukui relates the indignant response of a story teller, “...story telling is not a game. If you want to learn, listen. I don’t have to tell what I know.” That was the teaching of the old school, to close the mouth and open the ears.” (Pukui, n. d.)

Being able to interact with one another sets up a specific context with which a story is told. It pute the ‘power’ of sharing in the hands of the storyteller because not everything shared is meant for all audiences. Some stories such as those associated with nā wahi pana, were shared without reservation as people took great pride in having numerous points of interest to impart. But other stories were only meant for family members to hear such as stories of their ‘aumakua which inevitably revealed the reasons why certain things were kapu to that family.

Such stories were not discussed outside of the family unless the person to whom it was told was trusted not to repeat. To talk too freely was said to kaula'i nā iwi o kupuna i ka lā (dry out the bones of the ancestors in the sun). Bones were hidden things, not brought out for all to stare at. (Pukui, n. d.)

**Nuances of Hawaiian performance cartographies**

Clearly, Hawaiian performance cartographies are processual and performative in nature. Process cartographies encompass “oral, written, performative, and experiential modes of mapping as a means to transmit situated indigenous cultural knowledge from one generation to the next.” (Pearce and Louie, In review)

Performance cartographies are external interactions or performances that, may take the form of a nonmaterial oral, visual, or kinesthetic social act, such as a gesture, ritual, chant, procession, dance, poem, story, or other means of expression or communication.
whose primary purpose is to define or explain spatial knowledge or practice. (Woodward and Lewis, 1998, 4)

Hawaiian performance cartographies give “preeminence to performance, privileging process over product, particularly where permanence of the artifact might be a disadvantage in societies where maps were designed to grasp the ever-changing rhythms of nature and territory.” (Woodward and Lewis, 1998, 5) For Hawaiians, it's the narration of the story, the performing of the dance, the reciting of the genealogy, the delivering of the chant, the telling of the proverb, the singing of the song that is important.

Oliveira builds upon and provides solid examples for those Hawaiian cartographic (re)presentations identified by Louie, specifically, “mo‘olelo (stories), oli (chant), ‘olilo no‘eau (proverbe), hula (dance), mele (song) and their mo‘o ki‘auhau (genealogy).” (Louie, 2004, 6, italic in original) While Oliveira focuses on the content of the examples as being contextually spatialized, she does not fully explain the performance aspect of these representations.

For example, for those cartographic presentations that are performed orally, how do tone, rhythm, tempo, and vocal quality effect the presentation and its reception? Also, with the hula, how do the attire, adornments, and musical accompaniment effect the presentation and its reception? Furthermore do any of these characteristics provide a deeper understanding of the spatial knowledge being presented? While I am no expert in these areas and do not intend to go into detail, I can present the following based solely on textual evidence.
**Nuances of Hawaiian oratory**

Hawaiian oratory is “inspired by the natural sounds around them: the pounding of the ocean, the wind rustling the trees, thunder roaring. It was natural, then, to express personal emotions in terms of the environment – they were, in a sense, tutored by nature.” (Beamer, 1987) There are six broad categories of Hawaiian oratory, hai'iōlelo (speech), mo'olelo (historical accounts), ka'ao (story), 'ōi (poetic chant), mele (song), and 'ōlelo no'eau (proverb). The main difference between 'ōi and mele is that 'ōi is not danced to. 'Öi “were delivered in a variety of voice styles, sometimes with percussion accompaniment, and usually with a minimum of gestures. They were meant to be listened to and appreciated for their beauty of imagery and story.” (Barráere, Pukui, and Kelly, 1980, 12)

Another difference between 'ōi and mele is their vocal range. Mele generally have a wider tonal range and are distinctly rhythmic. 'Ōi generally uses “two to three specific notes, [and] is intended for formal subjects and specific occasions.” (Beamer, 1987, 3)

Kumu John Keola‘akainana Lake’s course text, *Oral traditions of the Ali‘i and Nā papa kanaka in history, chant, hula and the great epic*, provides a basic breakdown of voice qualities, types of chants, and modes of chanting. He lists five basic types of chants including 'ōi pule or mele pule (prayer), mele ko‘ihonua/ku‘auhau (genealogy) or mele kānaenae (eulogy, praise, dedication), mele kanikau (mourning, lamentation), mele ho‘oilopo (love), and mele paha (improvised chant). The vocal qualities he describes includes,
1. **"i** — a greatly admired deep vocal tremor similar to a vibrato singer. It refers to the rasping articulation of consonants, h, k, the glottal stop, and vowel, u, o, a, especially after the former consonants. It is a quality used in varying degrees of emphasis and coloration. It is decidedly considered a most desired trait or skill of a chanter. It is never used in a kepakepa, recitative style of chant. (Lake, n.d.)

2. Kāohi — the cutting off of prolonged vowel sounds. “It has a marked effect on pitch quality and is effective in ho'ae'ae, ho'ouwëuwë, and ‘aiha’a modes of chanting.” (Lake, n.d.)

3. Ho'ānu’unu’u — quick trilling, puloa-like sounds that interrupt a continuous sound. “The transition between pulses on a single pitch level causes partial slurring.” (Lake, n.d.)

4. Ha'ano'u and aheahe — loud, forceful articulation contrasted with soft, gentle sound. “Ha'ano'u is used primarily with ‘aiha’a. Aheahe is used for ollioli and ho'ae'ae.” (Lake, n.d.)

5. Other — “Glottal cutoffs, break caused by transition from one vocal register to another, glides, are other ornaments of chanting.” (Lake, n.d.)

Lastly, he explains five modes of chanting,

1. **Kepakepa** — fast paced, clearly pronounced conversational and recitative chanting used for mele ko'ihonualku'auhau and mele paha. Pitch is usually unstable.

2. **Ollioli** — relatively stable pitch chanting that highlights tonal inflections and long phrases that end with an ‘i’i vocal quality.

3. **Ho'ae'ae** — slower tempo chanting with short phrases of prolonged vowels and “one or more principle tones, one inflecting one and one subordinate tone.” (Lake, n.d.)

4. **Ho'ouwëuwë** — incorporating a wailing sound into the basic ollioli and ho'ae'ae modes where glides move from a high register to a lower tone.

5. ‘**Aiha’a**’ — forceful, long winded, fast tempo chanting with short, well defined phrases stressing sharp contrasts between loudness and softness.

Chanting is an intimate and unique performance allowing the chanter to express his/her dramatic style visually, aurally, and spiritually. As such, different islands, or even different schools, developed their own variations of style with respect to rhythmic pattern of chanting. Many rhythmic patterns are given specific names such that a kumu...
could call out the pattern by name and the accompanying instrumentalist would respond appropriately. In the Beamer household,

The traditional beginning rhythm of the mele hula is three kāhela and one pā. Represented by the sounds Sweetheart Grandma used when teaching us, the kāhela is one downbeat (u) and two upbeats (te): u te te. The pā is a single downbeat and upbeat: u te. The beginning mele hula rhythm pattern is thus:

\[
\begin{align*}
&u \text{ te te} \\
&u \text{ te te} \\
&u \text{ te te} \\
&u \text{ te}
\end{align*}
\]

The traditional rhythmic ending of the mele hula, which follows completion of the chant's story, consists of two kāhela, a half-pā (one down-beat), two kūkū (three downbeats followed by two upbeats), two pā, another kāhela, and a final pā. At the same time, the chanter utters a traditional vocal pattern:

\[
\begin{align*}
\text{mea oli} & \quad \text{ho'opa'a} \\
\text{(chanter)} & \quad \text{(instrumentalist)} \\
\text{ea la} & \quad \text{u te te} \\
\text{ea la} & \quad \text{u te te} \\
\text{eā} & \quad \text{u} \\
\text{ai e} & \quad \text{u u u te te} \\
\text{e} & \quad \text{u u u te te} \\
\text{e} & \quad \text{u te} \\
\text{e} & \quad \text{u te} \\
\text{e} & \quad \text{u te te} \\
\text{e}& \quad \text{u}
\end{align*}
\]

(BeatMAN, 1987, 3)

It would stand to reason that there are specific rhythms associated with different people. My cousin once relayed to me that during an all night vigil she heard the beating of the pahu (drum) in the distance and remembered the rhythm. Upon sharing that with Kumu Hula Pualani Kanaka'ole Kanahele, she was told that rhythm was

166
associated with a particular Ali'i wahine and that very few people knew its significance.

Furthermore, the fact that she heard it was a hō'ailona (sign).

**Nuances of Hawaiian dance**

Everything in life is in a constant state of motion; dancing about to their own unique vibration and frequency. Hula is a celebrated understanding of this aspect of life.

With the proliferation of hula in our contemporary society it may come as a surprise to learn that hula began as a religious ritual.

...hula was an accomplishment requiring special education and arduous training in both song and dance, and more especially because it was a religious matter, to be guarded against profanation by the observance of tabus and the performance of priestly rites. (Emerson, 1996, 13)

Ritual, dance, and myth all work together to bring forth the presence of the sacred and divine. “The myth tells of divine deeds in words, while dance portrays those deeds in movement, rhythm, and gesture.” (Kanahele, 1986, 129)

There are several differing versions on the origin of Hula including, the mo'olelo of Hi'iaka and Hōpo'e, the mo'olelo of Laka, the mo'olelo of Hinaulu'ōhi'a, the mo'olelo of Mo'ikeha and La'a, and the mo'olelo of La'ila'i. There's even a suggestion that the hula was born out of the Hawaiian martial arts, ku'ialua. (Kanahele, 1986, 129) While the origin is highly contested to this day, evidenced by certain stories incorporating others to indicate their precedence, all Kumu Hula would probably agree hula symbolically encapsulates and transmits traditional knowledge. Since I have only cursory knowledge of the art, I will but dabble along the edges in presenting my understanding of how hula
is, in my opinion, the epitome of Hawaiian performance cartographies, especially those that accompany mele pana.

Everything about the hula performance stimulates the aural, visual, and olfactory senses. Aurally, the hula is accompanied by both instrumentation and song adding even more depth to the above presentation of chanting styles. There are over twenty instruments used in hula performances, each fashioned by hand from natural elements such as gourds, wood, bamboo, shells, leaves, and stone. “Each instrument has its own name, distinct sound, and playing pattern.” (Beamer, 2001, 2) Furthermore, since Hawaiians recognized the life essence in everything, it stands to reason that each instrument was also invested with mana that was honored accordingly.

Visually, the bodily movements, attire, and adornments ideally work together to form a cohesive symbolic representation of contextual essence. Every hula movement has a specific meaning. There are gestures that symbolize flowers, animals, natural elements like wind, water, cliffs, trees, and even conflict and war. Dancers are capable of evoking an endless array of meaning with expressive hand gestures and undulating body movements.

In hula we use our hands to provide visualization of something we are expressing, and we use our feet to keep rhythm. We use the hands to actually shape the elements of what we are dancing about that the mele (poetry) tells us about. We use our eyes to focus in different directions and we listen to the rhythm of the ipu (gourd) and pahu (drum). We are using many, many different body parts when we’re dancing. Very few people in the world do that. And that to me is a big deal.” (Kanahele, 2005, 25, italics in original)
The manner in which a dancer is dressed and adorned also conveys the symbolic essence of the story being communicated through dance. The simplest analogy would be a person dressing for a job interview. The manner in which a person presents themselves from cut and color of clothing to jewelry and hygiene speaks volumes to the interviewer. Thus, the type of attire a performer walks onto stage wearing indicates the type of performance to be presented.

Depending on the type of adornment, performances could also speak the sense of smell. Fragrant lei moving with the dancer emanating on gentle breezes enhance the visual and aural performance allowing the audience to be surrounded in the scent of nature. Most people know how a certain smell can bring forth fond memories of moments long past. The same is true with wafting aromas of floral adornments.

A hula performance is meant to enlighten the audience taking them on a journey and, in some cases, bringing an awareness never before experienced. While the audience cannot truly ‘know’ the place or event being presented without actually experiencing it first hand, the performance allows the observers to become a part of the presentation. Captivated by the sensual experiences the presentation becomes surrogate, much like a map is a surrogate of a Western construct of space.

Dancing is a tool to educate ourselves, telling us who we are. The hula was also a vehicle, very capable of pitching you into another world, into that event for which the mele was composed. That is what dancing hula is capable of doing. When that happens, and you look at the dancer, the dancer becomes the dance. The dancer than can pitch you out with her to wherever she’s going, or whatever the mele is talking about. Hula is capable of that. (Kanahele, 2005)
I believe hula is the ultimate form of all the Hawaiian performance cartographies because it incorporates music and dance with the symbolic characteristics of all the other representations including mnemonics, sounds, and gestures. In fact, it is my belief that hula actually extends the symbolic repertoire. For example, a single hula performance not only has mnemonic symbology such as place name associations, there are also symbolic associations with various patterned markings found on the body, clothing, and instruments, with the color of clothing, with the type of instrument and choice of adornments being used, with the manner in which the instrument is being played, and with the method of binding those adornments to the costume.

Everything about the hula is cartographic by nature because all hula performance present situated knowledge. Other Hawaiian performance cartographies certainly make use of auditory symbolic cues in the form of voice quality, pitch, rhythm, tempo, and intonation and even incorporate various symbolic gestures, facial expressions, and body movements. However, hula adds another dimension with music and dance.

Closing Remarks

Hawaiian performance cartographies do not share the same kind of materiality and reproducibility as Western cartography. Yet they do serve as tools of way finding and spatial representation. Hawaiian spatial knowledge is acquired empirically, through sensory systems including, if not prioritizing, metaphysical senses. Therefore, Hawaiians acquired spatial knowledge from more than just the five senses of sight, sound, smell, taste, and touch. Hawaiians recognized that spatial knowledge can also be acquired
through the na‘au, kulāwi, au ‘āpa‘apa‘a, and mo‘o thereby recognizing dreams, trances, and unexpected phenomena in knowledge pathways.

Hawaiians symbolically encoded their spatial knowledge into their landscape, artistic endeavors, and language. They recognized various topographical and other natural features as the manifestation of various gods. Hawaiian artisans also carefully crafted symbolic meaning into every step of their artistic designs including kī‘i pōhaku, heiau and ahu, royal insignia, kapa patterns, tattoo designs, lei, hula instruments, woven mats and baskets, and various sculptured woodcrafts. Hawaiian language is the embodiment of sensuously and intimately participating with natural environment and is thus naturally imbued with metaphoric meaning.

Hawaiian artisans were professional craftspersons that passed knowledge on to future generations via experiential learning techniques involving practice, repetition, and redundancy. Worthy apprentices were selected at an early age and trained in a selected craft where Hawaiian spatial knowledge was metaphorically incorporated into songs and rituals using mnemonics, overlapping redundant methods to reinforce important concepts, and communal interaction. These protocols ensured knowledge was not only accurately maintained and passed on to future generations but also instantly accessible. Thus, Hawaiian spatial knowledge is encoded into bodily memory via repetitive practices or performances until they become second nature.

This epistemological foundation of Hawaiian spatial knowledge systems determines the nature of Hawaiian performance cartographies as processual and
incorporative. It integrates spatial knowledge into the landscape, language, and artistic creations and presents that knowledge in various cultural practices. Since each of these cultural practices maintain or store spatial knowledge they stress the importance of practiced recitation and emphasize interactive presentations of place and experienced space.

Since place names are found in all forms of Hawaiian performance cartographies from mo'olelo to hula, they can be characterized as a basic symbolic element. Hawaiian place names tell us a great deal about Hawaiian spatial understanding such as how environmental phenomena are organized and understood. (Baeeo, 1996, 44) Whether they are descriptive or commemorative, Hawaiian place names are situating devices that spatially anchor and locate narrated events rendering the landscape intelligible on multidimensional planes of understanding. (Baeeo, 1996, 40-47)

To get a better idea of how all this works in a Hawaiian reality, this text will provide an opportunity to experience the cultural landscape of Kapukapu through the Hawaiian performance cartography of storytelling presented by knowledgeable community members. However, before plunging you in to the intimate and sensuous details of this storied landscape, the next chapter allows you to wade in the calm shallows revealing the spatial knowledge systems situated at Kapukapu both prior to and after the arrival of Captain Cook. It also situates the author and methodologies embraced in the remaining text.
CHAPTER 4 – WHY ME? WHY HERE? AND HOW?

Science is and can be defined many different ways depending on who is doing the defining. But one thing that is certain is that “science” is culturally relative. In other words, what is considered science is dependent on the culture/worldview/paradigm of the definer. (Little Bear, 2000, ix)

By the time Europeans arrived on the shores of Hawai‘i, Western cartography was a reflection of the philosophical and technological advancement of the Western world. The same can be said about Hawaiian performance cartographies. By the time Hawaiians welcomed the Europeans onto their lands; Hawaiian performance cartographies reflected the sensual, intimate, and multidimensional relationships Hawaiians developed with their natural and spiritual environments. These two cartographic traditions met on the shores of Kealakekua precipitating an opportunity whereby differing understandings of space/place and their accompanying (re)presentations began to intermingle.

This chapter begins with a discussion of the Hawaiian cultural and cartographic heritage of the research area, the land area surrounding Kapukapu Bay, Figure 36.
It also includes those modern cultural and cartographic events that may have an impact on the cognitive cartographies of knowledgeable elders and community members. I follow that discussion with the methodological framework used in this research. It includes an in depth presentation on the nature of Indigenous methodologies and the specific methods, both Indigenous and exogenous, used in this research.

Also, since Indigenous methodologies requires the researcher to identify their position in the research in order to understand the motivation, framework, and direction the learning and sharing will take, I present the reasons I am involved with this research in the first place. It is a way to identify my relationship to the people, place, and purpose.
UNWRAPPING PLACE: KAPUKAPU’S CULTURAL AND CARTOGRAPHIC HERITAGE

In Hawaiian culture it is common to view natural and cultural resources as one in the same. This is probably because Hawaiian mo‘olelo (oral historical records) describes the birth of the islands and humankind in a genealogical context. It is within this context of familial relationship that Hawaiians perceive and attend to their environment. This section provides an overview of various dimensions of Kapukapu’s specific cultural and cartographic heritage interweaving genealogical, political, social, and economic dimensions.

According to Oliveira, mo‘okii‘auhau (genealogies) help Hawaiians identify and connect with their kūpuna and their ancestral homelands whereas mele ko‘ihonua (cosmogonic genealogies) establish relationships and responsibilities between the natural and spiritual realms, such as “land, ocean, and sky, gods and chiefs, and chiefs and the general Hawaiian population.” (Oliveira, 2006, 120) Both are fundamentally important for understanding a Hawaiian worldview.

There are several different Hawaiian creation histories ranging from evolutionary timelines and Hawaiian volcanic eruption patterns that match modern science’s accounts to more symbolic origins of the birth of islands via the mating of gods as well as biblically influenced accounts. They all provide “modern scholars with insights regarding traditional culture thereby revealing how these practices influenced the connection that Kanaka Maoli had with their environment. A common thread that runs
through these histories is the importance of knowing one’s roots.” (Oliveira, 2006, 121, italic in original)

There are at least two versions of mo’okū‘auhau associated with the Ali‘i (chief) of Hawai‘i Island. The more popular Kumulipo (the sacred genealogical chant of Hawaiian Ali‘i) is an evolutionary account chronicling the emergence of all life on earth. It is divided into sixteen eras or evolutionary timelines. The first seven begin in darkness where the first male energy, Kumulipo, and the first female energy, Po‘ole emerge. The last nine continue in light where the first woman, La‘ila‘i, the first man, Ki‘i, and the first male god, Kane and Kanaloa49 come forth.

The Kumulipo also contains references to both Papa (earth-mother) and Wākea (sky-father), those ancestors widely recognized as the progenitors of Hawaiian-kind, if not all humankind. Their mo‘olelo recounts the birth of the Hawaiian islands, the kalo, and Hawaiian-kind setting up the familial relationship that pervades the Hawaiian cultural lifestyle. However, Beckwith believes the story of Papa and Wākea has “an apparently minor part … [and] is possibly inserted as an afterthought.” (Beckwith and Luomala, 1981, 119)

It is quite possible that Beckwith and Luomala misinterpreted the inclusion of Papa and Wākea as an afterthought. Neither of them was trained by a professional knowledgeable in the Kumulipo. However, it is also possible that the Kumulipo was ‘updated’ to reflect a societal shift of accepted ideas. That is the beauty of oral

49 Beckwith describes Kanaloa as “the hot striking octopus”. (Beckwith and Luomala, 1981, 95)
histories. They are not stagnant accounts of the past. They are pliable, readily applicable moral encapsulations of cultural mores. In every generation selected individuals have the responsibility to learn the mo'olelo, mele ko'ihonua, and mo'okū'auhau they are taught, but that does not mean they are not influenced by external forces to "highlight" various parts in order to reflect their current situation.

In the mo'okū'auhau of Opu'ukahonua⁵⁰, Opu'ukahonua arrives with his two younger brothers, Lolomu and Mihi and one woman, Lana the budding earth. (Fornander, 1985, Vol 4, 20-22) According to this mo'okū'auhau, these four people are considered "the royal parents or ancestors of these islands, and that there were ninety-five generations⁵¹ from him to Kameahameha the Great." (Fornander, 1985, Vol. 4, 20) The mele ko'ihonua that accompanies this account describes the islands as pieces of coral fished out of the ocean by a fisherman, Kapuhe'euanu. Laulialamakua, a priest, came by as Kapuhe'euanu was disentangling the coral from his line and recognized the coral as a chief. He advised Kapuhe'euanu to make preparations to honor the god and call it Hawaiiloa. Kapuhe'euanu carried out the request. The next time Kapuhe'euanu went fishing the same thing happened. He took this piece of coral to Laulialamakua and was told to do the same thing except to call it Māuiloa. This went on until all the Hawaiian islands were raised from the ocean depths and named.

⁵⁰ See Appendix A – The Genealogy of Opu'ukahonua derived from Fornander.
⁵¹ In another section of this same text, Fornander states there are ninety-nine generations from Opu'ukahonua to Kameahameha. (Fornander, 1985, Vol. 4, 20)
It is not clear where the fisherman, Kapuhe’euanu, or the priest, Laulialamakua came from, but they could not have been from Hawai’i if the islands were raised from the ocean depths as pieces of coral. Fornander states, “...in the genealogy of Kuali‘i, ...

Opu‘ukahonua came from Tahiti to live in Hawai’i when these islands were inhabited by human beings.” (Fornander, 1985, Vol. 4, 22) While one can speculate that both Kapuhe’euanu and Laulialamakua also came from Tahiti, “to the Hawaiian people, in their own language, Tahiti means generally a foreign country, — a country outside of and beyond their own group.” (Fornander, 1985, Vol. 6, 241, italics in original) Thus, we cannot be certain this mo‘okū‘auhau begins with people from the island group of Tahiti or if they were from a place ‘outside of and beyond their own group’.

Oliveira discusses four possible reasons for the inconsistencies between various mo‘okū‘auhau, mele ko‘ihonua, and mo‘olelo that intrigue modern scholars. The inconsistencies could be attributed to the quest for political power, the acceptance of incomplete performances tailored to specific situations as fact, the loss of metaphorical understanding, and the need to reflect modern societal norms. Regardless of these inconsistencies, many mo‘okū‘auhau, mele ko‘ihonua, and mo‘olelo reflect Western scientific findings. (Oliveira, 2006, 156-158)

For example, the following mo‘olelo of Lono\textsuperscript{52} is symbolically consistent with archeologists’ findings that these islands were settled by Polynesians in several voyages.

\textsuperscript{52} Lono is noted for his affinity to Kona, Hawai’i. (Handy and Handy, 1972, 522)
In the generation of Kumuhonua [Earth Foundation] before the time of the generations of gods and men, or before the time of the population of the earth in olden times, men were not numerous on the land then. It was through him [Kumuhonua] that a god-like man named Lono, obtained food. Lono was a fisherman of Kona and dwelt at Keauhou in North Kona. He made fish basket traps. A few days later he went to the ocean to fish. All of his fish hooks broke off. He regretted the loss of the hooks and thinking that they had caught on the corals he leaped into the sea to investigate. They were taken by Hina-kauo the daughter of Kumuhonua. Lono said to a man, “Stay on our canoe.” He dived and found the woman below. There was land there and there he remained. He saw new things that he had never seen before and when he tasted the food he liked them, the sweet potatoes, taro, bananas, sugar cane and ‘awa. He lived with the two of them there for a month and then he saved some of the food plants for him to plant. He took taro, sweet potato, sugar cane, bananas, and ‘awa and asked about the time and the proper nights for sweet potato planting. It was the raw sweet potatoes, raw taroe, banana shoots, sections of sugar cane, (raw) yam and ‘awa that would grow, so he was told. He was permitted to and so took all kinds of plants from Kumuhonua. It was through him that Lono obtained all these food plants. He returned from the land of Kanu’upapa, the land where Kumuhonua dwelt at the foundation of the earth. Lono lived there and came forth from under the earth with all the plants gathered for him to plant. ‘Awa was first planted in Kona; sugar cane was planted at Kau-ka-ko at Ka‘awaloa. Later, the sweet potatoes, taro and ‘awa were planted and they were cared for in that place. (Handy and Handy, 1972, 522-523)

Western science maintains that the Hawaiian islands were populated over several migrations from the South Pacific. Although this mo‘olelo figuratively describes a land below the sea, Kanu’upapa, at the foundation of the earth, it could possibly be a land
below the horizon, south of the equator, where the seasons are opposite from those lands in the northern hemisphere.

The plants Lono was ‘permitted’ to bring back to Kona with him in the mo'olelo are consistent with what Western science has determined are capable of surviving a lengthy ocean voyage and are necessary for migrating Polynesians to support a growing population. However, Lono doesn’t just bring the plants with him; he also brings knowledge or the proper time for planting as well, in this case sweet potato.

Furthermore, Lono is ‘told’ which plants ‘would grow’ in Kona because it is the dryer side of the island where streams don’t flow regularly. Access to potable water was extremely important and often the existence of springs was kept secret. (Handy and Handy, 1972, 66)

According to Cordy,

...settlers of dry Hawai‘i, as agriculturalists, would have face new challenges for successful cultivation. With low rainfall in shore areas, taro would have only successfully and consistently thrived at higher elevations where rainfall exceeded 40-80 inches per year. Even at these elevations, land was often rocky with shallow soils and stoney [sic] outcrops. The lower coastal and intermediate lands were even harsher, for soil was even shallower and patchier under sparse rainfall, and lava was present across extensive areas. (Cordy, 2000, 131)

In Figure 37, the area near Kapukapu has a 40-80 inches band of rainfall between 1,500-3,500 feet in elevation approximately 4-7 miles inland. This means the area near Kapukapu is considered an optimal agricultural location for settlement.
However, settlement of the dryer sides of the islands didn't occur until approximately the tenth century AD. (Cordy, 2000, 129-136)

![Hawai’i Island Rainfall](image)

Rainfall was not the only agricultural challenge Hawaiians faced in populating the dryer, leeward side of Hawai'i. They needed to clear rocks to form enclosed terraces to hold what little soil existed from being swept down slope. These enclosed terraces are known as the Kona Field System (Kelly, Barráere, and Hawaii. Dept. of Transportation.)
1980, 27) and can still be seen today on both the landscape, Figure 38, and in topographic maps, Error! Reference source not found.

Figure 38. Amy B. H. Greenwell Ethnobotanical Garden depicting remnants of the Kona Field System on the landscape. (Image from http://www.bishopmuseum.org/exhibits/greenwell/greenwell.html.)

Figure 39. A portion of the USGS Honaulau topographic map depicting the Kona Field System rock wall remnants.
The Kona Field System was ingeniously designed to take advantage of unique environmental conditions: a relatively rapid rise in elevation from the shore inland, sheltered from the afternoon sun by daily breezes and orographic cloud cover.

Reference source not found.

Figure 40. Elevation profile of the ahupua'a of Kapukapu. (Louis, 2007)

The Kona Field System was necessary to provide agricultural produce during the first centuries of permanent settlement. At first these cleared fields would have been small areas in the forested uplands where rainfall was sufficient for selected plant growth. (Cordy, 2000, 248) Later, as the population increased to accommodate Kona's
political centers, sometime after the reign of Keakealani\textsuperscript{53} these clearings were expanded and farming intensified.

By the time Captain Cook sent expeditions inland, the Kona Field System had become long strips of land encompassing four different vegetation zones based on elevation and amount of rainfall.

- **Kula** (0-500 ft): 'uala (sweet potato) grew in rocky areas
- **Kalu'ulu** (500-1,000 ft): 'ulu (breadfruit) with 'uala and wauke (paper mulberry) used for kapa (bark cloth) interspersed between them
- **'Āpa'a** (1,000-2,500 ft, 0.5-2.5 mi inland): sweet potato in the lower areas and dry land taro in the upper area with sugar cane and ti leaves along the edges
- **'Ama'u** (2,000-3,000 ft, 2.5-3.0 mi inland): ma'i'a (bananas and plantains)

(Cordy, 2000, 248-258; Handy and Handy, 1972, 522-528; Kelly, 1983, 47-50)

There are ample oral descriptions of these field systems in the journals of Ellis, de Freycinet, and Menzies. The following is a glimpse of these descriptions for the different agricultural land areas. In the kula lands, Reverend William Ellis reports the descriptions given by Reverend Asa Thurston and Artemis Bishop.

The environs were cultivated to a considerable extent; small gardens were seen among the barren rocks on which the houses are built, wherever soil could be found sufficient to nourish the sweet potato, the water-melon, or even a few plants of tobacco, and in many places these seemed to be growing literally in the fragments of lava, collected in small heaps around their roots. (Ellis, 1963, 31)

\textsuperscript{53} According to Cordy, Keakealani ruled between 1700 and 1720.
In the kalu'ulu lands, de Freycinet reports the following experience shared by those of his crew that participated in an upland expedition.

We first went across dry field, where hardly any young growth was visible; but, after reaching a certain elevation, we found much richer terrain where the paper mulberry, breadfruit tree, the mountain apple, tobacco, cabbage, sweet potatoes and yams were cultivated. (deFreycinet, Wiswell, and Kelly, 1978, 8)

In the next two quotations, Menzies, a naturalist with Vancouver's expedition, first describes the 'āpa'a lands and then the 'ama'u lands,

As we advanced beyond the breadfruit plantations, the country became more and more fertile, being in a high state of cultivation. For several miles round us there was not a spot that would admit of it but what was with great labor and industry cleared of the loose stones and planted with esculent roots or some useful vegetable or other. In clearing the ground, the stones are heaped up in ridges between the little fields and planted on each side, either with a row of sugar cane or the sweet root of these islands ... where they afterwards continue to grow in a wild state, so that even these stony, uncultivated banks are by this means made useful to the proprietors, as well as ornamental to the fields they intersect. (Menzies and Wilson, 1920, 75-76)

...we...entered the wood by a well trodden path, on both sides of which were luxuriant groves of plantains and bananas reared up with great industry in the neatest order of cultivation. ... Every step we advanced through these plantation became more and more interesting as we could not help admiring the manner in which the little fields on both sides of us were laid out to the greatest advantage and the perseverance and great attention of the natives in adapting to every vegetable they cultivate as far as lays in their power, its proper soil and natural situation by which their fields in general are productive of good crops that far exceed in point of perfection the produce of any civilized country within the tropics. (Menzies and Wilson, 1920, 80-81)
The area surrounding Kapukapu is perhaps the most studied of the Kona field systems. Soehrens and Newman’s modern day archeological map of the makai (seaward) field systems of Kealakekua provides another visual of the system used to provide agricultural produce for the villages of Ka'awaloa and Kealakekua. They describe the general pattern of the overall field system as “very narrow and greatly elongated rectangles oriented on an axis that is both northeast-southwest and sea-mountain.” (Soehrens and Newman, 1968, 5)

Unfortunately, the area they studied only covered up to the lower kalu'ulu field system as the image of their map overlaid onto the terrain depicts in Figure 41.

![Kapukapu archaeology overlay](image)

Figure 41. Kapukapu archaeology overlay. (Louis, 2007)

One thing they do suggest that is consistent with the mo'olelo of the ancestor-god Lono is that “…the principle crop of the field system depicted on our map was the sweet potato…” (Soehrens and Newman, 1968, 9) You may recall from that mo'olelo
that Lono specifically asked about the appropriate nights to plant 'uala indicating the importance of 'uala to the people in Kona.

Handy and Handy (1972) describe 'uala cultivation as second only to taro cultivation, yet may be the more valuable staple due to its ability to grow in less favorable conditions, to mature in three to six months, and to flourish with less labor and maintenance. (Handy and Handy, 1972, 127) Furthermore they also state,

Perhaps because sweet-potato planting was most prevalent on the southerly (leeward, hence dry) sections of each of the islands, where those for whom the 'uala was the main source of sustenance were almost completely dependent upon rainfall, a much greater body of lore has grown up around its cultivation than around taro or other food plants, and this lore centers in rainmaking rituals.

In these rituals, whether elaborated by priests or used simply by planters themselves, the prayers were addressed chiefly to the god Lono as rain-maker or to Kamapua‘a (meaning hog-child), sometimes called Kanepua‘a (hogman), who was a form (kino lau) assumed by Lono in this rain-making function. Ku and Kane also were appealed to in many invocations, as gods of growing things and of living waters. (Handy and Handy, 1972, 137)

The 'uala is one of the many kinolau (body form) associated with Lono; others include dark rain clouds, lightning, thunder, and the kukui tree. All of these kinolau are either directly or indirectly related to the Makahiki festival described in the next subsection. The Makahiki festival probably had the most elaborate and complex rituals

54 Beckwith (1970) indicates "In prayers to Lono the signs of the god are names as thunder, lightning, earthquake, the dark cloud, rainbow, rain and wind, whirlwinds that sweep the earth, rocks washed down ravines by "the red mountain streams [stained by red earth] rushing to the sea," waterspouts, the clustering clouds of heaven, and the gushing springs on the mountains." (Beckwith, 1970, 31-32) Also associated with Lono are the color black, the pig-god, Kamapua‘a, The 'ama‘ama and aholehole fish and the lama tree. (Kanahele, 1986, 47-48; Cordy, 2000, 59)
from a planter’s point of view. For the planter, makahiki was that time of year when prayers and rituals were conducted to guarantee sufficient rain for crops. For the ali‘i and kahuna (priest), makahiki was a time for collecting tribute in the form of crop produce, livestock, kapa, feathers, cordage, etc.

The Makahiki festival is intimately connected with Kealakekua as depicted in the following mo‘olelo of Lono,

Lono sends out two of his brothers as messengers to find him a wife on earth. They travel from island to island and finally in the Waipio valley on Hawaii beside the falls of Hi‘ilawe they find the beautiful Ka-iki-lani dwelling in a breadfruit grove companioned by birds. Lono descends on a rainbow and makes her his wife, and she becomes a goddess under the name Ka-iki-lani-ali‘i-o-Puna. They live at Ke-ala-ke-akua and delight in the sport of surfing. A chief of earth makes love to her and Lono hears him singing a wooing song. He is angry and beats her to death, but not before she has assured him of her innocence and her love for him. Lono then institutes the Makahiki games in her honor and travels about the island like a madman challenging every man he meets to a wrestling match. He builds a canoe such as mortal eyes have never seen since, with a mast of ohia wood and a sail woven of Ni‘ihau matting and cordage twisted from the coconuts of Keauhou. The people bring heaps of provisions and pile them up before him. Forty men bear the canoe to the launching place, but Lono sails forth alone. His words of promise to the people are that he will return to them, not by canoe but on an island shaded by trees, covered over by coconuts, swarming with fowl and swine. (Beckwith, 1970, 36-37)

The annual Makahiki festival celebrated Lono as the provider of the rains. It begins with the rising of the Pleiades over the horizon at sunset and corresponds to the transition into the rainy season brought on by those Kona (southerly) storms producing
dark rain clouds, thunder, and lightning. For an agriculture based economy, rain was of supreme importance, especially for those living on the dry Kona lands.

The festival was replete with ritual and ceremony from the playful hi’uwai (water splashing – ceremonial bathing) to the releasing of the wa’a o Lono (Lono’s canoe) adrift with a basket filled with foods. One very important part of the festival was the clockwise procession made by the ali‘i and kahuna around the island’s coastal trail with the image of Lonomakua (father Lono). They collected tribute at each ahupua‘a (pig altar) stopping at certain ones to enjoy sports, games, and entertainment.

On Hawai‘i Island this procession started and ended in Kealakekua making the area an important ruling center during the Makahiki season. The fact that Kalaniopu‘u was in residence at Ka‘awaloa when Cook arrived during the Makahiki season is evidence of the area’s significance for the Ali‘i and Kahuna. For many people, the place name Kealakekua is translated as ‘the path of the god’ Lonomakua as he embarks on his circuit around the island. However, there is another story associated with Kealakekua shared by Aunty Moana Kahele in chapter five.

According to Cordy (2000), by the time Captain Cook set anchor in Kapukapu, January 17, 1779, the surrounding shoreline was densely populated with 350-380 hale (house). The southern shore flats contained an open arena for sports, games, and other entertainment activities, and the northern shore flats contained the chiefly housing compounds. The area surrounding Hikiau Heiau was a kahuna complex bounded on the

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56 This was an altar formed of rock topped with an image of a pig’s head carved out of kukui.
inland side by an eight to nine foot rock wall. On the northern side of Hikiau there was a pond and various kahuna hale. On the southern side there was a smaller Hale-o-Lono Heiau, Helehelekalani.

When Captain Cook arrived, Kalaniopu'u was the Ali'i Nui of Hawai'i Island and the Makahiki festival was nearing the end of the second of its four month time period as evidenced by the sports, games and other recreational activities witnessed and recorded by the crew. While Cook may have initially been considered the return of the ancestor-god Lono, it wasn't long before the ruling class was disenchanted and only recognized him as the leader of his ship and crew. It is through Kamakau that we learn the name of the chief that struck the fatal blow, Ka-lani-man-o-ka-ho'owaha. Kalaniopu'u mourned Cook's death and treated his remains as that of a Hawaiian Ali'i, stripping away the flesh except for the hands and intestines and returning some of the bones to the ship's crew. (Kamakau, 1992, 103-104) After the ship departed, it was several years before another would anchor in Kapukapu Bay.

When Kalaniopu'u died in 1782, the island of Hawai'i was divided between his son, Kiwala'o, and his nephew, Paiea Kamehameha. Despite the urging of Kiwala'o's Uncle, Keawema'uhili, to go to war, relations between the two cousins remained somewhat peaceful until July 1782, when a disgruntled cousin, Keoua Kuahu'ula gathered his warriors and cut down the coconut trees in Keomo on the east side of Ke'ei. This was a

56 The King George and Queen Charlotte captained by Nathaniel Portlock and George Dixon, respectively, anchored in 1786. By that time, Paiea Kamehameha was victorious in the Battle of Moku'ōhal.
sign of war and led to four days of skirmishes before the real battle began. In the ensuing battle at Moku'ihai, Kiwala'o was slain and Keoua Kuahu'ula escaped via canoe to become ruling chief of Ka'ū and part of Puna. Paiea Kamehameha took Kona, Kohala, and part of Hāmākua. Keawema'uhili was caught and imprisoned, but his guard took pity on him and let him escape. As a result, he became ruling chief of Hilo and the other parts of Hāmākua and Puna. (Kamakau, 1992, 118-122)

After the return of Captain Cook's ships to Europe, much of Hawai'i's modern history was carefully documented as ethnographic accounts in journals and other historical texts, including maps. Europeans began publishing maps and other images of the islands as part of these ethnographic accounts for their own use. One of the first printed maps of Hawai'i included a detailed plan of Kapukapu. However on this map the bay was given the name Kealakekua Bay and spelled according to what the English understood the Hawaiian names to be, in this case, Karakakooa Bay, Figure 42.

(Fitzpatrick, 1986, 15 - 18)
The European world quickly made Kapukapu one of the most frequently visited ports in the Pacific. While little is known of the number or frequency of whaling and trading ships that anchored in Kapukapu, explorers such as Vancouver and his crew, who made three trips between 1792 and 1794, wrote extensively about their visits. On Vancouver’s second visit, he landed the first cow and bull at Kapukapu and on his third visit he presented Paiea Kamehameha with two cows, a bull, two bull calves, three rams and three ewes. (Kona Historical Society)

Soon after their initial importation Paiea Kamehameha placed a kapu on the slaughter of cattle and built the first paddock to prevent these animals from damaging cultivated areas. It was located in the “mauka section of the ahupua’a of Lehu’ula …
and averaged eight feet in height and eight feet in width." (Kona Historical Society) This was the beginning of the cattle industry in Kona. It preceded the American cattle industry by more than 20 years. Unfortunately, some of the cattle got out of the paddock when an earthquake compromised its cattle walls and they roamed free.

(Slatta, 2004, 1) In less than twenty years they formed huge herds, eating native crops, and stampeding through villages, causing destruction and terror. The wild cattle became so numerous and hard to handle that the kapu had to be lifted to allow the capture of these animals.

In 1803, the Lelia Byrd under Captain Shaler arrived at Kapukapu with two mares and a stallion. Although Paiea Kamehameha was not in residence at the time, John Young accepted these gifts on his behalf and the horses were landed at Kawaihae. They were the first horses ever seen in Hawaii. In 1832 Kaua'eaouli Kamehameha sent his ambassador to Mexico to bring back three Mexican vaqueros (cowboys) to help thin the herds on the island of Hawaii and teach Hawaiian cowboys how to rope and tame the wild cattle. The Mexican cowboys became known in Hawaii as 'paniolo' from the word 'espanol' for Spanish. With domestication under way, Kona began exporting its cattle to Honolulu to supply a growing marketplace.

Kapukapu was one of the locations in Kona where cattle were loaded onto ships. Figure 43, Figure 44, Figure 45, and Figure 46.

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57 In 1836 when Texas became Independent, Texan farmers claimed the cattle the Mexicans left behind and set up their own ranches. (Wheeler, 2006)
Figure 43. Photo of the "S.S. Hawaii" waiting off shore for her cargo of cattle being loaded by cowboys from Greenwell Ranch. (Digital photo taken by Louis from a display at the Kona Historical Society)

Figure 44. Photo of the cattle tied to long boats transporting them to a waiting inter-island steamship where they will be hoisted aboard and taken to Honolulu. (Digital photo taken by Louis from a display at the Kona Historical Society.)
Figure 45. Photo of a cow being hoisted aboard an inter-island steamship for transport to Honolulu. (Digital photo taken by Louis from a display at the Kona Historical Society).

Figure 46. Photo of an oblique aerial view of Kapukapu during the cattle shipping era. An inter-island steamship waits for cattle to be brought out by long boats and hoisted aboard for transport to Honolulu. (Digital photo taken by Louis from a display at the Kona Historical Society).
But cattle were not the only export Kona supplied. The coffee industry also came
to fruition in the early nineteenth century. Coffee was first transported to the Hawaiian
islands via a British gunship that was carrying home the bodies of Liholiho Kamehameha
and Queen Kamāmalu, who had died of measles during a state visit to London in 1824.
The ship took coffee trees aboard during a stopover for supplies in Rio de Janeiro and
four years later a missionary, Samuel Ruggles, planted the first coffee plant in Kona.
Although other plants were introduced, coffee reigned supreme and is still grown today
with a major emphasis on estate and gourmet varieties. In 1845 the first coffee export,
248 pounds, was sent to Honolulu to accommodate a growing demand. (Kona Historical
Society)

Aside from economic changes, Hawai‘i underwent a massive socio-political shift
from the ‘āina (land) as a familial relation toward its objectification and commodification
through the act of allocating parcels as property. Kame‘elehiwa provides an excellent
historical account of how this shift affected the Hawaiian socio-political structure in her
book, Native Land and Foreign Desires - Pehea Lā E Pono Ai? Cartographically speaking,
this shift began when Cook’s expedition returned to Europe with the first maps of
Hawai‘i. However, these maps were made for European use and had not yet affected the
cognitive cartographies of Hawaiians. Changing the way Hawaiian related to the world
began in missionary run schools and culminated in the first maps being made in Hawai‘i
by Hawaiians.
In the mid-1830s the need for maps in the classrooms for geographic education of Hawaiians was widely recognized and the most significant development in the effort to provide these maps began at the Lahainaluna seminary. As the head of seminary, Lorrin Andrews (1795 – 1868) learned the process of copperplate engraving and printed the first World Map in November 1834. The technique was taught to his students and they became proficient at it producing five other maps by early 1836. (Fitzpatrick, 1986, 107-109) In 1838, two years prior to the Mahele, one of the most important maps of Hawai'i was drawn and engraved by a student, Kalama, Figure 47.

Figure 47. The first map of the Hawaiian Islands made by a Hawaiian student, Kalama, at the Lahainaluna Seminary in 1838. Only two complete copies exist, one in the Hawai’i State Archives and the other in the Royal Geographical Society in London. (Image from http://www.newberry.org/smith/exhibits/popcart/hawaii.html)

According to Fitzpatrick this eight sheet map of Hawai’i

...is important for several reasons: it was made by Hawaiians; it reflects the proficiency which the students at Lahainaluna achieved in a short period of time; it corrected major errors in existing maps of Hawai’i; and it was instrumental in preserving the names of basic Hawaiian land subdivisions. (Fitzpatrick, 1986, 112, caption for figure 66)

Fitzpatrick further postulates that during the Mahele, when property transactions required the name of the ahupua’a in which the parcel was located, Kalama’s map was the only one available for reference and “could have been consulted by the king, government officials, and private individuals ...” (Fitzpatrick, 1986, 112)
The shift to private property required the work of land surveyors. Surveying in Hawai‘i played a huge role in how the islands were represented and was probably introduced in 1779 when Captain Cook spent several weeks at Kapukapu as evidenced by the detailed inset on the map in Figure 9. However, maritime surveying is primarily concerned with charting coastlines and navigational hazards whereas land surveying is concerned with the description of the extent of real estate. Land surveys were a necessary step for all land claims to be awarded title. (Moffat and Fitzpatrick, 1995, 53)

In 1843, nearly four decades prior to the establishment of the Hawaiian government survey in 1870, William Patterson Alexander (1805 – 1884) joined the Lahainaluna seminary and taught surveying to many of the students. Both he and his students conducted “substantial amounts of surveying in support of kuleana claims.” (Moffat and Fitzpatrick, 1995, 54, italics in original) Although there is no definitive list of all the surveyors during the Mahele,

The most extensive listing that has been published was compiled by Arthur C. Alexander, who was the manager of American Factors’ Land and Survey Department. … Of the 35 surveyors listed, only 10 were Hawaiians. Eleven men in the list were missionaries or sons of missionaries. According to Alexander, “most, if not all of the early native surveyors were trained at Lahainaluna School under W. P. Alexander.” Of these men in general, Alexander noted the “while not always reliable, they were never guilty in their kuleana survey of such grossly inaccurate work as was done by some of the white men. They also had a great advantage over many of the white surveyors in their intimate acquaintance with Hawaiian land matter and the language.” (Moffat and Fitzpatrick, 1995, 62)
By the time the Hawaiian government survey was established in 1870, several problems existed as a result of survey inaccuracies to boundary lines and land ownership records creating a chaotic mess with land records. W. D. Alexander (1833 - 1913) was hired to provide a workable solution. He began by creating the most accurate triangulation network possible that other surveys could connect to. In Kona, this primary triangulation network was completed by Joseph Swift Emerson (1843-1896) in 1883. While in the field, Emerson’s survey crew included several sketched views of the area surrounding Kapukapu, Figure 48, Figure 49, and Figure 50.

Figure 48. Emerson’s sketch of Ke’ei from Makolehale station looking southerly. (Hawaii State Survey Office)
The above figures, as stunning as they appear, portray the landscape as a vast open area, devoid of Hawaiian cultural features or activities. Occasionally, surveyors would jot notes about place names. However, Emerson's was not one to take much notes that did not pertain to the business at hand. And we must keep in mind, the
surveys were not meant to include information about culturally important features.

Emerson's only concern was to delineate a triangulation network on Hawai'i Island that provided other surveyors the opportunity to accurately locate boundary lines between parcels. The following figure is the result of the surveys conducted because of Emerson's carefully executed task, Figure 51.

![Parcel map of the area surrounding Kapukapu. (Louis, 2007)](image)

Figure 51. Parcel map of the area surrounding Kapukapu. (Louis, 2007)

It is hard to imagine that after all the change the communities in this research area have endured there is still a vibrant Hawaiian culture being maintained. Some of these cultural elements are obvious and readily observable; others are only known in distinct circles or only shared with trusted responsibility. The next chapter provides insight to one of these culturally significant elements missing from these maps in the form of storied place names.
**Methodological Framework**

The methodological framework embraced by this research is based on Indigenous methods inspired by Tuhiwal Smith's (1999) *Decolonizing Methodologies*. Her book is both a response to the historical oppression of research on Indigenous peoples and a challenge for academia to acknowledge and provide research frameworks more consistent with the ontology, epistemology, and axiology of Indigenous peoples. This research involved mostly qualitative methods to acquire and interpret Hawaiian place names, their meanings, and associated stories from both textual sources and community collaborators as described by Tuhiwal Smith (1999) including; connecting, storytelling, naming, and representing.

**Connecting** is an integral first step for any Indigenous research project entailing the positioning of the researcher. Researchers must have a critical consciousness about how they and the research connect to the Indigenous people in humanizing ways. Sharing who we are and where we come from in terms of self, culture, beliefs, values, life experience, and memories is consistent with the principles of relationality, respect, and responsibility.

**Storytelling** is a critical method that focuses on unscripted dialogue and is a natural fit for cultures still maintaining oral traditions. It is this dynamic that ensures the storyteller maintains control of the information being shared.
Naming is a means of renaming the landscape according to indigenous cultural realities. It also provides indigenous people an opportunity to retain control over sharing their storied meanings (sometimes only understood in their native language).

Representing is an attempt to propose a solution to the dilemma of capturing the complexities of indigenous peoples’ lives, lifestyles, or worldview. Mapping is about representation. Indigenous mapping is about indigenous people representing themselves in a manner consistent with their cultural protocols.

A discussion of the nature of indigenous methodologies precedes a presentation of the specific methods used in this research. The following section is an excerpt from my article entitled, “Can you hear us now? Voices from the margin: using indigenous methodologies in geographic research,” published June 2007 in Geographical Research. It started as a subsection of this text and was altered for a presentation in a session sponsored by the newly formed Indigenous Peoples’ Knowledge and Rights (IPKR) commission of the International Geographical Union (IGU) in Brisbane, Australia in July 2006. I was subsequently asked to submit the piece for a special edition of Geographical Research and it was further altered from the original according to peer review comments. I include it here because it not only describes the nature of indigenous methodologies, it also highlights the differences between research done within an indigenous context using Western methodologies and research done using indigenous methodologies.
So what exactly are Indigenous methodologies? To assume there is a singular answer to this question only feeds scholarly beliefs of essentialism emphasizing the 'messenger' instead of the 'message'. "To a large extent, such campaigns are simply the logical consequences of centuries of intellectual hegemony and academic colonialism where Whites defined Indian history and American Indians served as the objects of definition." (Grande, 2000, 348-349) Who can blame non-Indigenous scholars for wanting to protect themselves and defend the legitimacy of their own scholarship? And likewise, who can blame Indigenous scholars for wanting to assert themselves and gain recognition for their scholarship?

So instead of speaking in specifics, let me paint with broad brush strokes.

Indigenous methodologies are alternative ways of thinking about research processes. (Abdullah and Stringer, 1999; Akan, 1992; Atleo, 2004; Bishop, 1999; Cajete, 1994, 2000; Crazy Bull, 1997c; Ermine, 1995; Hodge and Lester, 2006; Semali and Kincheloe, 1999; Smith, 2000b; Steinhauer, 2002) They are fluid and dynamic approaches that emphasize circular and cyclical perspectives. The main aim is to ensure that research on Indigenous issues is accomplished in a more sympathetic, respectful, and ethically correct fashion from an Indigenous perspective.

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69 This section is an excerpt from my article entitled, Can you hear us now? Voices from the margin: using Indigenous methodologies in geographic research published June 2007 in Geographical Research.
There are overwhelming commonalities in the literature on Indigenous methodologies and Indigenous research agendas including four unwavering principles: relational accountability, respectful representation, reciprocal appropriation, and rights and regulation.

**Relational accountability** describes the concept that Indigenous people share about their dependence on everything and everyone around them, casually referred to as “all our relations, be it air, water, rocks, trees, animals, insects, humans, and so forth.” (Steinhauer, 2002, 72) It implies that all parts of the research process are related, from inspiration to expiration, and that the researcher is not just responsible for nurturing and maintaining this relationship but is also accountable to ‘all your relations’.

**Respectful (re)presentation** requires the researcher to “consider how you represent yourself, your research and the people, events, phenomena you are researching.” (Absolon and Willett, 2004, 15) Respect is not just about saying ‘please’ or ‘thank you’. It’s about listening intently to others’ ideas and not insisting that your ideas prevail. (Steinhauer, 2002, 73) It’s about displaying characteristics of humility, generosity, and patience with the process and accepting decisions of the Indigenous people in regard to the treatment of any knowledge shared. This is because not all knowledge shared is meant for a general audience.

**Reciprocal appropriation** is a metaphor by N. Scott Momaday (1976) that describes the attitudes of Native Americans and the environment. Specifically, it is “appropriations in which man invests himself in the landscape; and at the same time
incorporates the landscape into his own most fundamental experience.” (Momaday, 1976, 80) It recognizes that “all research is appropriation” (Rundstrom and Deur, 1999, 239) and requires adequate benefits for both the indigenous people and the researcher.

Rights and regulation refers to research that is driven by Indigenous protocols, contains explicitly outlined goals, and considers the impact of the proposed research. (Smith, 1999) This is meant to ensure that the research process is non-extractive and recognizes Indigenous peoples’ intellectual property rights to ‘own’ the knowledge they share with the researcher and maintain control over all publication and reporting of that knowledge. It demands that the entire research process be a collaboration and any publication or announcement of ‘findings’ must be written in understandable language and shared with and receive the endorsement of the Indigenous community.

Indigenous methodologies are not merely “a political gesture on the part of Indigenous peoples in their struggle for self-determination.” (Porsanger, 2004, 8) They are necessary to “reframe, reclaim, and rename” (Steinhauer, 2002, 70) the research process so Indigenous people can take control of their cultural identities, emancipate their voices from the shadows, and recognize Indigenous realities.

Embracing Indigenous epistemologies is a critical element of Indigenous methodological research. As with Indigenous methodologies, I acknowledge that there is no singular definition of Indigenous epistemologies as knowledge is not just socially constructed from how it is acquired, selected, and stored to how it is symbolized and transmitted, it is also, “local ... located ... situated and situating.” (Turnbull, 2003, 19)
Furthermore, what differentiates one society from another are the strategies they employ to understand their own places. (Oliveira, 2006, 6) Therefore, please consider this a non-exhaustive presentation of commonalities within the literature.

There is an overwhelming number of authors, international and interdisciplinary, that acknowledge the holistic framework of Indigenous epistemologies. (Aare, 2003; Abdullah and Stringer, 1999; Abeslon and Willett, 2004; Akan, 1992; Atleo, 2004; Battiste, 2000; Battiste and Barman, 1995; Bishop, 1996, 1999; Bourke and Bourke, 2002; Cajete, 1994, 2000; Cardinal and Hildebrandt, 2000; de la Harpe, 2005; Deloria, 1995; Ermine, 1995; Fixico, 2003; Graveline, 2000; Hernandez-Avila, 1996; Kovach, 2005; Lamb, 2003; McGregor, 2004; Miheesah, 1998; Moody, 1993; Moreton-Robinson, 2006; Porsanger, 2004; Semali and Kincheloe, 1999; Smith, 1999; Steinhauer, 2002; Stewart-Harawira, 2005; Struthers, 2001; Sue and Sue, 1990; Thaman, 2003; Wautleaher, 1998) it is a holism that goes beyond the empirically based concept of a unified physical universe. And while holistic thinking that incorporates the unity of spiritual and physical worlds has had a role in some parts of Western thinking, it is "doubtful that holistic thinking could be considered an overriding theme in patterns of Western thought ... [when there is a] ... tendency to compartmentalize experience and thus assume that some parts have no relationship to other parts." (Atleo, 2004, xi-xii)

From an Indigenous perspective, research, the search for knowledge, is considered a spiritual journey. In Indigenous epistemologies, "the greatest mysteries lie within the self at the spiritual level and are accessed through ceremony." (Sinclair, 2003) The
spiritual aspect of life is as important to the search for knowledge as the physical and can only be accessed through prayer, ceremony, vision quests, and dreams. Knowledge received through these means is a reflection of the Indigenous perception of “living in a sea of relationships. In each place they [Indigenous peoples] lived, they learned the subtle, but all important, language of relationship.” (Cajete, 2000, 178) These kinds of practiced beliefs nurtured over generations created an intimacy with each place, its animals, plants, and geography. It is because of this intimacy with place that many Indigenous academics believe “the most welcomed researcher is already a part of the community, … understand[s] the history, needs, and sensibilities of the community … focuses on solutions, and understands that research is a lifelong process.” (Crazy Bull, 1997b, 19)

However, I don’t believe Indigenous methodologies privilege Indigenous researchers because of their Indigeneity. In some cases, there are different expectations from Indigenous communities working with Indigenous researchers with an ‘insider’ view. Creating methodologies that only apply to Indigenous researchers is laying fodder for more essentialist arguments. While I am fairly confident that most Indigenous researchers will already naturally hold themselves accountable to the principles outlined herein, I’d much rather see Non-Indigenous researchers working with Indigenous communities have the tools they need to ensure their research agendas are ‘sympathetic, respectful, and ethical from an Indigenous perspective’. Thankfully there is encouraging literature to this effect. (Bourke and Bourke, 2002; Crazy Bull, 1997a; de
Before I end this section I would be remiss if I didn't clarify the differences between research done within an indigenous context using Western methodologies and research done using indigenous methodologies. These four differences were identified in the discussions in the indigenous methodologies sessions at the AAG conferences (2004-6) and the following discussion incorporates other social science references that reinforce these claims.

**Accepting/Advocating of Indigenous knowledge systems** - The main difference between these two approaches to research is the acceptance and adequate representation of a knowledge system that does not necessarily conform to academic standards. Indigenous knowledge systems are poly-rhetorical, contextually based, and rooted to a specific place and time. Moreover, metaphysical phenomena are highly regarded and integral to the learning process. For Indigenous communities their oral histories, narratives, and spiritual practices and rituals are important means for knowledge transmission. They contain numerous nuances that only certain community members are privileged to understand. Attempting to decipher this rich code and adequately represent it requires the researcher to become an advocate of Indigenous knowledge system and at the very least incorporate the 'indigenous voice' in their work. In some cases this even means co-authoring with community scholars. (Absolon and Willett, 2004; Agius and Howitt, 2003; Akan, 1992; Cardinal and Hildebrandt, 2000;
Positioning of the Indigenous community members and the researcher in the research - The manner in which researchers position both themselves and the Indigenous people in the research is another difference. More often than not Indigenous people are given diminutive labels such as ‘subjecte’ or ‘informante’ instead of ‘collaborators’ or ‘partners in theorizing’. While there has been a shift in recent years to acknowledge the continued marginalization this position maintains, this type of research is still being conducted, especially in areas where positivist research reigns supreme. (Battiste, 2000; Bishop and Glynn, 1999; Crazy Bull, 1997b; de la Harpe, 2005; Ermine, 1995; Rundstrom and Deur, 1999; Semali and Kincheloe, 1999; Smith, 2000a; Thaman, 2003)

Prior to the rise of cultural studies in academia, geographic researchers did not regularly indicate their own personal biases in their research. It may have been assumed that all ethnographic research was done from an outsider’s perspective looking in, but each person has numerous events in their lifetime that shape their perception and biases both their ability to relate to Indigenous communities and their representation of the research they are conducting. Geographic researchers have become more aware of their outsider-ness whether it has to do with social status, gender, race, or sexual orientation. Howitt and Stevens provide some insight to positioning oneself when conducting cross-cultural research. It begins with:

...a critical awareness of how research is shaped by relationships, power, and ethics. Researchers also can make an effort to work in
more culturally-sensitive ways, prepare for research by learning
the local language, interact with Indigenous peoples on their terms
in their own social/political community venues, and become
informed about local concerns, seek local support and consent for
research, and honor local cultural research protocols and
negotiated research agreements. And they can change the
nature of their research by making Indigenous participation
integral to it. (Howitt and Stevens, 2005, 10-11)

Determining a research agenda - Geographic research in Indigenous communities
is usually done because someone has funding to study some physical or cultural
phenomenon with little regard to the needs of the community. (Abaclon and Willett,
2004; Battiste, 2000; Bishop, 1997; Crazy Bull, 1997b; Grenier, 1998; Hodge and
Lester, 2006; Moody, 1993; Forsanger, 2004; Semali and Kincheloe, 1999; Sinclair,
2003; Smith, 2000b; Steinhauer, 2002) At a recent geographic conference, a
researcher presented statistical data about particular medical problem area for an
Indigenous population. This researcher was hoping to get government funding to 'help'
those communities 'in crisis' but never once went out to those communities to
investigate the cause of the problem. This researcher's agenda had nothing to do with
the needs identified by the community. Furthermore, a later discussion with this
researcher revealed the impassioned, "I really believe in what I'm doing. These
communities need help and I'm doing my part to help them." It was as if this researcher
truly believed academic knowledge production must be used to benefit the community ...
whether they wanted it or not.

Directionality of sharing knowledge - This leads to the last area of differentiation,
knowledge or 'new' ways of incorporating existing knowledge, researchers don't often think about sharing their archival research with the Indigenous communities they are working with. I have heard numerous stories shared in the AAG sessions of researchers going into Indigenous communities with reports of past research done by other scholars that community members have no knowledge of even though some of the people in the report are family members. They are always grateful to receive these pieces of information but it seems odd to me that they are unaware of either the existence of the research or the involvement of family members. In one instance I delved further and found that the family member remembered the other scholar but never heard back from them and had no idea their participation led to the report being shared.

Sharing knowledge has to go both ways. (Abdullah and Stringer, 1999; Bishop and Glynn, 1999; Crazy Bull, 1997a; Harrison, 2001; Heise, 2002; Ivanitz, 1999; Klevit, 2003; Miheuah, 1998; Rundstrom and Deur, 1999; Steinhauer, 2002) Giving the Indigenous communities copies of all the archival documents being used in the research is vital to building rapport and rectifying past transgressions. Furthermore, it really should go without saying, but to be clear, allowing the Indigenous community participants to see the final draft of the work they have helped the researcher produce is equally vital. It may be difficult for academic scholars to be 'judged' by both a panel of Indigenous community members and a group of academic peers, it may be even more difficult to adequately write for both audiences, but it is necessary to do so.
Methodologies: Indigenous and Exogenous

The research methodology here falls short of being considered Indigenous methodology as outlined above because the Hawaiian community in Kealakekua did not participate in the initial design of the research objectives. This is partly due to my not knowing much about Indigenous methodologies when I set out begin this research. However, I did share these objectives with my key community collaborator, Aunty Moana Kahele, and the handful of community collaborators with whom I met. I listened to their concerns and conducted the research in a manner consistent with the other principles described above. Aunty Moana agreed that knowing the stories of the place names would help people understand their cultural importance and maybe that would help some of them respect the place as more than just a commodity.

It is important to note that this research is an illustrative case study of the Hawaiian performance cartography of storytelling. It is based on my interaction with a single community member, Aunty Moana Kahele. Although I did interview other community members, those conversations are not included in this research. This is because most of those conversations were not pertinent to this research. Also, many of the community members I interviewed redirected me to other more knowledgeable community members, specifically Aunty Moana Kahele or Uncle Billy Parie. While I did meet Uncle Billy Parie, he was dealing with family matters and was not available for interview during the time period this research was carried out.
Thus, the majority of the information presented in this text is from a single source. However, Smith notes that

...there is a very real constraint on access to knowledge when working with elders. There are also protocols of respect and practices of reciprocity. The relatively simple task of gaining informed consent can take anything from a moment to months and years. Some indigenous students have had to travel back and forth during the course of a year to gain the trust of an individual elder, and have been surprised that without realizing it they gained all the things they were seeking with much more insight, and that in the process they gained a grandparent or a friend. (Smith 1999, 136)

You may also recall Pukui's comments on her own experiences in the field. Some stories could not be told in the presence of those people who did not have the right to listen. Other stories were only revealed after the inquiring person 'proved' themselves worthy of the privilege of learning the story.

Furthermore, storytelling is a cultural practice that is taught to a select few. While I make no claims to having mastered this cultural practice, I know a person must dedicate themselves to 'the learning experience' without distraction. There is no way an outside researcher can qualify for such an experience if they are not completely focused on learning from one person at a time. In fact, it may very well be considered disrespectful to learn from several sources at once. As such, I dedicated three years to learning the stories Aunty Moana Kahele chose to share with me.

I began by establishing a rapport with Aunt Moana Kahele while attending Aunty Margaret Machado's Hawaiian Massage academy in the summer of 2002. I maintained contact with her throughout the rest of the year and re-established rapport during the
summer of 2003. In the meantime, I conducted archival research to record place names in an orthographically correct digital database in order to enhance the dialogue. Initially, I designed a database to provide a format for Geographic Information System (GIS) analysis. However, as the archival research proceeded, it became apparent that the majority of recorded place names could no longer be located. Nonetheless, I did record all place names I found, unless I was specifically asked not to record them, along with their textual sources, translations, and/or stories in the database in hopes it would provide for both quantification and qualitative analysis. A sample database input page is shown in Figure 52.

<table>
<thead>
<tr>
<th>ID</th>
<th>Place Name</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Hali'ilua</td>
<td>Moana Kahele Manuscript</td>
</tr>
<tr>
<td></td>
<td><strong>Ka Inoa Wahili</strong> (Place Name Corrected)</td>
<td>Ano (Type)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loke (pool)</td>
</tr>
</tbody>
</table>

**Unuhi Pill (Literal Translation)**

**Unuhi Laula Loa (Figurative Translation)**

**Mo'olelo (Story)**

A little pool with a flat rock inside. Shaped like a huge bathtub, this is where the women of the Ali'i clan took their bath. The water in this pool is cold. It used to be very clean when a Hawaiian family used to live there by the name of Lanui Kaneac. He use to keep those areas clean. But when he died nobody took care of that place. The last time I seen that pool, it was all overgrown with Kiawe trees around and huge branches fell across the pool. Lots of rubbish [was] inside the pool. Aloha ino keia wahi.

**Ko'u Mana'o (My Thoughts)**

Figure 52. Place names database sample page. (Louie, 2002)
By the time I met with Aunty Moana in the summer of 2003, I had visited and attained copies of pertinent documents, where they were available, from the State Archives, State Survey Office, Bishop Museum Archives, Hamilton Library, the State Library, the Mission Houses, and the Kona Historical Society. I transcribed the testimonies to the Boundary commission highlighting all Hawaiian words in different colors to distinguish those Hawaiian words that were people’s names from place names. I also brought USGS topographic maps and other digital data to facilitate our discussions (a. k. a. open-ended dialogues). When I gave Aunty Moana copies of all the work I had amassed she carefully reviewed everything and said, “This is important work.” I agreed and we began our discussions.

I conducted our discussions in English and, at times, Aunty Moana would say a few phrases in Hawaiian, asking if I understood what she said and most of the time I did understand her. I would respond with my limited language skills and usually finished off in English. This naturally set the tone for our rapport. It did not stop her from using Hawaiian phrases; she just did not expect me to respond in Hawaiian.

I initially set out to digitally record our discussions, both audio and video. However, Aunty Moana preferred that our sessions be conducted without being taped. Instead, she referred me to another video done by Kamehameha Schools Land Asset
Division\(^{60}\). In one instance, I was told specifically that the stories being shared were for me to remember and not for others to know on a tape.

Our discussions continued in person for a few months. As she spoke of different places, she weaved in genealogies and personal experiences. After about three or four sessions, I started asking if the person she was talking about was the same one from a different story, stating, “you know the one where...”, finishing the sentence with the story she told me. Occasionally, she corrected me emphasizing points I was certain I hadn’t heard before. It was about this time that I shared the dreams I had with her about Kealakekua and Kapukapu\(^{61}\). As a result, our discussions became more intense. I literally felt myself transported into the stories she told...and I didn’t even have to close my eyes to imagine them.

After a while our discussions took place over the phone, partly because I had to return to O‘ahu and partly because she was very busy working on other community matters. After each one of our discussions I wrote down as much as I could remember in personal journals. However, I remember thinking that I didn’t want my writing things down to take away from the experience of remembering the narrative...from experiencing the performance. I reminded myself that these notations were not meant to be a substitute for the performances. They were meant to aid me in writing this manuscript.

\(^{60}\) I was able to get a copy of both the report done by Kumu Pono Associates and the video done by Nā Maka O Ka ‘Aina.

\(^{61}\) See the next section on “Choosing one another”.

218
By the summer of 2004 I had received two grants to complete my research; one from the Ford Foundation and the other from the National Science Foundation. I decided to try to find other knowledgeable community members willing to share their stories and life experiences. By this time I had acquired a copy of the Kamehameha Schools report and video and attempted to contact key participants. I knew I couldn’t just ‘cold call’ these people and asked for people I knew to help introduce me to these participants. My efforts were unsuccessful until the fall of 2005.

I invited Kapāl Oliveira to spend the weekend with me in Kona in order to introduce me to those community members she knew from her summer language camps. The weekend was magical. Not only did I finally get on the bay riding in a catamaran outfitted to look like a double hull canoe, I met Sparkie Ewing. Sparkie was born and raised in South Kona and took me under her wing introducing me to everyone she could think of. I met more people in four months than I had in the nearly eighteen months on my own. Although, I did not get many more stories about place names in the area I was working in, I certainly learned a lot more about the people living there.

The most valuable person Sparkie introduced to me was Barbara Nobriga. Barbara is a fourth generation rancher in Kona. She learned ranching experience from her grandmother, Noenoe Wali of Kawanui, North Kona and continued with her mother, Kapua Heuer. She has traveled across the entire island on horseback along mauka trails and is very knowledgeable about mauka place names. Unfortunately, many of the place names she helped identify and related stories about were not in this study area. I
recorded them anyway, in a different database and made a mental note to myself to reconnect with her some day. Hopefully, I'll be able to see the island from her perspective; on a horse looking down the landscape from the mountains instead of from the coastline or along the roadways.

Aside from determining a research agenda prior to working with the community, I complied with the Indigenous methodologies principles summarized in the previous section and maintain this research is NOT about using Western methodologies on an Indigenous topic. The previous chapter on “Hawaiian performance cartographies” not only recognizes and accepts the existence of Hawaiian knowledge systems; it advocates such knowledge systems form the foundation of Hawaiian cartographic traditions. I made copies of every piece of information I acquired and shared them with Aunty Moana ensuring that knowledge was flowing in both directions. Most importantly, I clearly establish my outsiderness position in this research and allow for the voices of the community collaborators to be heard in the next chapter on “Through their eyes, with their voices.”

CHOOSING ONE ANOTHER

Although having a well known and very deeply respected person, Aunty Moana Kahele, willing to share the stories of Kapukapu could be seen as reason enough to conduct this research, I acknowledge that, for indigenous people, the search for knowledge is much more than a physical task. It is also a spiritual learning. I continue to hear many stories of academicians doing research on Indigenous people or in Indigenous
communities for research sake without bothering to ask if either the people or the place could benefit from the research. I didn’t want to be one of those people and while I knew Aunty Moana wanted to work with me and wanted to share her knowledge, I just wasn’t sure the place was ready to share itself with me.

So, I did what came naturally. I prayed for a sign, a vision, a dream, anything that would let me know that it was pono (proper, righteous) to do this research, to learn about the intimate details of Kapukapu. Thankfully, the answer came in the form of several dreams over several weeks of which I will share two. In the first I was running, playing with a young Hawaiian boy in a wet forest. I was chasing him on a worn path, both of us laughing as we took turns hiding with the chance of surprising the other unawares. We decorated each other with flowers and ferns picked along the way. We climbed trees, made bird calls, picked and ate fruit. By and by we reached a Hawaiian community near the shoreline. There were many hale, men fixing fishing nets, women repairing kapa. Although the people noticed us, they returned to their work speaking to each other … in Hawaiian.

That was certainly strange, because although I passed my language requirement by taking a third year of Hawaiian language, I still don’t feel confident in my ability to speak Hawaiian and am only somewhat confident in my ability to comprehend oral communication. So, hearing them speaking Hawaiian and understanding them in my dream was strange in retrospect. Nonetheless, no one stopped either the boy or me
from playing. No one scolded us for making too much noise. No one warned us not to go over the ridge.

I remember feeling like this was a new place to me. Like I was the new kid and this young boy was from this village. I felt that he must know the right places to go and not to go, because I certainly didn’t feel like I knew. We continued to play winding our way up the mountain playing hide and seek in empty caves. The higher we got, the air began to taste funny, and all of a sudden we were at the ridge and we were very quiet. The little boy’s eyes were in distress as he motioned for me to meet him on the summit. I slowly joined him and saw the reason for his anguish. On the other side of the ridge was the modern development Kona has become with houses, roads, industrial warehouses, and an ocean filled with motorized fishing boats. Gone were the trees, gone were the birds, and gone were the people and practices of the people of old.

Without saying a word he communicated to me with a long hard glare and I knew what I was supposed to do. As he returned to his village, his time, I stood and walked the summit toward the ocean, the village on one side, the modern development on the other. These two incongruent cultural landscapes were separated by this ridge that I walked like a fence until I reached the ocean. I sat on the pali pondering what this all meant as the sun began to set. I realized I was at a juncture in time and place. I knew what was coming for the village. I knew the cultural landscape that celebrated a Hawaiian understanding of life would soon be engulfed and could quite possibly be
forgotten ... unless someone chose to remember and not just remember but remind others of what existed here before it became thoroughly swallowed up.

That was a tall order, a hefty responsibility that I was still not sure I was chosen to carry out. So, I did the unthinkable. I dove off the pail into the ocean below. Now anyone that knows me well knows of my fear of the ocean; and somehow I maintained that fear in this dream. But I remember thinking that if it was the right thing to do, I wouldn't die. I had heard somewhere that if you die in your dreams, you are quite possibly dying, and I didn't want to die. I just wanted to know for sure that this was right.

I didn't die. I remember surfacing rather relieved. I was treading water when I saw probably my greatest fear approaching, a huge dorsal fin of a shark. I began to think I was going to die. But then I didn't feel like fleeing. I remember thinking if this was it there was nothing I could do. Then I realized I was surrounded by all the creatures in the ocean, turtles to the left of me, dolphins to the right, and various fish scattered between them including rays and eels. As the shark slowed and settled in front of me the circle was complete. The awe I felt for all these ocean creatures to surround me as such was so great, the meaning too much for me to comprehend, the power too immense to perceive. I awoke, but as I did I remember looking down seeing it all, the circle, the village, the modern development, and me.
By the time I had my second dream, I had a chance to speak with someone about my fears of the ocean. I expressed the reasons and the rationale for my fear and was given very good advice.

Now, here is where fear lives: "In our minds". Fear, as shaped by experience, becomes a conception that is difficult to change by thinking about it. You must return into your body, get out of your mind...and take small steps into different oceans. It's a good metaphor for your life. Stay in your breath and breathe deeply...slowly, with purpose and clarity. Fear is an energy that we fuel. Paint it red so it becomes unmistakable and obvious...then deconstruct it with your actions. One act at a time. But here's the trick, one can't learn how to play tennis by reading a book. You won't push through this fear by thinking about it. You can do it only by doing it. (Meyer, 2003b, 112)

I did just that. I started taking small steps to get over my fear and began visiting the ocean more often and staying in the water longer each visit. At first the slightest touch of limu (seaweed) or other 'foreign' object would send a bolt of terror through my body. Eventually, I got over the terror of things touching me in the ocean and started working on feeling comfortable treading water. This is a good place to tell you about the second dream I will share, because it starts with me treading water in the middle of Kapukapu.

In this dream I have no idea how I got to be in the middle of the bay. There are no boats around me, no kayak, and no people even, just the calmly lapping sounds of the ocean all around me as I tread water looking west into the Pacific Ocean. In this dream I am not afraid of the ocean or of not being able to feel the earth under my feet. As I turn to my right, I see the flat of Ka'awaloa and imagine the all'i that made their residences there. It seems like an excellent place for affairs of the government. It's near a
permanent aquacultural food supply, has access to agricultural fields up mauka, has
easy, quick access to launch an attack or flee from one, and has several brackish water
holes.

As I continue to turn to my right, Kapaliomanuahi rises from the Ka‘awaloa flate
and becomes Näpalikapuokeoua. The sight is immense and I realize that where I’m
treading water, the ocean floor is probably as deep as those pali are high. I continue to
turn to my right facing east looking toward the beach. I imagine the shore once lined
with sand and small hale for the kahuna that lived and practiced here. Still turning to
my right I see Hikiau Heiau and realize it would have been the tallest structure on the
beach, but is now dwarfed by modern homes that continue to line the coast as I turn to
the south. It is at that moment that I sense the presence of another. It’s Kua, my
‘āumakua from Ka‘ū, and the namesake for Kealakaua.

As I turn to face him, it’s as if I knew that’s the reason I was there treading
water. I was waiting to meet him. In retrospect I am really surprised I was not afraid of
either the treading of water or the arrival of a shark or meeting such an important family
deity. I turned completely and said, “Ah, there you are.” He swam by nudging me and I
took it as a sign to hold on, which I did. It’s amazing that you can breathe underwater in
your dreams. He gave me a tour of the bay, showing me the many crevices and
underwater caves. I saw underwater ko’a (cairn), limu, and lobsters. It was beautiful.
When it was time to go, he somehow looked me in the eye and I recognized that look. It
was the same glaring look the little boy gave me at the summit. They were one and the same.

It was after this dream that I finally felt this research was the right thing to do.

I, of course, shared these experiences with Aunty Moana and our talks became more intense. She would still take quite a few minutes talking about her aches and the demands others were placing on her time, but she more quickly moved in to telling me personal stories and experiences she had in connection to the spiritual landscape of Kapukapu and its surrounding areas. I do share a few stories that she shared with me, but those personal stories belong with her family and the community members. I am encouraged in knowing they will keep the tradition of sharing stories with their children and that the cultural landscape of this area will continue to flourish.
CHAPTER 5 — THROUGH THEIR EYES, WITH THEIR VOICES

If we think of oral tradition as a social activity rather than as some reified product, we come to view it as part of the equipment for living rather than a set of meanings embedded within texts and waiting to be discovered. One of the most trenchant observations of contemporary anthropology is that meaning is not fixed, that it must be studied in practice — in the small interactions of everyday life. (Cruikshank, 1998, 41)

Sharing the stories from community members is an integral component of understanding the cultural landscape. Hearing the community members sharing their experiences is essential to achieve the goal of this chapter. Since I am not able to supply footage from my own interview process, I have provided a DVD in Appendix A with video interviews from Kumu Pono Associates’ (KPA) conducted by Kepā Maly and filmed by Nā Maka o ka ‘āina and a portion of a video entitled Kona Hema also filmed by Nā Maka o ka ‘āina. While the following text provides concise consolidated transcriptions and experiential summaries, the video files on the DVD add another level of sensual experience allowing each of you to experience the interviews for yourself. Although you cannot interact personally with the community members, you can become an intimate part of the performance by locating yourself in the story telling process.

This chapter presents twenty of the 166 unique place names my research uncovered, 34 from map sources and 132 from descriptive sources. There is no alphabetic or geographic order to the way I present them. I decided to share them the same way I experienced them unfolding before me on my journey of intimate acquaintance with Kapukapu. The more I learned specific nuances, the more my ‘study site’ became
animated and anthropomorphized making the term, 'study site', derogatory and
distancing. As I sat on the floor of Aunty Moana’s living room, I had no idea there was
actually a pattern being revealed. She began with the story of the Kealakekua as she
heard it passed down from generation to generation. It was captivatingly different and,
through the story, I realized I was personally, if not genealogically, connected to the
place. I was hooked. She then elaborated on the misrepresentations of seven names
that have been changed and disseminated in textual and cartographic sources. Lastly,
she breathed life into Kealakekua revealing nine intimate stories of sensual geographies.

After all was said and done she handed me a copy of her book, Clouds of
Memories. She explained that she wrote all these stories down as she grew up listening
to friends and family ‘talk story’. Since it was her last and only copy, I refused to take it
and later acquired a copy elsewhere. In the last few months of her life, I visited her at
the Kona Community Hospital and discovered someone had stolen her copy. She longed
to give a copy to her adopted daughter. I made her two copies hoping she would agree to
have one copy left at the Hulihe’e Palace library. She agreed and asked if I would make
her adopted son a copy as well ... so there would be no hard feelings between him and her
daughter. I handed over her son’s copy at her funeral and watched as friends and family
members passed it along reading selected stories in her handwriting. They were in quiet
awe of both her accomplishment in completing the manuscript and her ability to
illuminate the cultural landscape in a light they had never before experienced.
On what was to be my last visit with her, I asked if I could scan and include some
of her stories in this manuscript and she agreed to six of them. Of the twelve other
stories she shared, she agreed I could transcribe seven of them from her unpublished
manuscript, Clouds of Memories\textsuperscript{62}, and, after careful consideration and repetitive
training, allowed me to include five stories from my recollections. The last two stories I
did not experience with her. Instead, I found them in transcribed oral history interviews
from community members I did not interview. I've included them because they add more
depth to the sensual geographies that make up Kealakekua. Before we begin this
journey, let me introduce the story tellers.

\textbf{Whose Voices?}

This section is organized according to their order of appearance in the next
section on "The places, their names, and significance". While I only interacted with Aunty
Moana, I've included the other knowledgeable community members in this text because
they add dimensions to the stories Aunty Moana shared with me. Furthermore, their
participation in interviews conducted by Kepä Maly provided recorded documentation of
those storied place names they agreed could be used for scholarly work such as this.

\textsuperscript{62} The book was published after her death.
Moana Kapapakeali'ioka'alokai "Mona" Kapule-Kahele (Aunty Moana), Figure 53, was born at Kapahukapu, Kahauloa-Nāpo'opo'o, Kona Hema in 1921. She was raised by her kūpuna at Kahauloa and trained by her kupunakane, Kalokuokamaile, in the native arts of healing and ho'oponopono. As she grew up she listened to her family and other community members telling stories of the Kealakekua area. She recorded many of these stories on to whatever scraps of paper, old christmas wrappings, and leaves she could find. She forgot they existed when she got married to Abel Kahele and moved to Miloli'i to live with him. Her mother saved them all in a trunk and later asked if she wanted them back. She was amazed her mother kept all those scraps and began sorting through them and writing them down in school notebooks. She has participated in
several oral history interviews, some of which have been recorded to audio and video and included in the accompanying DVD.

**William Kalikolehua Pānui**

Uncle William Kalikolehua Pānui was born at Keʻei, Kona Hema in 1928. He was raised by Louie Kauanoekauikalilokahalopuna Pānui and Annie Kahaiulu Kauhi-Pānui, his adoptive parents. He learned about Keʻei’s history and cultural landscape from his father, noted historian of Keʻei-Nāpoʻopoʻo. Together they would walk the land with his father pointing out various places of historical value. (Kumu Pono Associates, 2003, A-5)

Unfortunately I did not meet with Uncle William Pānui. The meeting Kapā Oliveira set up for us did not materialize as other pressing matters emerged and I was not able to reschedule. Thus, all of the stories he shared in this chapter are derived from his interview with Kepā Maly and other community members included on the accompanying DVD.

**Katie Keliʻi Kalā-Andrade**

Aunty Katie Keliʻi Kalā-Andrade was born at Kahauleo, Kona Hema in 1936. She was raised by her hānai parents Milika’a and David Kalā and lived in Keʻei all her life. Her hānai parents instilled in her Hawaiian values and various cultural practices associated with fishing and working the land. (Kumu Pono Associates, 2003, A-2, A-128) I did not
know of nor did I attempt to contact Aunty Katie Keli'i Kalā-Andrade. As such, her 

inclusion in this chapter is minimal.

Maile Ke'ohohou-Mitchell

Aunty Maile Ke'ohohou-Mitchell was born at Pōhakupa'akai, Kona Hema in 1930. She is Aunty Moana’s younger cousin through her mother, Annie Pēnioni Kapule. Her father was David Ke'ohohou. From her parents and kupuna, she learned the traditional lore of the Kealakekua-Ke'e regions, and various practices associated with fishing and crop cultivation. (Kumu Pono Associates, 2003, A-2, A-35) Unfortunately, as with Aunty Katie Keli'i Kalā-Andrade, I did not know of nor did I attempt to contact Aunty Maile Ke'ohohou-Mitchell and, thus, her contribution in this chapter is also minimal.

The places, their names, and significance

The first four storied place names in this section were shared while I was attending Aunty Margaret Machado’s Lomilomi School. Aunty Moana found out I was interested in the place names of Kealakekua and as she started to tell the stories quite a group of people drew near sitting at the base of her wheelchair. The next five storied place names I learned sitting on her living room floor in a marathon three hour ‘talk story’ and the last nine were revealed during phone conversations over a period of a year. Although she became quite ill and ended up in the hospital for a few months, she would always tell me how she needed to get back to telling me the stories, because getting them right were so very important to her.
As you read through these stories you will notice that I have not grammatically corrected Aunty Moana’s manuscript or altered these interview transcriptions for better comprehension. I feel that keeping the words and sentence structure in its original form provides an added dimension of experience. Besides, Aunty Moana was resolute that no one change her words, “put it like it is in the text. That’s how I remember it, that’s how I wrote it, and that’s how I want to share it.”

Kealakekua-Kaiakekua

Figure 54. Photo of Kealakekua. (Louie, 2005)
The following scanned images are from the manuscript of Aunty Moana. They are included here with her permission but should not be copied out of this text without permission of her family. They are the Hawaiian and English versions of how Kealakekua and Kaiakekua were named.
Kai-a-ke-Kia
Kualakekua - The Pathway of Kua

Iloko, o ma la kahiko, ka po'e o ke la manawa, loa'a no lakou akua no na mea a pay. He loa'a lakou akua no Kalani, ka honua, na mea pili ana ikaaina a me ka kai.

Oiai oke laua'kahi. Loa'a no ke ia akua mano. He ali'i mano no na mano a pau. Kupuna no oia no keka po'e o Kau. A he akua no, kekahe po'e, o Hawaii.

Ka ia akua, kuhea ia kona inoa o Kua-a-Wakea. Kona mau makua, o Wakea (makua kane) ame Papa (makua wai). O Wakea oia ka makua nui no na po'e ali'i a mena po'e kahuna-pule. O Wakea olelo ia, oia no ka kupuna oia lahay o Hawaii.

Mamuli oka modelo, o Kua, oe aku gia i kanaka manua. Aku i akua. No ka mea hiki no iia i ho'olole kona kino mano i kanaka a noko no like. Me iia po'e. Aka hiki no e like hou i mano. I kona make make no.

He nui no ma mea mai kai i han a o Kua no ka po'e kanaka. Ka hana o Kua, kele maka oia ika.
Hnikai maka moana a kumi na pae ana o Hawai. Mai Kau a kumi na pae ana.

Ia no Maluhia lihi oia, huli a ho'i ika ana o Hawai. Kom no pia ikei Kai melino o Kapukapu i hoolehua. Malei hoololi oia mai ka mau i Kaneka, hele oia maka po'e mai ia wahi, a launa pu me lokou.

Koha no ola ike po'e iloko i na pae hane like ole. Hele pu neke, po'e hawai a kokua no oia i loa ka ia. Mai kii no oia mai ia wahi.

Oka, iloko ohe mea, a Kau a'i no e hoolei ka po'e iia. Aoke no e niike i keia po'e no kea mai oia? Aoke no oia hahai ia lokou o wai oia. No ho oia neke mai kii. Na aloha ka po'e iia, no kona hana mai kii a launa pu me lokou.

Hiki nei kamuela e heele. Ana o Kua ia lokou, noho mea e ho'i ana via i Kau i hana ana.

Kali via e kokoke i na po'o ke ia maluwe oka alohi, hele via launa pu guke ka po'e a olelo via ia lokou. Na hiki mai Kuu nyama wa i ho'i a, a ke hagwi nei Kuu aloho meka iloko maiki ia o lokou. Na hele
au o nei ku i aloha ia buku a
pee loa. Sao via maka lihi 'kai, a
nei kona lea i o eu maka lihi 'kai.
Ku mana na no iva mai ana nei
ino 'ka meno.
Mamaa po o ka maka mai ka
pee, a kehi via iloko ia 'kai 'huili
via i 'ka poe a 'kau kona hina
iluna pea hi ia labou. "Ehui via a
liu iloko o 'ka 'kai. Ka mana na i pui
mai, he mano nei palene ole. Gia 'ka
mua i au i waho. E na poe mano,
ho'okena no labou maka aoa o "kia
a au like labou, waho a "%ka 'kia
i liu iloko o 'ka 'kai. Malai'a no, ma
wali'akou.
Mamaa o "kua i kono iloko oka
'kai 'huilo via iloko poe mai buku
ho'okena'akou no 'kau. Ho'oka mea e
hele mai ana no au e ike ia bukus
no 'ke "koli manawa. Mai buku
makou i hele iloko o 'ka 'kai, no ka
mea e ho'oke mea i ho'okeni ia
bukou. A liu via iloko o 'ke 'kia.
Gia 'ka manawa i wando 'ka poe
auwe, o "kua 'ka keia aole no "kandia."
Ma ho'ona hana malake ike 'ole 'ole
ka olu olu 'ole 'ka, heke makai nei
kealohe 'ka poe ia "kua. Kapa no
This next excerpt from Aunty Moana’s manuscript is not an exact translation of the above story but does express the important parts of the story.
Many people translate Kealakekua as the pathway of Ku. But however the question arises as to what god. There are quite a number of stories were written about Keala ke Kua. But this is the story I heard from one of my uncles who lived in the village, when he was a young man. He heard this story from one of the kupuna of the village. So here is the story.

First Kealakekua, not as Keala Ke Kua as sometimes heard among some people.

Long long time ago the Hawaiians people had lots of gods. The earth, heavens, plants, animals, sea, birds, birds house, pigs, chickens, trees, grasses, canoes, and man. In fact everything of nature had a god. But they kept the four main gods, Kane, Ku, Lono, and Kanaloa. To day known for tradition as the four major gods for their culture.

However, the people also had a god and a Great King of all sharks in the ocean. This shark god was known as Kua.

He was also the King Shark of Ku and the ancestor of some people of Kilauea, Hono. At times he can become a man without anyone suspecting anything. He does not hear any marks of any kind.

Kua traveled the waters from Kailua to Kona and around Hawaii and the other islands. On this return trip to Kailua he stops where always at Kapukapu, Rose for a nice rest before
returning to Kau.

On one of his trips he decided to spend some time among the people of Kapukapu. Changing himself completely to a manner and dress with the people, he received them with aloha and treated them well. He lived among the Planters, did everything what a Makahaina (commoner) did. From planting, fishing, building canoes and etc. Things he never done in his life, he was doing it now.

The fisheries loved him the most because he was good at catching fish. Anyway, was very cooperative and showed all his aloha to the people. Likewise the people treated him so well and showed their gratitude towards Kua. They didn't treat Kua like a stranger but as one of them.

Finally the time came when it was time to tell these wonderful people that he must leave them and return to his people. Upon this news, the people were so sad. They felt like a broken family, they beg him to stay on with them, but he thanked them and said, I will come to visit you some day. I had enjoyed my stay here. You treated me like a godling and not as a visitor let me leave you these words when the sun is golden, the horizon red and gold I will be here. However, you will be safe in these wa'ina of wherever and even your generations to come.

The people did not really cry. They feeling that Kua was King of the Aha'wai
Kua stepped into the water, cupping his hands over his mouth, he bent down and gave a booming voice like a chant only he knew.

Suddenly, there were two dark lines on the water. It formed two straight lines from the horizon to the shore. Kua stood still and watched. Even the people on land were all silent. They were wondering and whispering, what kind of man this is? He chanted over the water and there are two dark lines coming to the shore. Must be he is an ali; and all the canoe are coming. But as the dark lines touched the shore the people's voices sounded, " alas! this must he be god!"

Kua stood in the center of the two dark lines. He turned around and waved to the people. By this time the bottom part of his body was changing. Not saying a word, he dived into the water. When he appeared he was a huge shark swimming between the two lines of sharks. All swimming out towards the horizon as the sun was setting in the ocean. Now the people were sure, Kua was none other but the great king of the sharks. They were so happy that they had treated Kua with all their kindness and along.

For all the good deeds Kua did for the people, where he stepped into the bed the people marked that spot as Ke-Kua-Waters or Kua, and that where the whale stands at NapoPOP. The trails of pathways where he walked were named Ke Ala Ke Kua Pathway of Kua. As far as anyone seen bitten by sharks at NapoPOP, none that anyone knew or heard about.

This is how Ke Ala Ke Kua existed. Today,
After sharing this story of Kealakekua with me, I realized it was not like any other story about Kealakekua that I learned through published texts. Pukui, Elbert, and Mo'okini defines Kealakekua as,

Lit., pathway of the god. There were many heiau on the road from Ke-ala-ke-kua to Kai-lua; Thrum listed 40 (Restarick). It was believed that a god slid down a cliff here leaving an imprint, and that the gods often slid here in order to cross the bay quickly (Wilkes 90, 184). (Pukui, Elbert, and Mo'okini, 1974, 101)

The fact that Pukui, Elbert, and Mo'okini used Wilkes as a source should have made me suspicious to an erroneous entry. When I brought this to Aunty Moana's attention, she was quick to respond with her dislike of Pukui's misrepresentation of the names along the South Kona coast. She then referred to another erroneous entry from Handy and Handy attributed solely to Pukui,

Ke-ala-a-ke-akua is the correct name of this bay that lies between Napo'opo'o and Ka'awaloa on Hawai'i and belong to a huge ahupua'a (land division) that runs to the summit of Mauna Loa. This is how the bay received its name: Beside the sea stands the heiau of Hikiau and there the images of the gods of old Hawai'i were kept. During the time of the Makahiki some of the gods were carried by the priests on a circuit of the land or else they were taken where they were to be worshiped. Sometimes the gods that multiplied the food crops, the akua ho'olulii 'ai, were taken out and borne up the hillside and this trail taken by the priests and the
gods was called Ke-ala-a-ke-akua, or “Trail of the gods.” After a circuit of the island the gods were born again down the same hillside trail and taken back to the heiau of Hikiau. The sandy strip below is called He-one-o-ke-ala-a-ke-akua or “The sands of the trail of the gods.” (Handy and Handy, 1972, 373, italics in original)

As a result, Aunty Moana began telling me of seven other misrepresentations found in several other texts especially maps.

Kapukapu

Figure 56. Photo of Kapukapu from Highway. (Louie, 2003)
I had never known another name for this bay even existed and I'm sure the rest of the world will never acknowledge any name other than Kealakekua Bay because it has been written into history as the place where Captain Cook met his demise. Although he is hailed as the first European to discover the Hawaiian Islands, the people of this area attest to the Spanish being the first Europeans in Hawai'i.

Kūlou

Figure 57. Photo of Kūlou. (Image from hawaiiantrading.com/mae/hptco/keoi_beach-pan.html)
Aunty Moana told me, and my fellow students attending Aunty Margaret’s Lomilomi School the following story about a ‘lost’ Spanish ship and the petroglyphs the survivors etched into the rock to record their existence. Later, I found video and textual sources in an oral history interview she participated in with other community members conducted by Kepā Maly for Kamehameha Schools Land Asset Division (KS LAD). The video portion is included on the accompanying DVD. In the interview shown below, ‘WP’ is Uncle William Pānui and ‘MK’ is Aunty Moana Kahele.

(WP) In the sixteenth century, 1500s.
(MK) In 1525.
(WP) In 1525 mahalo, a Spanish ship was dislocated from the armada and, somewhere on the Kona coast, it shipwrecked. And there were only two survivors that reached land. And those two survivors happened to arrive at the beach area along Palemanō. And all the natives went down to the beach to see what was going on. These two came out of the water, and the first thing they did was kneel, kūlou, on the sand and pule. Apparently they were Catholics. The Spanish were Catholics. And so they knelt down to pray. A kapa ‘ia kēlā wahi o kūlou. [And that place was called Kūlou.]

(MK) ‘Ae, and that’s how the Spanish spread.
(WP) And aia ma’i, mamua o ka hale o aunty Margaret machado, he awa, a he pu’u pāhoehoe ma ka ‘ao‘ao ‘ākau. Ke hele ‘oe nānā ‘oe, he ki‘i kaha ‘ia l oloko o pāhoehoe. A’ole ‘ia he ki‘i Hawai‘i, a’ole, he ki’i Paniola. [And there in front of the house of Aunty Margaret Machado, there is a landing, and a rise of pāhoehoe on the North side. You go and look, there is an image etched into the pāhoehoe. It is not a Hawaiian image, no, it’s a Spanish image.] (Kumu Pono Associatee, 2003, A-151)

Also, I removed Maly’s vocalized responses in this quotation in order to concisely present the information.

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63 During the interview, Maly would nod and say, ‘ae, as a form of respect.
Aunty Moana told us her grandfather pointed out the location of where the ship sank and sometime ago some group of people came around asking for that information because they intended to conduct a search for the remnants to prove the Spanish were in Hawai'i long before Cook ever arrived. She told them where to find the ship even though she didn't need any proof or evidence. The stories and petroglyphs were enough to convince her.
Kapahukapu (The Forbidden Boy)

This cave was a big pool. Boiled up by a reef forming a wall from one side to the other side. When the tide is high, the sea water would flow over the reef, way and fill the pool. It gets very deep where the wall is formed. But when the tide is low, water in the pool gets very cold, and there is a little outlet at the mouth and where you can drink. The water, the upper tide is better the water tastes. Even though it also have or last a little brackish.

In the old days, this pool was set aside for the women of the Ali'i class. No commoners, Alii men or any other men can enter or bathe in this pool. A kapu was placed on the pool. So the name Kapahukapu came into use. Then when it came to my mother's time relatives who lived on the next lot broke the wall so it was much easier for the canoe to go in and out of this pool. Even my family and ourselves, use this cave to land our canoes. On each end of this cave is filled with children and older people. From this cave we would swim across to the rocks.

There is something strange about this cave. Children or older people were not sick, fevered or had bronchial or deep colds are been taken to this cave when the tide is low and the water very cold, and dipped or made to swim in this cold water.
I know for a fact this method did take place when I was a little girl.

My grandmother was told that I had asthma. She could not believe that, because no one had asthma in the family. My parents wanted to take me to see the doctor. But my grandmother refused to let me go to see the doctor. Instead, she scooped me up, carried me all the way to this lake, and walked right into the water carrying me. She dipped me a couple times and swam along with me. I cried and cried, because the water was too cold. After awhile I felt better. That first night was the best night I ever slept. No more coughing or looking for another breath of air.

My grandma took me a few times for a swim at that cove. After a few days I was fine. From that time on until to this day I never had a nagging cough. I also remember all the neighborhood kids were like wise treated at this cove.

Another incident happened to us. My son, who was four years old, was sick with a bad fever and a dry cough. I took him to the family doctor to see what was wrong with him. He said my son had the whooping cough and that I should take them to the hospital. At that
time we were living in Hilo. Driving home to pick up some things for my son to take with him to the hospital, when I remembered how sick I was and where I was taken. Instead of going to the hospital, I drove all the way to Kona to be dipped into that curative. My parents were so angry with me. They said that water is too cold to dip this baby. I might make him more sick instead. That didn't stop me. I took my son to Kapahu-kape and dipped him in that cold water. He rebelled, but after awhile I had a hard time to get him out of that water. We stayed in Kona for a whole week and every day he was in that water.

Soon it was time for us to return home to Hilo. The next day I took him to the doctor for a checkup, he was surprise, no cough or fever. As if my son was not sick at all. He thought maybe I must have given him some remedy. I said "no, I only took him to Kona (to a cave for a burn). After the second night no more cough. The doctor wanted to know where this cave was found. I told him where it was. Every year, he and his family would go to Kona just to visit that cave. He told me, "there must be some kind of elements or minerality in that cave, because it did help this family too. He didn't stop coming to
As I read this story in Aunty Moana’s handwriting, I recall that it is not the same one she told me in person. Although the difference doesn’t really distract from the story...
itself, it could affect the legacy of this place for the community that still uses it for recreation and healing. As such, I choose to hold back on sharing and to stand firm on Indigenous principle that not everything shared is meant for others to hear. I can still hear Aunty Moana saying, “What I write you can share, but what tell you is for you, not everybody.” She recognized how knowledge is disseminated in modern times as opposed to her childhood days. This next place name is evidence of her knowledge of the reach of modern day media.

**HALI‘ILUA**

On the accompanying DVD, you'll notice she doesn't say much more than it was a place where the Ali‘i Wahine would bathe and thus it was kapu for them only. She says a bit more in her text, describing it as, “a little pool with a flat rock inside...shaped like a
bathtub.” In her personal communications with me she also mentioned the name literally meant ‘two coverings’. It was so named because when the Ali‘i Wahine would bathe her attendant would lay out her kapa and moena beside the pond. Although, she does not provide this information in her handwritten account, sharing it, in this instance, is not a betrayal of trust because she did talk about it in her interview with Maly.

That means two coverings, or blanket like. The chiefess who lived at Ka‘awaloa, had an old lady that took care of her personal items. And when the ali‘i would go bath at the pond, her kapa and moena would be laid out on the papa by the pond. There was also a fine covering of ‘ilili in the pond, so it was like a lua, pond with a covering. (Kumu Pono Associates, 2003, A-254)

**LUALI‘ILOA**

Another body of water that is now known by a different name was the fishpond beside Hikiau Helau. Here are her words transcribed from her manuscript.

During the time when Kalani‘ōpu‘u was in the process of building the Hikiau Helau, he asked Hewahewa to build him a fish pond.

Hewahewa gathered certain men of the ali‘i clan than had this fish pond built. ‘Alā rocks were gathered from across the bay and was used to cover the bottom of the pond. Every rock were set in place and fitted a certain way until it was completed. Hewahewa lived across the pond. This pond was filled with fish for only the ali‘i to eat.

However, as the past died away, a Japanese couple had come here. They built a house on the north side of the fishpond. This pond was than neglected. This Japanese family cleaned it up and raised shrimpe in it. They kept this pond clean. Shrimpe were many. I remember the Japanese women going from house to house with her bucket of shrimp to sell. For ten cents you got a bowl full of shrimpe. My tutu use to dry them and only eaten when there were no fish in the house. When this couple, who than were old, had
died, again the pond was left neglected.

Sand began to fill the pond. Every time the sea got real rough or tidal wave, sand, debris, and more sand and much, rocks poured into this pond.

Some years ago, some people wanted to dredge that pond but instead the heavy equipment got stuck in the sand and mud that they had to get another machine to pull the others out. What is the mystery, nobody knows. Only the people of the pae knows what and how it was built. Perhaps it is better left that way for people to see or for those who remember seeing the fishes there. (Kahele)

Later I learned the Greenwell’s gave the pond the name Kalua’ōpae and that name became a part of the collective memory of the community. The next two place names are not part of Aunty’s manuscript. I learned while sitting on Aunty’s living room floor and later discovered them in KPA’s oral history interview.
Aunty Moana said this is the name for the land section known today as Ke‘ei.

She said Ke‘ei has no meaning, but Ki‘ei means to peep\(^\text{64}\). The people living in this area would run into their hale whenever canoes or people would arrive and only look out from through the thatching. (cf. Kumu Pono Associates, 2003, A-241) Aunty Moana believed the name got messed up somehow when it was written down. She expressed this in the KPA oral history interview included on the accompanying DVD. A little later, in that same interview, Uncle William Pānui remembered a different story that Aunty Moana acknowledged knowing.

(WP) The place name of Ke‘ei. The story I remember from my tūtū. There was a chiefess of Ke‘ei, and every day she and her attendant would go down to the kahakai and there’s a big poho, poho wai. They go down there and fill up that poho with water and that’s where she would wash her face, clean up, and wash her hair. And one day when she was down there with her attendants and she just happened to look down into the poho and her attendant peered over her shoulder. Ki‘ei, peered over the shoulder. When she looked down, she saw this other face in there. And she said “Well I though that only the high royalty, that face would show in there.

(KM) The reflection

\(^{64}\) The complete definition is “To peer, peep, as through a door or crevice.; to look slyly; to protrude forth.” (Pukui and Elbert, 1986, 147)
E ka, e ki'ei he lalo ilo. So kapa 'ia kāla wahi o "Ke'ei e lalo ilo,"
"What was up above, what was below, turned up side down. So
"Ke'ei, Ki'ei he lalo ilo. And so Papa Desha used that a lot in his
mo'olelo of Kekūhaupō. Whenever he mentioned "He kaiki o Ke'ei he
lalo ilo," in his mo'olelo.

(KM) 'Ae. And it had to do with a poho kai?

(WP) Poho kai.

(KM) That was makai here at...?

(WP) Yes. Makai of Palemanō, o ka helau.

(MK) Yes, that was the first place that had that name.

(KM) Ahh. So you heard of this as well?

(MK) Yes. (Kumu Pono Associates, 2003, A-164)

In the above quote, 'KM' is Kepā Maly. This story reminded me of the following

'ōlelo noe'au.

He Ke'ei 'oe no lalo ilo.
You are a person of Ke'ei, from far below.
You are of no consequence. Two chieftesses peered into a pool
together at ke'ei, in Kona, Hawai'i. The reflection of the one from
Hanauma appeared above that of the one from Ke'ei, so she made
this remark. (Pukui and Varez, 1983, 76)

Now I realize the three representations don't quite agree with each other and I

truly don't know which one is the 'correct' name, nor do I know the 'real' reason for the
area getting named. Although I've never heard anyone else refer to it as Ki'ei, it does not
mean it wasn't acknowledged as named Ki'ei in a different time. It just means the
collective memory of the people living here, with a few exceptions, recognize the name
Ke'ei.
According to Aunty Moana, this is the name of the area where Kamehameha defeated Kiwala'ō, popularly known as the Moku'ōhai Battlefield. She said it was given the name Mokuoka'e because the men who were killed in the battle were left to rot leaving a smear, ka'e, on the landscape. Aunty was adamant the description for Moku'ōhai in Place Names of Hawai'i was wrong. It states Moku'ōhai is the,

Site of a battle won by Kamehameha in 1782 over Kiwala'ō and Keōua, thus gaining control of Kona, Kohala, and Hāmākua, Hawai'i. The battle was fought in the village of Ke'e, near the bay listed on maps as Moku-a-Kae; this name is not known to local persons, and may be a garble for Moku'ōhai. Kiwala'ō's throat was slit with a shark-tooth weapon (lciomanō) by Kamehameha's ally, Ke'eaumoku (RC 121; Kuy. 1:38). Lit., 'ōhai tree grove. (Pukui, Elbert, and Mo'okini, 1974, 155)

Aunty Moana said she never heard of that place having an 'ōhai tree grove and besides the native 'ōhai is a shrub. She believes the map that listed the bay as Moku-a-Kae could have been a transcription error and Uncle William Pānui agrees, "Now, it used to be
Mokuokaʻe then somewhere along the line, it was changed to Mokuakaʻe. Just one letter, from Mokuokaʻe to Mokuakaʻe, and then change again to Mokuʻōhal. (Kumu Pono Associates, 2003, A-148)

It’s unfortunate that these last two place names are misrepresented in so many authoritative texts because they are probably the only resource the majority of people will use to identify the names of these places. I can only hope these oral history interviews and Aunty Moana’s manuscript can provide an undercurrent of knowledge that a few will carry in their memory and pass on to others. I know, for me, at this point of our conversations, I had to doubt the authority of the textual sources I had researched. Perhaps Aunty Moana sensed this and felt it was the right time to share the descriptions and stories associated with the next nine place names.
Legend of Na'opo'o

By my paternal Grandfather, Mary K. Kapu'u's father

Isaac K. Kapu'u Sr.

Written by Mary K. Kapu'u Kahule - 1987 Collection

Kai-a-le-kua had two great ponds. The ponds were clear and fresh pure water. Pond number one was at Kealaula and shallow. Pond number two at Kai-a-le-kua. These ponds were wide, except for pond number two was shape like a bowl or basin.

The people never went without water. They had more water than they can use. Everything was just handy. Lots to eat and lots of good water to drink. The people were happy. Suddenly there was trouble brewing between the people and the Ali'i. (Royalties)

The Ali'i wanted the water all for themselves and this enraged the people so much. All their lifetime, they depended on these ponds and water for their use too, and so as the royalties.

When a new Ali'i became the chief, he was mean. He treated the people so bad that they cried out to their gods for help. Before they knew what was happening, this chief ordered the new Ali'i to fill a kapa with these ponds. The people were told they could not have any water from these ponds because it belongs to the Ali'i.

The people suffered very much. They had to drink the salt sea water from that beach. No fresh water to get for miles and miles. Death was the penalty if they were caught.
taking water from the ponds. The trouble went on and on. More people were killed for taking water and the kau system became more and more worse. If one child is caught drinking from the pond the child and the entire family were killed. How gruesome can these ali'i be?

Then one morning when the people and the ali'i woke up there were no ponds of water to be seen. They just seem to disappear. In its place the rocks were just as dry as can be. It seems like no water ponds were there. So strange.

They all went to the Kahuna to ask or tell them what happened to the ponds of water. The Kahuna answered, the ponds had gone away because you are so mean and greedy. You made the people suffer and so the gods made you to suffer too. Where the ponds are a canyon tall you go! Do not know. Strange as it seems the pond of Kaii Pepe moved up to the higher slopes and became a great spring and known as Wailapa. These people went to the ocean and became Wai Kapa Kai.

However, the story is, they were brother and sister who had come from the hidden island. They traveled until they landed at Kai i Kaheia. They looked for water to drink, but there was not any around. All they could see was Wai Waien Kail. No hot smiles and miles. No food or are you.

259
I remember, after I heard this story, I tried to look for any signs of these two dents on the hillshade I printed out, and she said I wouldn't find the ponds on any map, but had a drawing I could look at to satisfy my curiosity. The cartographer in me would still like to try to recreate this scene using modern cartographic tools, but I hesitate in doing so until I am certain such an undertaking would benefit more than just my curiosity. If it doesn't provide any benefit to the community or the traditions of this place, it would be a waste of time.

Figure 61. Aunty Moana’s sketch portraying the two ‘dents’ of Napo’opo’o from her original manuscript. Permission for use in this text granted.
Keawekekāheka

Keawekekahiai'ionamoku was a King in the early times. The tide pools were close to the place where he lived. This is the secret story of Keawekekahiai'ionamoku, the King and was the first to be put into Haleokeawe where it was named after him.

In the early days, fish were so numerous that every type of fish were in these particular tide pools or kāheka. There were any type of fish this King wanted to eat. Now in those days the women folds were forbidden to eat certain kinds of fishes caught in deep water. So the only fishes, seaweeds, or shell fishes that were in tide pools or the reefs were the only things the women could have to eat. As for Keawe, he would rather go to the tide pools and reefs to catch his own fish.

However, because of his desire and habits, the tide pools and reefs near the area he lived were forbidden to anyone. Man, woman, or child caught in these areas were put to death. So the women folks called this place Keawekekāheka. This was the secret of Keawe. He only caught his catches at night. What a character!

I had a hard time understanding why fishing at night from tidal pools was a secret. It didn't make sense to me. I thought night fishing was, and still is, an accepted practice. Then Aunty said he didn't just catch fish at night. Whatever or whoever he caught near his tidal pools, men or women, he would ... enjoy. So to avoid having a careleeve traveler or curious village wandering around unknowingly, they placed a kapu on that place for people to stay away.

When I asked where this place was on the map, Aunty said it wasn't too far from Keawekekāheka point. But then when she took a look at the map, it was her turn to be confused. She saw a place near Keawekekāheka point named Umi'e well. "That makes no
sense,” she said, “that’s not Umi’e well – Umiwil is on the other side and it has nothing
to do with a person named Umi.” She then launched into a diatribe of how Hawaiians
didn’t give names for just any reason like they do today. I asked if she knew the name of
that water feature and she said, “that’s Hall’lua. Hawaiians had reasons for naming
places,” she said, “like Hāwala’au, Kopuhi and Limukoko.”

HĀWALA’AU

This awa or cove is not used for beaching the canoes. Due to lots
of big boulders. There’s a point that extends to deeper water and
use to have a spring board here. But when the sea gets rough the
board is usually gone.

‘Opīhi, crabe, fish, wana or sometimes the little tide pools becomes
full with little fishes. People would gather all these fishes to eat.
If you leave them there the lower the water and usually dry up the
tide pool, all the fishes will dry up. Instead, it is gathered for food.

Families who lives near this cove can hear what goes on at some
homes near by. Especially when there’s a family fight going on. I
use to live close to this cove a few years ago, until the 1960 tidal
wave, we were driven out because it destroyed the house we were
living in. We lost almost everything what we owned.

While there use to hear all the commotions going on in the next
house. Some commotions were funny and some are just violent
and mean. Hāwala’au, because of the voices traveling. Especially
at night, you can hear every word. (Kahele)

I inquired if perhaps the houses were close together, because when I was living in
Kalihi, I could hear everything going on in the house next to me. After all our windows
were less than ten feet apart. Aunty Moana laughed in astonishment and rhetorically
said, “Is that so. Don’t you feel like sardines packed up so close together?” Then she
said, the houses at that time were much more than ten feet apart and thoughtfully added that the ‘echo’ probably had something to do with the way the shape of the awa and the direction of the wind because when the sea was rough all you could hear was the ocean crashing.

**Kepuhi**

Now at the point of Kepuhi is a blow hole. Water is always been pushed out from his blow hole. However, if an explosion is been heard and rocks rolling underwater, you would hear the old timers say, “we are in for a storm or rough sea.” (Kahele)

Aunty Moana emphasized that there were a lot of ‘sayings’ like this that she heard the old timers say. As far as she knew, though, they were always right.

**Limukoko**

This was a rock near the shoreline by Palemanō that had a lot of limu kohu. Limukoko was another name for it. Anybody could go and pick as long as they were watchful not to stay too long and over-pick. If you did, the water would rise and make it hard, if not impossible, for you to get back to shore. The ocean had a way of making sure you only took what you needed and didn’t get greedy. Other community members agreed this was a place you needed to be careful during the KFA interview on the accompanying DVD. In the following quote, ‘KKA’ is Aunty Katie Keil‘i Kalā-Andrade.

(MK) ...there’s one stone outside, and that’s only where the limu kohu growe over there.
(KM) ‘Ae, exactly. On the old map there’s a place called Limukoko.
(WP) Limukoko.
Aunty Moana said this is a cave in the ocean where the sharks live. The reef acts like a covering for the cave, like a pale. In the KPA interview on the accompanying DVD, Uncle William Pānui (WP), Aunty Katie Keliʻi Kalā-Andrade (KKA), and Aunty Maile Kēʻōhohou-Mitchell (MM) agreed adding their experiences.

(WP) O Palemanō, ʻoia hoʻi, he manō i mālama ʻia. [At Palemanō, there is a shark that cares for it.]
(KM) Kiaʻi? [Guardian?]]
(WP) Kiaʻi i keau mamua loa, Ka pale, ʻoia hoʻikāhi okamanō elulu ai, like me kaʻōlelo o ka haole, ka reef. Aʻia malale. [A guardian in

264
ancient time. The protected area, that is the place where the shark rests, is like a reef as said in English. It's below].

(KM) Ai malalo, lo'a he..? [Below has a..?]
(WP) He ana. [A cave.]
(KKA) Ana.
(KM) 'Oia ka wahi ho'olulu ai ka manō? [That's where the shark rests?]
(WP) Uh-hmm, 'oia kāhi i noho ai ka manō. [That is the place where the shark lives.]
(MM) 'Ae.
(KP) He 'aha ke 'ano o kēla manō, manō kanaka ai'ole he manō i'a?
[What is the nature of this shark? A shark good to humana, or a wild shark of the sea?]
(MK) Manō 'ōko'a. [It's a different kind of shark.]
(KM) Pehea kou mana'o, he kia'i, Palemanō? [What do you think, a guardian, Palemanō?]
(KKA) 'Ae, he kia'i. [Yes, a guardian.]
(MK) No Palemanō, 'ai. A na kekāhi mau 'ao'ao, a'ole. [For Palemanō, yes. For other sides, no.]
(KKA) like pū me ia, he 'ohana no anakala Louie kekāhi, hele mau 'oia malaila e lu'u, k[i] 'oia ka 'ula. [Like this, the family of uncle Louie is one, he'd always go diving out there to get lobster.]
(MM) 'Au'au. [Trap.]
(KM) Pehea, hānai 'oia ka manō? [How about it, did he feed the shark?]
(KKA) Hānai 'oia? [Did he feed?]
(WP) A'ole i ko mākou Manawa, mamua loa. [Not in our time, but long before.]
(MM) 'O wau, kūkū, 'ae. [Me, my tūtū, yes.]
(KKA) Hele 'oia e lu'u, hou 'i'a, kēlā 'ano, lu'u 'ula. A'ole 'oia l kākā i ka wal. [He'd (uncle Louie) go dive, spearing fish, that kind, dive for lobster. He wouldn't strike the water.]
(KM) 'Oia, he mau kānāwai o pill 'ana ko iākou lawā'a 'ana? [Is that so, there were laws about how you would fish?]
(KKA) 'Ae, ua ha'i mai 'oia, "He 'aumakua kēlā manō. Mai ho'opā, mai pepehi, nānā wale no." [Yes, he (uncle Louie) told me, "The shark is our 'aumakua. Don't strike it, don't kill it, only look."]
(WP) He 'aumakua. [It is an aumakua.] (Kumu Pono Associates, 2003, A-155)
I asked Aunty Moana if the name could also be Palemano because that area protects the village from the ulumano\textsuperscript{65} winds and she said, “Hawaiian liked to play with words and it just so happens that place also acts as a barrier to the ulumano winds, but that’s not the reason the name was given. It was given for the shark ‘aumakua belonging to the fishermen in the area.” This play on words also shows up in the next place name.

**Kalaemamo**

According to Aunty Moana,

> The cape of many races or as was called Ka Lae Mamo, was a point where many a canoe, traveling would watch for to enter the bay or into Ka’awaloa (long cove). Navigators who come from all different islands or countries would watch for this point. The mamo fish were plentiful and were large ones in these area. Not those little ones we see among the reefs and corals. But Ka Lae mamo was not named after the fishes. It was named for the many races of people. (Kahele)

I remember Aunty Moana telling me this story in person. She said she heard this from her grandfather and remember the name making sense because, a while after Cook died, all kinds of ships from all kinds of places set anchor in Kapukapu. She also said, “not too many people know this is the reason for this name. Most think it’s for the mamo fish, because no more the ships come to Kapukapu. So the meaning no longer makes any sense to them.”

\textsuperscript{65} This is “a strong, local wind blowing from a given direction.” (Nakulina, 1990, 140)
According to the many conversations and stories from the old timers of Napo'opo'o, I learned that it was named after an Ali'i Nui by the name of Keōakupuapaeikalaninui. Not by one of King Kalaniopu'u's sons as some people had stated in some written stories.

However, there are so much been said of this Pali (Cliff). There are many caves facing the ocean, and another cave, the length of pali. Entrance use to be on the mauka side of the bay and the outlet to the end of the pali where it comes out to the sea. Numerous earthquakes caused landslides, had sealed the entrance of this cave.

I remember my Kupunakane telling us how he use to take some haole people in that cave. Almost to the center you will have to stoop down. There are many dead remains. Some looks like a whole family because the way they were set. Even have some pools of water where he tasted and it is almost fresh. If the tide is low, than the outlet toward the ocean can be reached. It is impossible to reach the outside end because of the sea water rushing inwards.

Anyway somehow this pali holds so many unspoken mysteries. The caves that were facing the ocean were also burial places for some ali'i's. (Kahele)
I asked why the pali was kapu and Aunty Moana said, “Keōua made it kapu because that’s where all the burial caves the ali‘i used. And to make sure nobody go fool around, he made it kapu.” She then launched into a criticism of Pukui’s consistent misrepresentation of the of this area in the book, Place Names of Hawai‘i, stating, “she sure went mess up how people know this place.” The entry for Palikapuokeōua states, “Lit., sacred cliff of Ke-ō-ua (Ka-mehameha’s foe slain by Keʻeaumoku).” (Pukui, Elbert, and Mo‘okini, 1974, 177)

Paliomanuahi

![Image](image_url)

**Figure 64.** Photo of Kapalikapuokeōua / Paliomanuahi from Kapukapu. (Louis, 2005)

Long ago fire was not known to the people of the beach. Foods were eaten raw or dried. Now at the bottom of this cliff a boy lived with his family. His name was Manu.

One day Manu was looking up the cliff, he saw smoke and wondered what can it be. For several more days he saw this thing called smoke. He could not stop thinking about what, he had seen on the cliff. Finally, he made up his mind and climbed up the pali (cliff) to see what was really there.
When Manu reached the top of the pail, he looked around, there was a fire place but no smoke nearby. As he neared the fire place he saw sweet potatoes on the hot coals. Reaching for the potatoes, but drew back his hands because it hurts his fingers.

Manu thought to himself, what manner is this that he could not touch the potatoes. He looked around, but nobody was there. So, Manu turned to look at the potatoes. Just than, he heard a voice say, “Manu, there are two sticks by the fire place near the stones. Pick it up and rub the sticks together and you will have a fire started.”

Manu looked around to see where the voice was coming from. All he saw were two white birds, but no body was around. He wondered, my, where did that voice come from? Been frighten, he turned slowly to look at the two sticks. Again, Manu heard his name. Turning slowly, he saw two beautiful girls. As they came closer to him, but instead of standing still, he backed away from them. One of the girls said, “Don’t be afraid, we will show you how to light a fire.

Manu was so stun that he could not say a word. He just remained dumbfounded. One of the girls took some dry grass and made a pile. The other girl took the two sticks, and began to rub and rub until Manu saw the smoke. Then the girl blew on it until fire started to burn the dry grass that was piled up. Next, some twigs were added, than bigger sticks added. Soon, they had a nice fire going. The last they placed the potatoes and the hot coals. When it was done, they shared it with Manu.

He was so amazed that he was not afraid of the girls anymore. In fact, he liked it better cooked than eating it raw or dried. Manu thought to himself, now we can eat cooked food.

The girls and Manu soon became good friends and enjoyed each others company. He had so much to ask them. They told him or answered his questions. But when he asked them where did they come from? They replied that, we cannot tell you. But when you need us, just call out Manuahl and we will come to you.

Soon it was time for Manu to go home down the cliff to the
eeahore where he lived with his family. He thanked the girls for teaching him how to make fire and eating cook foods. As he started to walk the girls gave him the two sticke. One stick was light in weight and the other was heavy. He told them he had enjoyed been with them, and he hope to see them again.

But in his mind, he kept thinking, where did these girls come from? As there was nothing on that pali to show of other village or people. Who are they? Anyway he turned and waved to them, then started down the pali. The girls yelled at him to wait, they had something to tell him. When they got close by, then they said, from this day on this pali will be known as “Pali-o-Manu-Ahi.” You are the first human of your village to learn of fire. When he turned to wave at them, they had changed themselves to white birds and eat on his shoulders until he was safely at the bottom of the pali.

They bid him farwell by fluttering their wings and then flew away, never to be seen again. Well Pali-o-Manu-Ahi still stands and so the story ends.

Footnote:
This Pali-o-Manu-Ahi is at Napo’opo’o, above of Kapukapu Bay. Now known as Kealakekua Bay. This pali looks like a ridge.

This was the last story Aunty Moana shared with me. I remember thinking it was so similar to the Maui legend of bringing fire to the Hawaiian people and when I mentioned that she said, “...that Maui story was for the Maui people, this story was for the people here. “

In an interview with KPA, Uncle William Pānui shared a different story about the name Paliomanuahi.

(WP) Well, Manuahi, there were firebrands. The people went up to the top of the pali at night. And they would light firebrands and toss them over. It looked like birds flying. Firebirds.
(KM) Beautiful, yes.
(WP) A kapa ‘ia Pali o Manuahi. [And so it was named Pali o Manuahi.]
(KM) So these firebrands would be tossed over the pali and float out over the sea side, or down to the ‘ilina?

(WP) Well see, they fall into the sea and pilo.

(KM) Yes. Did you hear, were there at times canoes out on the water trying to catch any of those firebrands?

(WP) Yes, that was some of their entertainment, games. (Kumu Pono Associates, 2003, A-30)

I brought this up with Aunty Moana and she said she knew of those practices, but the story she heard came from her grandmother, Kahikikala Au Kaolu. She never said Uncle William Pānui was wrong, like she had done numerous times with Puku’i, she just verified her source. Before I end this section, let me add two last place names found in KPAs oral history interview, Kamaiko Heiau and ‘Umiwai. They round out the sensual geographies of this journey.

Kamaiko Heiau

(WP) Heiau Kamaiko. ... Heiau kahiko, a maopopo mākou, ka inoa kamaiko, he inoa o ka ‘ia [an ancient temple...we know the name as kamaiko, it is the name of a fish.]

(KM) ‘Ae.

(WP) Maiko.

(KM) Maiko.

(MM) ‘Ae.

(WP) And if you catch the maiko and leave it out, and decompose, hele a pilau, ‘oia ke ‘ano o kēia wahi. No ka mea, ka make ‘ana o kekāhi kanaka, kaula ‘ia maluna o ke ka’a. [It comes defiled, that is the nature of this place. Because when some people died, they were dried on something like a cross.]

(KM) ‘Ae.

(WP) Maluna ka helau, kaula ‘ia ke kino. [On top the heiau, the bodies were dried.]

(KM) Pelapela. [Flesh stench]

(WP) Pelapela a pā mai ka makani, honi ‘oe i ka pilau. [Flesh stench and the wind blew, you could smell the stench.]

(KM) ‘Ae. O kanaka? [Yes, of people?]
(WP) Kanaka. Like me ka pilau o ka maiko. Ke waiho wale 'ia ka maiko, a pilau. Kapa 'ia Kamalko. [People. Like the stench of the maiko. When the maiko are left to rot, so it's called Kamalko.]

(KM) Hmm. So keia heiau ho 'ano luakini, he heiau mōhāi kanaka? [So this temple is it a type of luakini, a temple where humans were sacrificed?]

(WP) A'ole, he heiau ho'omākaukau ke kīno no kekanu 'ana. [It is a temple for preparing the body for burying.]

(KM) 'Oia ka wahi a lākou i ho'oma'ema'a'i wī? [So that is where they would prepare the bones?]

(WP) 'Ae, hele a malo'o ke kīno, palepale wale no ka 'ili. Malo'o ka 'ili, palepale 'ia a lawe 'ia ka wī a hō'okomo lilo o ka 'eke, ka'ie, a kanu 'ia. [When the body becomes dried, the flesh is foul. When the skin is dried, it is stripped and the bones are placed in a basket, ka'ie and buried.]

(KKA) Kanu mahea, i ukā? [Buried where, in the uplande?]

(WP) Kanu 'la makai. [Buried near the shore.]

(KM) Ua kanu 'la nā kānaka makai nei? [The people were buried near the shore?]

(WP) 'Ae, 'ae. Nui 'ino nā po'e i kanu 'la mahope o ka heiau, lilo o ke oke. [Yea, yea. There are very many people buried behind the heiau in the sand.]

(KM) 'Ae, 'Oia kāu mea i lohe aia? [Yea, so that is what you heard?]

(WP) 'Ae. He mau makahiki i hala, ua nui ke kai o kai nei, a 'eili 'ia ke one ma Maluhia. Ke one ma ka 'ao'ao o Maluhia, 'eili 'ia e ke kai. A nui nā wī i ho'ahuwale 'ia. A ua hiki mai kekahi po'e e ... [Some years past, the ocean was rough at the shore here and the sand was dug up. The sand side of Maluhia was dug up by the sea. And there were many bones exposed. Some people came ...]

(KM) Hō'ilī a kanu hou? [Gathered and reburied?]

(WP) 'Ae. [Yea.]

'Umwiwai

(WP) in the property that I'm staying in there are two punawali. One is small and the other one is kind of a big punawali. And papa gave the name of the 'aina, 'Umwiwai. And most people would think of the word 'umi ae being ten. Ten waters or they would think of the chief, Um, that's his. But a'ole.

(KM) What is it?

(WP) 'Umwiwai is, when you try to drink brackish water for the first
time you gag, 'umi.
(MK) Like choke.
(WP) Or gag. So, kapa ia 'Umiwai, because of the wai.

Prior to reading this account, I thought the place name Umi's well on the USGS map, near Ka'awaloa, was the anglicized version of 'Umiwai. I thought that was just one more category of discrepancies I found with all this research. After reading this I realized 'Umiwai is near Palemano not Ka'awaloa and discovered the feature named Umi's well on the USGS map was really Hall'iuia. The next chapter goes into a bit more detail on the various inconsistencies and blatant errors I discovered and discusses the sensual cartographies the storied place names highlighted here provides.

CLOSING REMARKS

Every time one of my meetings with Aunty Moana ended and I stepped out of her home having learned a new story or a new dimension of an old story, the landscape seemed alive because of the story. It was exhilarating.

This feeling, an inexplicable renewal of enthusiasm after storytelling, is familiar to many people. It does not seem to matter greatly what the subject is, as long as the context is intimate and the story is told for its own sake, not forced to serve merely as the vehicle for an idea. The tone of the story need not be solemn. The darker aspects of life need not be ignored. But I think intimacy is indispensable—a feeling that derives from the listener's trust and a storyteller's certain knowledge of this subject and regard for his audience. This intimacy deepens if the storyteller tempers his authority with humility, or when terms of idiomatic expression, or at least the physical setting for the story, are shared. (Lopez, 2002, 29-30)
Stories are capable of accomplishing what no other form of communication can - they can get a message through to our hearts. They bring down invisible walls between people's physical, intellectual, and emotional dimensions and when these stories involve places we are familiar with, they bring us closer to an understanding of how space, place, and time merge. When a story is delivered with compassion, intrigue, and circumstance we cannot help ourselves but become enveloped by their mystery. We lose ourselves in the plot, identify with various characters and their trials, and sometimes we allow ourselves to be changed by their message(s). We think differently of ourselves and our roles in our communities when we honor things from the past. We invariably realize our place as part of a larger story.

Many stories about the land are quickly recognizable and moving to us because they are stories about relationships. They are about love and lose and healing. Aldo Leopold wrote, "We can be ethical only in relation to something we can see, feel, understand, love, or otherwise have faith in." Scott Russell Sanders responds to Leopold by saying, "This has always struck me as a key justification for art, which brings the world into ethical regard through stories, images, sounds, emotions, and spirit. Leopold is right that we need to carry the land inside of us, if we're going to care for it and fight for it." (Forbes, 2002, 9)

Stories provide a framework for experiencing the physical world and intersect with larger social, historical, and political processes. They are indispensable tools we use to make sense of the world and our lives. There is nothing trivial about storied place names. "[N]atural ecosystems and abstract geographical spaces become human places precisely through the accumulation of narratives that record and pass on to other people the living memory of what those places mean." (Cronon, 2002, 88)
The stories shared in this chapter illustrate this area as a cultural landscape infused with meaning. Aunty Moana recognized the landscape as a source of nourishment for mind/body/spirit. She shared these stories for various reasons. She wanted the cultural landscape to be embraced by future generations of people (all people) as a source of well-being. It had fed her ancestors and children. It nourished her metaphorical mind filling it with symbolic associations that accumulated through time. It inspired her spirit every time she engaged in interactive storytelling. Truly to experience a cultural landscape sensually as a 'whole' being devoid of false veils that separate mind from body from spirit, is to step into a world of knowing where the space of time becomes irrelevant and you can stand in a place beside your ancestors and your descendants simultaneously.

Aunty Moana animated the past and brought it into the present by appealing to all my senses, awakening some of them from a deep dormant sleep. She often weaved in genealogical linkages and alluded to songs, proverbs, chants, and dances. Although my experience was inevitably hindered by my weak language skills, Aunty Moana adjusted her presentations adapting to my abilities. The stories she shared with me in person cannot compare to the ones you read in this text or the presentations on the DVD. There is something 'special' created when you sit at the feet of a storyteller and unconsciously respond to the changing rhythms of their oratory, their verbal expressions and bodily gestures.
Aunty Moana stimulated my metaphoric mind encouraging me to open a seam in the fabric of time and observe people and events as though they were right in front of me. It would take a truly extraordinary person to experience all of this while only having this text to read. Cut off from cultural cues and nuances of Hawaiian oratory, it would be difficult, but not impossible, to transcend the separation of space and time in order to truly experience these stories as surrogates for the places they represent.
CHAPTER 6—DEPTH OF MEANING

Native cultures have indeed amassed an enormous knowledge base related to the natural characteristics and processes of their lands through direct experience and participation. However, all Native cultures have readily used their landscape in ways that benefited them and ensured their survival. Native cultures have applied their technology to make roads, to cut timber, to fish, to hunt, to farm, and to engineer the landscape in order to survive. The difference between Native and non-Native use of the land and its resources is that Native cultures have traditionally aspired to live in accordance with an ideal of reciprocity with the landscape, guided by cultural values, ethics, and spiritual practice. Living a life of relationship through ethical participation with nature is the ideal behind the practice of Native science and its orientation to place. (Cajete, 2000, 135)

Analyzing information shared by knowledgeable indigenous community members is tricky. From an indigenous perspective, it is presumptuous to believe the little time spent listening and learning to stories shared gives anyone the 'right' to go deeper. I remember one community member asking me, “and who do you think you are to go changing names around here.” She was referring to my involvement with the Hawai' Board of Geographic Names (HBGN) to add Hawaiian diacritical marks to the Hawaiian place names on the U. S. Geological Survey (USGS) topographic maps. When I explained I was working with Aunty Moana Kahele, she nodded approvingly. But her sentiment about someone from outside re-presenting information about the place where she lived is still relevant. It didn’t matter that I was Hawaiian; I was not from 'around there' and didn’t appear to have any authority. All she saw was an academic doing research.
Indigenous researchers will always come across community members that share this sentiment about research even if they are native to the place where they are doing research. This should be expected and respected. It is a barb we need to keep close as a constant reminder of the past injustices indigenous people around the world have witnessed in relation to research. By keeping it close we are reminded of the pain and struggle misrepresentation has caused and it will help us to remain within an indigenous research protocol where humility defines ethical conduct.

With that in mind, I humbly offer the following ‘deeper’ look at the storied place names shared by community members. I acknowledge this presentation is of my own design and while I have discussed some of these ideas with Aunty Moana, I did not receive her ‘authorized’ approval to share my thoughts on the stories shared. Any misrepresentation is my own error in judgment and should not reflect badly on her, the community, or the places themselves.

In moving deeper into meaning I start at the surface and look at those naming discrepancies inscribed on Western map documents that misrepresent the meaning of places due to the omission and incorrect usage of Hawaiian diacritical marks. I then move deeper into those inscribed place names that may be incorrectly represented because of human error; someone was mistaken in how they heard the place name pronounced; an oral blunder, if you will. Next, I will present those place names that emerge as a result of Western associative place naming practices. I will also discuss
new place names that have been inscribed onto maps and overshadow those place names community members remember and still use.

After probing various naming discrepancies, I will delve deeper into the storied discrepancies highlighting differences between community member's recollections for a few storied place names. Then, I move deeper into the meanings of various storied place names revealing the 'íeleleons' they provide. Lastly, I present those storied place names that awaken the sensuous nature of Hawaiian performance cartographies.

**Naming Discrepancies**

First of all, let me make clear that the analysis I present in this section has nothing to do with right or wrong. It has to do with a subjective analysis of differences of perspectives between Hawaiian and Western place naming practices. I recorded 296 place names from both map documents and descriptive sources and was able to eliminate those place names that were redundant leaving only 164 unique place names.⁶⁶

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⁶⁶ See Appendix B - Place name tabulations for a thorough presentation on the data collected.
I sorted the list according to place name and then according to source. I gave preference to descriptive sources because they were closer to the origin, the people living in the community, and because they were historically older than the map sources. Thus, the number of ‘similar’ place names from map sources is higher than from descriptive sources and the overall number of unique place names from map sources is less than from descriptive sources. It important to note, in giving preference to the descriptive sources, I am consciously shifting authority from the map to the people and bringing their voices forward.

The following is a discussion of the challenges each column from Table 1 poses to the Hawaiian cultural landscape, including new place names, spelling discrepancies, non-Hawaiian place names, locational errors, place names of unknown origin, and muddled place naming practices. Some of the place names used in these sections were not included in the discussion from the previous chapter. However, they are an important

<table>
<thead>
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<th>TOTALS</th>
<th>Tot#</th>
<th>R#/#</th>
<th>N</th>
<th>Sp</th>
<th>L</th>
<th>U</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptive Sources Total</td>
<td>166</td>
<td>34/132</td>
<td>0/0</td>
<td>0/0</td>
<td>0/0</td>
<td>0/79</td>
<td>0/0</td>
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<tr>
<td>Map Sources Total</td>
<td>130</td>
<td>100/30</td>
<td>15/0</td>
<td>30/7</td>
<td>3/2</td>
<td>0/6</td>
<td>35/23</td>
</tr>
<tr>
<td>TOTAL</td>
<td>296</td>
<td>134/162</td>
<td>15</td>
<td>37</td>
<td>6</td>
<td>85</td>
<td>58</td>
</tr>
</tbody>
</table>

Table 1. Final place name counts.

(Tot#) Total number of place names counted,
(R#) Total number of redundant place names counted,
(F#) Total number of unique place names,
(N) New place names over writing existing Hawaiian place names,
(Sp) Spelling errors,
(L) Location errors,
(U) Unknown origin,
(M) Muddled place naming practices.
aspect of the changes the Hawaiian cultural landscape has endured since becoming mapped.

**New Names**

New place names overwrite existing Hawaiian place names and record modern events of significance such as Cook's Point, Cook's Heiau, Umi's Well, Manini Beach, and Ke'ei Beach, shown in Figure 65.

![Map showing new place names](image)

*Figure 65. New names shown on the USGS 1983 topographic map series. (Louis, 2007)*

Each of these new place names have at least one older Hawaiian place name associated with it. Cook's Point is known by the community as Kalaemamo (a name that also
appears on the map in smaller text). Cook’s Heiau is known as Puhinaolono. In fact, old maps depict this place name. Umi’s Well is Hali’illa pond. This is a curious change since no one has ever known it to be Umi’s Well. I think it was an anglicized change for the place name Umiwai located on the wrong side of Kapukapu. Umiwai is near Maluhia Camp shown as ‘water’ in Figure 1. Manini Beach is in an area known as Kapahukapu, Hāwala’au, and Pōhakupa‘akai.

The underlying reason why these Hawaiian place names were changed into non-Hawaiian or hybrid-Hawaiian place names has to do with the intention of those with the authority to change them. In other words, it has to do with asserting power and control. At some point, authority figures decided to honor James Cook, that great English sea captain that charted the Pacific Ocean disproving one cartographic myth after another, and granted England a portion of Kalaemamo. England thereby named that portion of Kalaemamo, Cook’s Point, inscribing their perspective of historical significance on the landscape. Perhaps this is the reason Puhinaolono Heiau was changed to Cook’s Heiau. It is the place Cook’s body was prepared for internment. However, England was not granted a portion of the Heiau. So the name change had to be authorized by Hawai‘i State or U.S. Government officials.

Another excellent example of how a change in authority also changes the representation of a cultural landscape is the new place name Manini Beach. Community members know exactly who named the beach and the reason why. Apparently a government official, noticing the abundance of ocean produce the Hawaiians living in this
area were capable of acquiring, would go to this area and lay net to catch fish but could only net Manini fish. Out of frustration, this government official declared this area Manini Beach and related that to those surveyors contracted to update the USGS maps.

On a completely different note, there was one feature in the study area that had more than one Hawaiian storied place name. It is the pond next to Hikiau Heiau. Some community members relate to the pond as Kalua‘ōpae recognizing the resource, shrimp, the pond provided. Lualiloa is another name Aunty Moana shared that wasn’t found on any map source in this study. The ‘new’ place name portrays a Hawaiian understanding of place as capable of representing a multiplicity of truths. Both place names equally convey cultural knowledge of historical significance. Both place names are equally valid expressions of an experienced place.

However, how would one decide which ‘one’ place name should be put on a Western cartographic map? Should it be the ‘older’ more ‘traditional’ place name whose story illustrates the distinction of social classes in Hawaiian society, Lualiloa. Or should it be the ‘newer’ more ‘relevant’ place name that is part of the cognitive cartography of a larger number of community members. Thankfully, I don’t make those decisions. The Hawai‘i Board on Geographic Names is responsible for deciding on the ‘official’ place name for all geographic features in Hawai‘i. If it were up to me, I would probably attempt to manipulate the technology to provide a mechanism that would allow for both place names to be equally represented. For example, the Coeur d’Alene tribe in Idaho has a
Native Names project that can be adapted to present multiple experiences of a single place.

**Spelling discrepancies**

There are two diacritical marks in Hawaiian language, the ‘okina (glottal stop) and the kahakō (macron). Hawaiian diacritical marks help distinguish the ‘meaning’ of Hawaiian words and help people pronounce Hawaiian words the way Hawaiian speakers pronounce them. Pukui, Elbert, and Mo‘okini provide an excellent example of why the diacritical marks are necessary for Hawaiian place names. Using the place name Kahalawa, an isolated beach on the northwest coast of Moloka‘i, they list six possible pronunciations and orthographic spellings, each with a different meaning.

- Ka=hai=awa  ‘the sacrifice [in a] bay’
- Ka=hai=’awa  ‘the sacrifice [of the] kava drink’
- Ka=ha‘i=awa  ‘the breaking [by the] bay’
- Ka=ha‘i=awa  ‘the breaking [of the] kava drink’
- Kā=ha‘i=awa  ‘the bay belonging to someone else’
- Kā=ha‘i=awa  ‘the kava plant [or drink] belonging to someone else’

(Pukui, Elbert, and Mo‘okini, 1974, 238)

Ultimately, incorporating ‘meaning’ via orthographic corrections adds more dimension and possibilities for toponymists, Hawaiians, and general map users. Since maps are used for all kinds of research, including toponymic research, accurately depicting place names on maps is an exciting and new technological innovation for toponymists. And from a Hawaiian point of view, it is an acknowledgement that alternative cultural realities exist. Recall, Hawaiian cartographies use place names as a reverse mnemonic device.
that records cultural histories; cultural histories that come to life in the interactive presentation of Hawaiian cartographies.

Orthographic differences

Nearly 30 percent (37 of 130) of the place names from map sources had spelling discrepancies either due to missing or incorrect placement of diacritical marks. Some maps that include place names with a Hawaiian component do not attempt to add the diacritical markings thereby misrepresenting the meanings of those places. For example, most USGS topographic maps up to the series printed in the 1980's did not have any diacritical markings and place names such as Palemanō and Ke'ei were included without the kahakō or 'okina, respectively, Figure 66.
Topographic maps are considered 'authoritative texts' and are frequently used by other government agencies, commercial ventures, and the general public. Without the diacritical marks these place names are susceptible to losing the first layer of their cultural significance; their literal translation.

Thankfully, in April 1999, the USGS began adding the diacritical marks on their 1990 series of maps with the help of the HBGN. The HBGN specified that these additions must be made by consulting accepted authorities on Hawaiian place names including the Hawaiian speaking kupuna (elder generation) who might have special knowledge of specific geographic areas and the meaning of the names given to places.
Furthermore, the Geographic Names Information System (GNIS), the U.S. place names database, has been updated to match those accepted spellings the HBGN has authorized. This has monumental consequence.

The GNIS is considered the legal authority for the spelling of place names throughout the U.S. Any U.S. government-funded project must spell the place names according to the accepted authority. While there is no place name police, it does mean that eventually these corrected place names will be spelled in a manner that recognizes the first layer of cultural meaning. Essentially, it allows the mana instilled by generations of Hawaiians to be maintained and acknowledged.

Aural differences

Occasionally, place names are misspelled because of an oversight. Most of the time the person making the map is not familiar with the area being mapped and the letters in the place name get transposed or mistyped. Two examples can be found in the above figure, Mokuakae Bay and Ke'ei. Aunty Moana was adamant that this is a misrepresentation because she grew up using the place name, Mokuoka'e, and other knowledgeable community elders agreed with her. Recall, Uncle William Pānui statement, “Now, it used to be Mokuoka’e then somewhere along the line, it was changed to Mokuaka’e. Just one letter, from Mokuoka’e to Mokuaka’e, and then change again to Moku’ohai.” (Kumu Pono Associates, 2003, A-148)

Ke’ei is another example of an aural difference. Aunty Moana repeatedly reminded me that Ki’ei was the name she learned for that area from her Kūpuna. When
she asked them how come the name was Ke'ei she was told somebody recorded it wrong.

It's quite possible that the person being recorded did not know the story behind the place name Ki'ei and pronounced it as Ke'ei. Although, Uncle William Pānui did not agree outright with Aunty Moana, he did recall a story that used the place name Ki'ei.

**Blunders**

These kinds of errors could very well be oversights, but these oversights change the cultural landscape and introduce new meaning with no mana. For example, the oversight of spelling Keawekāheka as Keawakāheka in the Atlas of Hawai'i volume 3, Figure 67, potentially changing the storied landscape shared by Aunty Moana.

Figure 67. Atlas of Hawai'i general reference map spelling discrepancy.

It may seem like a small problem, especially in this particular situation where the difference between the two place names is only one letter. But many people consider maps an authority and in the absence of cross-cultural dialogue these oversights and blunders will be memorialized. While this particular place name change is not an example of a story being lost, it is about a place name not being accurately represented. In the
Hawaiian cartographic practice of storytelling the proper pronunciation of a place name is crucial to the story. Changing a name changes the historical record that is associated with many other cultural elements such as genealogies.

Unknowing future generations of Hawaiian will have their cultural heritage over written by a false authority. It is the same authority that 'innocently' imposes its own place naming practices on 'unnamed' or manmade features further confusing unsuspecting map users. For example new built features will be given new place names. When these new built features are given associative place names and then relocated they contribute to cognitive cartographic confusion. This is a locational error.

**Locational Errors**

There are two place names in the final data set that are located in the wrong place. Hōnaunau School and Kealakekua (Town), shown in Figure 89 are nowhere near the ahupua'a they are associated with.

![Figure 68. Place name locational discrepancies. (Louis, 2007)](image)
The town of Kealakekua is actually in the ahupua'a of Keaopuka and Hōnaunau School is in Kī'i. The reason Kealakekua is in Keaopuka has to do with the location of the Kealakekua Post Office. They couldn't put the Kealakekua Post Office in the ahupua'a of Kealakekua because it already had the Captain Cook Post Office which got its name from the Captain Cook Coffee Company building that housed it when it opened in the early twentieth century. At one time Hōnaunau School was actually in Hōnaunau. However, after a natural disaster of some sort closed the school, they relocated it to Kī'i and maintained the name.

This is why one of the knowledgeable community members I spoke with was very dissatisfied with the way government buildings get named without consulting the community. This may seem like a small innocuous matter, but changing the cognitive cartographies of future generations by incorrectly identifying the location of ahupua'a and popularizing certain ahupua'a while allowing others to fade out of existence has very serious consequences for future generations. These consequences are already beginning to manifest on the landscape. Hawai'i Island County officials have put up road signs designating location of ahupua'a boundaries based on these incorrect cognitive cartographies.

Now, grant it, every generation leaves its own mark on the cultural landscape and it is not uncommon to emphasize the importance of one place over another. The problem is that the Hawaiian families with genealogical connections to these places will eventually be cut-off from reinforcing their cultural identity by experiencing the cultural
landscape of their ancestors. It is a sad fact that is already evident as over half the place names on the final list, 85 of 162, are of unknown origin.

**Place Names of Unknown Origin**

Of the 85 place names of unknown origin, 79 are derived from the Boundary Commission Testimonies in the late nineteenth century. When I showed Aunty Moana the place names from my transcriptions, she was familiar with about three-quarter of them but was not at all certain where these names came from. Although it is conceivable for someone to use the testimonies and other survey documents to re-place these names in relatively accurate locations, an unfortunate consequence of these names not appearing on maps and not being discussed among the people in the community means the stories may very well be lost. Meanwhile a new set of place names resulting from the use of two separate place naming systems has already begun infiltrating the cognitive cartographies of future generations.

**Muddled Practices**

The largest group of place names found on maps fit into this category, 45 percent (58 of 130). Place names that are hybrids, part Hawaiian part non-Hawaiian, usually occur because of a Western concept of associative place naming. A feature on the landscape with a specific name is associated with other things on the landscape. For example, Hōnaunau Forest Reserve, Nāpoʻopoʻo School, Kealakekua Bay, Keʻei Beach, and Palemanō Point are all the result of muddled place naming practices. They blindly
assign a Hawaiian place name, given for explicit reasons and carrying a specific
genealogy, to other features either for clarification of feature type, like bay or point, or
creation of new features residing within or nearby the specific place name, like forest
reserve or school.

The two place names, Hōnaunau Forest Reserve and Nāpo'opo'o School, are
rather obvious examples of muddled practices. A boundary was demarcated to protect
the forest area and given the name of an area it encompasses. A school was built and
given the name of a nearby area. Deciding whether or not this is an appropriate practice
is not the point. I am not saying these place names are wrong, I am acknowledging that
two distinct place naming practices are being blended together and the result can lead
to confusion.

For example, from a Hawaiian perspective, a bay is considered part of an
ahupua'a resource management unit and would naturally have the same name as the
ahupua'a making the addition of the term bay unnecessary. Although it would stand to
reason that adding the generic topographic term 'bay' merely clarifies the type of
feature the place name refers to, such a clarification obscures a Hawaiian
understanding of an ahupua'a as a resource unit extending into the ocean.

In some cases, a bay will be given a name based on some socio-cultural
phenomena, such as Kapukapu. Aunty Moana said the bay was named Kapukapu
because it was sacred and only the men of Ali'i statue were allowed to surf there. It
would also stand to reason that it is sacred for at least two other reasons, the
importance of Makahiki and the numerous caves holding the bones of past Ali'i, some of which have fallen into the bay during earthquakes. Naming something Kapukapu imposes a high degree of respect and associates usage with a higher level of social status.

When Captain Cook arrived, he named the bay Kealakekua associating it with the land area fronting the bay. To some degree I guess we should be thankful that he assigned the bay a Hawaiian name. However, knowing the underlying rationale for naming the bay was distinctly based on Western perspectives of place naming and knowing another specific place name existed clarifying the importance of the bay in the Hawaiian socio-cultural consciousness diminishes the value of this hybrid place name. The same can be said for Kūlou and Palemanō, Figure 69.

Figure 69. Orthographic photo of Kūlou and Palemanō. (Louis, 2007)

Kūlou refers to a historical event, the arrival of Spanish in Hawai'i in 1525. However, nobody asked knowledgeable community members about the name of the beach and it was arbitrarily assigned via associative place naming practice as Ke'ei Beach. The
only people that refer to this beach in this manner are not local to the place. The people
from this area know it as Kūlou, the beach two Spanish survivors swam to and kneeled in
prayer.

Palemanō refers to an underwater feature created by the reef acting as a ledge.

Beneath this ledge is a haven for sharks. The ledge is thus a pale, a shelter or a covering,
for manō. Adding the generic topographic term, point, to the place name misrepresents
the type of feature this place name refers to. Although I am grateful that a Hawaiian
place name was recorded and can be passed on to future generations, I acknowledge the
appearance of the place name on the map is due to muddled place naming practices.

**Story Discrepancies**

In the previous section, place name discrepancies were a result of an
authoritative struggle between two different cartographic traditions. This next section
deals with discrepancies that occur within the Hawaiian cartographic tradition of
moʻolelo. Of the twenty storied place names shared in the previous chapter, two of them,
Kiʻei and Paliomanuahi, had two different stories related by two different knowledgeable
community members, Aunty Moana Kahele and Uncle William Pānui.

**Kiʻei**

Aunty Moana learned the 'true' name for the area currently known as Keʻei is Kiʻei.
She learned this from her kupuna. She said Keʻei has no meaning, and thus, I translate
that to mean it has no mana. She relates the story of how the people living in this area
would only peep out from their hale instead of greeting guests. When she asked her 
kūpuna how the name got changed they told her the people recording the names did not 
listen well and wrote it down the way they think it should be spelled.

Uncle William Pānui remembers hearing the story of a chiefess washing her face 
and her attendant peering over her shoulder thereby making her reflection appear above 
that of the chiefess. Thus, the reflection turned the social ranking upside down...he lalo 
lilo. This story is similar to Pukui’s 'ōie lo no'eau about Ke'el, “He Ke'el 'oe no lalo lilo.” 
However, the 'ōie lo no'eau depicts two chiefesses instead of a chiefess and her 
attendant. Fundamentally, this makes the essence of each story quite distinct. In 
Uncle William Pānui’s version, Ke'el refers to a difference of social status. In Pukui’s 
version, the story elevates the chiefly lineage from Hanauma above the chiefly lineage 
from Ke'el.

Paliomanuahi

According to Aunty Moana’s manuscript, Paliomanuahi was a name given in honor 
of Manu, a young curious Hawaiian boy, learning to make fire from two kupua wahine. She 
learned the story from her grandmother, Kahilikala Au Kaoluloh. Although it is very 
similar to the story of Maui, Aunty Moana assured me this story was local to 
Kealakekua.

According to Uncle William Pānui’s interview, Paliomanuahi was a name given to 
recognize a type of sport entertainment, firebrands thrown from the ridge into the bay. 
A firebrand was a spear like implement set on fire and thrown off the ridge. In the
evening it looked like birds of fire soaring into the ocean. Sometimes the people throwing
the firebrands would aim at a canoe in the bay to add to the excitement.

Neither story is more correct than the other. Both stories relate to culturally
significant events, the origin of fire and the throwing of firebrands. It would appear as
though the story about the origin of fire is older than that of throwing firebrands. After
all, you have to know how to make fire before you can throw it off a cliff. However, that
does not mean that story came before the other story. It could just appear to be older.
It could be a more recent story told by a grandmother spinning a yarn localizing the Maui
stories for her grandchildren. On the other hand, perhaps it is the story behind the
origin of the place name, but not many people knew the story and decided to relate the
firebrand throwing to the place name because they do look like birds of fire floating down
from the cliff.

This is a perfect example of why I chose to accept all stories as truth and not
rank one as better or more correct than another. Each story is part of the cognitive
cartographies of two knowledgeable community elders. Both make perfect sense in
relation to the literal translation of the place name. Both provide spatial knowledge
that is culturally situated and localized. What is even more impressive is that when
Aunty Moana was presented with the difference, she did not recant her story or put
down Uncle William Pānui’s story. She just calmly stated her source. She knew there
was a diversity of truths and once I realized she was teaching me this concept we moved
on to other lessons.
**Storied place name lessons**

Oftentimes storied place names are performed to pass on lessons with cultural significance. This is the case with some of the place names shared in the previous chapter, specifically the stories of Kealakekua, Limukoko, Nāpo'opo'o, and Paliomanuahi. Each of these stories relates an important cultural characteristic future generations need to be aware of in order to continue thriving in this area.

**Kealakekua**

The story of Kealakekua teaches future fishermen that the bay is a protected fishing ground. Fishermen need not fear seeing manō swimming within the bay as long as they show respect and care for ocean resources there will never be a shark attack within the bay. Of course this begs the question of what the possibility of an attack in the future would mean to the story. How or would the story still have relevance? When I asked Aunty Moana this question she said that if anybody gets attacked in the bay it would be because they didn’t show respect in one way or another.

Not showing respect could happen to greedy fishermen or careless swimmers. Maintaining belief in the old way is a sign of respect as well. Almost all the fishermen I spoke with said they frequently see sharks but they don’t bother each other because they are not taking what they do not need to feed their families. One young fisherman even said there is a huge shark roaming around in the area but that it never really comes
into the bay it just stays near the ledge at Palemanō. He sees it regularly when he goes diving but never fears being attacked because he knows he is safe fishing in the bay.

**Limukoko**

Limukoko teaches people to be aware of their environment and not to be too greedy when picking limu. After careful observation, the people living here notice that there is only a small window of time when picking limu is safe and the amount of limu you can pick in that time limit is enough to feed your family. Picking limu for a longer period of time will put you in harm’s way and you risk losing it all to the ocean. Since the ocean water rises slowly, it is easy to get caught unawares and once the small tidal pools between the shoreline and Limukoko are filled, you will find yourself in a precarious predicament.

**Nāpoʻopoʻo**

The story of Nāpoʻopoʻo reminds the people about the consequences of being greedy, especially with vital resources such as fresh water. The deeper meaning in this story has to do with the mismanagement of natural resources. In Hawaiian tradition, the Konohiki is responsible for managing the resources of the ahupua’a. As part of the spoils of a change in leadership, Konohiki were ‘assigned’ ahupua’a. Sometimes the assigned ahupua’a were in areas the Konohiki were not familiar. This story reminds the Ali‘i and Konohiki of the necessity to manage all resources responsibly because they are
‘gifts from the gods’. Any kind of mismanagement be it greed or irresponsible behavior will lead to the loss of these resources for all.

**Sensual cartographies**

At the most intimate depths of understanding and meaning presented here are those storied place names that reveal the sensual nature of Hawaiian cartographic traditions. Through place names such as Kepuhi, Kamaiko, ‘Umiwal, Mokuoka’e, and Kealakekua we learn how Hawaiians experienced the world with all their senses and incorporated these experiences into their cultural landscape.

**Kepuhi**

Kepuhi is the blowhole of this area. It acts as an early warning system for storms. Depending on the time of year, women and young children go to the shoreline to wash clothes and gather food. After years of observation they learned to listen to the way the waves crashing at Kepuhi sounded like. If you just hear the water rushing through the rocks, it is okay to go out for deep sea fishing. However, if it sounded like an underwater explosion of rocks slamming into each other, it is time to bring the canoes in and lash them down because rough weather is approaching.

**Kamaiko**

Kamaiko Heiau was a temple for preparing the body for burial. It sits on the promontory over Palemanō. It was given the name Kamaiko because human flesh stench
smelled the same as a rotting maiko fish. This heiau was not used by the Ali'i. It was used by the people in the community. The Ali'i, because of their mana, were tended to at Puhinaolono on the Kaawaloa side of the bay. I asked Aunty Moana about the burial practices and she said the bodies were dried on wooden crosses until the flesh could be pulled away from the bones. Then the bones were cleaned off and put into a basket and buried.

I wondered about the flesh and asked what happened to it? She said it was thrown into the ocean. All of a sudden the cyclical connection between Palemanō and Kamaiko became apparent. Manō hovered under this protected ledge consuming the dried rotted fleshly remains of the dead. Many believed they became extended family members watching over them while they fished and protecting them from harm. This kind of belief system ensures cultural protocols of respect and responsible ocean resource management practices are maintained.

'UMIWAI

'Umiwai is the name of the 'āina where Uncle William Pānui lives. It was named after the brackish water well that caused some people not accustomed to drinking brackish water to gag. The name was meant to be an indication of the brackish water. When Uncle William Pānui said many people think of 'umi as ten or think it refers to the Ali'i named 'Umi, I had to smirk to myself because I was one of those people. I remember thinking this was an excellent example of why the stories are so important. It is so easy
to misunderstand the literal meaning of place names, especially when there are so many
different ways to interpret them.

MOKUOKA‘E

Mokuoka‘e is the name of the land area where Kamehameha battled his cousins
Kiwala’ō and Keōua to become Ali‘i Nui of Hawai‘i Island. It later became known as the
Moku‘ōhai Battlefield. It was named Mokuoka‘e because the ‘āina became smeared with
the rotting bloodied bodies of fallen warriors both literally and figuratively. It was an epic
battle, fought in historic times and memorialized in the landscape. It is unfortunate
that the place name given by the people living in this area became misre-presented as
Moku‘ōhai because the original place name directly reflected what the area looked like
and in essence what it became. For some, the battle was a glorious victory. For others,
it was a dismal defeat. For the people living here, it will always be the land area smeared
by the corpses of valiant warriors, some of whose bones are still buried in the fissures
and stone mounds.

KEALAKEKUA

Lastly, Kealakekua is a significant place name for both Ali‘i and Maka‘āinana
social classes. It is most commonly known from the Ali‘i perspective as the trail the
Makahiki gods used to start their island circuit from Hikiau Heiau. Thus, the name is
invested with the mana associated with the annual Makahiki festival and its rituals. It

301
honors the memory of Lono and provides the Ali‘i an opportunity to rest from warfare and enjoy the bounty of life.

From the maka‘ainana perspective, Kealakekua is the trail the shark god of Ka‘ū, Kua, walked between the shoreline and the mountain gardens helping the people living in this area with their daily tasks. He was welcomed immediately and treated like family. He helped the farmers in their gardens and the fishermen with their catch. No one knew where he came from until it was time for him to leave. The people named the path he walked after him forever memorializing it in their cultural landscape.

In this example, the mana of Kealakekua exudes from various perspectives and dimensions. Yet, all these dimensions involve metaphysical realities. Whether it is a reenactment of an ancestor elevated to Akua status through generations of ritualized performances or a god living and working among the people, the stories associated with Kealakekua acknowledges a metaphysical presence into the Hawaiian cultural landscape.

CLOSING REMARKS

This chapter describes how those storied place names included in the previous chapter address some of the ideas and issues brought up earlier including Hawaiian and Western cartographic realities. It not only calls attention to those place naming and story telling discrepancies from the previous chapter caused by overlapping differing spatial knowledge systems, it also provides examples of how Hawaiian storied place names embed cultural nuances and stimulate the nine senses outlined by Oliveira.
Although some of the stories shared and analyzed rightly reveal a discontent with the current naming practices. It is important to see beyond the emotional displeasure and see how the differing spatial knowledge systems intermingled after the arrival of Captain Cook. While only twelve of the place names in this study were overtly changed either by disregarding Hawaiian knowledge systems or by innocent superimposition, they still had an affect of changing the contextualized cultural landscape. There aren't many people that remember the name Kapukapu at this point in time. If Aunty Mona had not published her stories, there may not be many more people in the future as cartographic assemblages honor the name given by Captain Cook, Kealakekua Bay, instead of Kapukapu.
CHAPTER 7 — INTERWEAVING TRADITIONS

Geographical landscapes are culturally vibrant entities, filled with past and present significance and a complex array of symbolic relationships. These symbolic relationships play a fundamental role in shaping all forms of social activity whether it is cultural, political, economic, or personal. Hawaiian performance cartographies are cultural practices that reveal the symbolic spatial relationships Hawaiians nurtured with their island setting. Mapping Hawaiian cultural landscapes requires both knowledge of how Hawaiians perceive, conceptualize, and actively construct their spatial reality and an understanding of the meaning and significance of the symbolic relationships Hawaiians invest into their island environment.

For generations, Hawaiians incorporated their spatial knowledge, moral underpinnings, and spiritual relationships into their heavenscape, landscape, and oceanscape. They conveyed this knowledge via various cultural practices such as 'ōiōelo no'eau (proverbs), mo'olelo (stories), oli (chant), hula (dance), mele (song), and mo'o kū'auhau (genealogy). These cultural practices employed metaphor and mnemonic devices like storied place names, sounds (including pitch, rhythm, voice quality, and intonation), gestures (including facial expressions and body movements), and artistic designs to get their message across. This research focused on place names as storied symbols in Hawaiian performance cartographies.
HAWAIIAN PLACE NAMES AND CARTOGRAPHY

I started by asking what kinds of Hawaiian place names have been preserved on maps and discovered a majority of them were associated with a Western colonial mapping project of land surveying for the conversion to private land ownership. I then asked what happened to those other place names, the ones DeSilva describes as nourishment. How has the (under)representation of Hawaiian place names on Western maps affected a Hawaiian understanding of place?

Thankfully this research revealed many of those other place names are still part of the Hawaiian cognitive cartographies. Although this is excellent news, it is somewhat alarming because every time a kūpuna dies, they take with them their cognitive cartographies; their knowledge of and experiences with their cultural landscape. This research also revealed that many community members were still able to demonstrate the sensual and spiritual nature of Hawaiian storied place names. Thus, it appears as though a Hawaiian relationship to place still exists as an integrated and interactive telling.

I was also interested in finding out how maps have affected the nature of Hawaiian cartographies? In order to answer this question, though, I needed to describe the philosophical underpinnings that frame the nature of both Western and Hawaiian cartographies - two separate yet contextually functional spatial knowledge systems. I did not intend to present Hawaiian and Western cartographies as a dualism, because that would continue to privilege Western epistemological knowledge frameworks. By
framing this discussion within a Hawaiian epistemological context, not only was an
indigenous presence brought to the forefront, it also provided an opportunity to
investigate the history of cartography from a new perspective. Since there have already
been several publications on the history of cartography, finding another ‘angle’ to
present was challenging. I decided it was time to begin a discussion of the relationship
of Western epistemologies to the technological and technical development Western
cartography.

Western cartography owes much of its technological and technical development
to astronomy, exploration, and mathematics. Astronomy provided human beings a
method of studying spatial phenomena and gaining spatial knowledge about the earth.
Explorers increased geographic knowledge of the known habitable world oftentimes
demystifying philosophical musings and correcting errors in calculation. Mathematics
provided the framework by which the world could be known, measured, plotted, and
symbolized.

Western cartography also frames its technological and technical development
according to its philosophical evolution. Western spatial knowledge begins with Greek
cosmogonic and cosmologic discussions of myth and fantasy. The Ionian philosophers of
the fifth and sixth century BC shifted their explanations on more ‘natural’ causes.
Eventually, they developed a line of reasoning that separated cosmogony from
cosmology, because one was still best described with supernatural and mythical
elements while the other could be explained in more ‘natural terms. Even though both
Babylonian and Egyptian neighbors had already developed, employed, and incorporated advanced mathematics into their spatial understandings, we can only speculate they influenced early Greek thought. By the time Alexander the Great swept across the southern portion of the Asian continent, Babylonian astrological records were voluminous. These and other philosophical works were gathered together and housed in a library in Alexandria providing philosophers a central location to access new geographic knowledge.

It is in this setting that in the third century BC Euclid was able to formalize his mathematical contributions of geometry. I believe this development inextricably intertwined Western cartographic development with mathematics. Thus, for nearly two millennia (since the third century BC) the development of Western cartography becomes a story of increasing measured accuracy and place becomes a quantifiable location enmeshed in an abstract spatial grid.

Although the Middle Ages are usually considered uneventful in terms of scientific development of cartographic techniques and technologies, they were extremely important in creating a universalizing mindset driven by philosophical ponderings of infinite space that cannot be overlooked. This theme later emerges in the works of Newton, Descartes, Kepler, and others. This attitude cemented the idea that the world could be known, homogenized, and graphically framed.

Cartographic compilations during this era reflected Christian theological doctrines. Attention to measured accuracy was not as important as representing
Christian worldviews. Those ‘other’ worldviews were represented in the margins. While some of the representations were derogatory at best, most of them were fantastic mythological creations. But at least they were acknowledged on some of the Mappaemundi. Much of cartographic development immediately after the Middle Ages is a reaction to the stifling control of religious dogma.

Exploration once again expanded geographic knowledge of the known, habitable world allowing cartography to correct errors and incorporate new information. However, by this time, Western cartography had already established the framework for understanding and representing the world. So, when explorers trained in Western cartographic traditions encountered different spatial knowledge systems that did not fit into their framework, they chose not to incorporate it because if it was not measurable, it did not exist. Furthermore, when Renaissance explorers charted new lands, they began inscribing their own names on maps, regardless of whether or not they acknowledged that Native peoples already had their own names. It was a form of cognitive appropriation that foreshadowed the actual appropriation of the land during the Western colonial mapping projects.

Probably the most influential Western philosophical that affected cartography is Descartes’ separation of the mind from the body. He rationalized ‘truth’ and ‘certainty’ was operations of the mind. That the body was part of the physical world and could be quantified like all other objects. By making the eye the lens through which the world is known and rationalized to the mind, the occularcentric nature of modernism was set in
Practically speaking, technological development of the telescope and its use as a tool in trigonometric surveys once again altered man’s relationship with nature and place.

It is important to recognize that the appropriation of land was a concept Europeans perfected in their own homelands during the cartographic reformation before exercising it overseas. The cartographic reformation is a time when cartography was finally free of the mythical artistic renderings of the Renaissance to follow the more technically perfected methods of surveying. The Carte de Cassini was an important cartographic achievement that taught the rest of the world how to establish national mapping projects thereby covering the world’s landscapes with chains of great triangles.

The cartographic grid and the surveyor’s triangulation networks that were then imposed on indigenous landscapes took no notice of any existing cartographic systems. They effectively wrote the indigenous presence out of existence even though many of the maps explorers and surveyors drew could not have been done without the help of indigenous peoples. Occasionally, these maps would include indigenous names. In the case of Hawai‘i, a majority of the names recorded on maps are Hawaiian place names, but the reasons they were recorded had very little to do with preserving any kind of Hawaiian cartography or Hawaiian place naming practices. It had everything to do with securing the names in an established Western cartographic framework.

Before describing the role of Hawaiian storied place names and the nature of Hawaiian performance cartographies can be achieved, I first set out to express their
philosophical underpinnings via Meyer’s Hawaiian Epistemology, Andrade’s Hawaiian Geography, and Oliveira’s work on Hawaiian language and spatial knowledge. The salient points of each of their works are the foundations for understanding Hawaiian spatial knowledge systems.

HAWAIIAN SPATIAL KNOWLEDGE

Hawaiians acquire knowledge empirically, sensually through cultural lenses that are simultaneously objectively subjective and subjectively objective. Hawaiians recognized the body as an essential part of acquiring knowledge prioritizing metaphysical sensual experiences. You may recall, the dreams I shared about Kealakekua. As far as I was concerned these dreams were essential for me to proceed with this research. Through my dreams, I was able to interact with Kealakekua as a living entity. According to Oliveira, Hawaiians are capable of acquiring spatial knowledge from their nine sensory systems, sight, hearing, taste, touch, and smell, na‘au (similar to intuition), kulāiwī (ancestral place), au ‘āpa‘apa‘a (cyclical, seasonal, and ancestral time), and mo‘o (connection to the past, present, and future).

Hawaiian spatial knowledge symbolization reflects metaphoric modes of expression and manifest in several places including topographically, artistically, and linguistically. Hawaiians metaphorically recognized various topographic features and elements of nature as representations of deities. A specific star constellation represents the phallus of Wākea, freshly fallen snow of Mauna Kea represents Pollahu, and Halema‘uma‘u is the home of Pele. All Hawaiian artisan creations were imbued with
symbolic meaning from the sacred to the profane. Hawaiian language developed through an intimate participation with the natural environment and is thus the linguistic embodiment of experiencing the world sensuously and imbuing it with metaphoric meaning. It is quite different from the concept of landscape as text precisely because a text separates the observer from the presentation of knowledge. It is much more about place representing a multiplicity of meaning. Hawaiian place names symbolically encapsulate and spatially anchor those culturally significant ‘happenings’ of long ago, yesterday, and tomorrow.

Hawaiian spatial knowledge transmission is mainly performative and transmission of specialized knowledge usually takes the form of apprenticeship and training. Hawaiians developed techniques to ensure complex bodies of spatial knowledge could be accurately retained from one generation to the next. It included incorporating knowledge into various cultural practices such as, mo’olelo, ‘ōlelo no’eau, oli, mele, mo’o ko’aahu and hula; applying various rhythmic, tonal, and gestural mnemonics, teaching experientially, and using repetition and redundant connections.

**Hawaiian Performance Cartographies**

Hawaiian performance cartographies are interactive presentations of ‘experienced space’. They situate mapping in the landscape and encode spatial knowledge into bodily memory via repetitive recitations and other habitual performances.

As such, all the nuances Hawaiian oratory and hula provide an even deeper understanding of Hawaiian performance cartographies which in turn provides a deeper
layer of knowing and relating to the land and ultimately strengthens Hawaiian cultural identities.

After all of this, the distinction of Western cartography as a performance of inscription versus Hawaiian cartography as a performance of incorporation was no longer clear. Inscribing practices ‘incorporate’ new knowledge according to their ontological and epistemological consciousness and incorporating practices ‘situate’ (inscribe) knowledge onto the landscape and into bodily memory. The best way to describe the characteristics that make each presentation of place unique is to describe the way each relates to and presents the landscape.

The best analogy of how each cartographic tradition represents landscape is in describing the presentation of a performance at the cinema versus one at the theater. The cinema, according to Connerton is like any other inscribing practice, it situates the body as an object of knowledge and discourse as separate from the ‘subject being studied’. In other words, it physically and temporally distances the actors from the spectators. Western cartography, like the cinema incorporates spatial knowledge by physically and temporally distancing the knowledge source(s) from the knowledge seeker.

The theater, on the other hand, physically and temporally unites actors and spectators. Hawaiian cartography, like the theater situates the body as part of the subject being presented. It incorporates spatial knowledge by physically and temporally uniting knowledge source and knowledge seeker. (Connerton, 1989, 78)

312
Fundamentally both Western and Hawaiian cartographies are a product of their underlying ontological and epistemological framework. Western cartography presents experiences of the world through dualisms. Hawaiian cartographies present experiences of the world interactively. The same can be said about the role of place names in Western and Hawaiian cartographies. Hawaiian cartographies present place names as an interactive incorporative repository of cultural knowledge and meaning. Western cartography presents place names as static fixed labels in an inscribed performance of measured accuracy.

While it is a tragic loss that over half the place names collected in this research from descriptive texts no longer have a story remembered by knowledgeable community elders that participated in this research, it would be wrong to single out Western cartographic traditions as the sole culprit in their demise. Although inscribing practices have always formed the privileged story and incorporative practices the neglected stories, Hawaiian cartographic traditions and place naming practices continue to be practiced and are acknowledged as viable venues for preserving cultural knowledge.

When Aunty Moana was given a map to work with, she incorporated it into her storytelling repertoire. She didn’t necessarily use them as surrogates of Hawaiian reality; she used them as an orienting tool that was incorporated into the performance. The presence of the map did not alter her relationship with the landscape but it did affect her relationship to some of the place names. Those that were misspelled or misplaced or replaced by other names changed the way she presented the significance of
that place to me. Whenever she saw a ‘wrong’ place name, her story usually began with a
diatribe about how errors of this nature are confusing.

Although these kinds of errors of transcriptions and transliteration are a
product of the ‘new knowledge space’ created by the cartographic culture clash, like
most encounters in this ‘new knowledge space’, also known as the ‘contact zone’ or ‘third
space’, there has been significantly more of an effect on the colonized society than on
the colonizing society. Much of this is a direct result of the inscriptive and authoritative
practices of Western societies. It appears as though Hawaiian spatial knowledge went
largely unnoticed in Western maps except for the inclusion of Hawaiian place names.
Hawaiian understanding about the multiplicity of meaning a place represents readily
incorporated Western maps as another ‘tool’ in their performed presentation of place.
Hawaiian place names were ‘reduced’ to ‘labels’ on an objectified and distanced
landscape for assimilation into the Western consciousness.

But how have Hawaiians used or adapted Western cartographic practices?
Hawaiians have successfully engaged with Western cartographic techniques and
technologies from the time the first map was printed in Hawai‘i. Lorrin Andrews taught
Hawaiian students how to make Western maps using the copperplate method and they
became quite proficient at making them. A Hawaiian student made the first ahupua‘a
maps of the islands thereby ‘using’ Western cartography to represent Hawaiian cultural
knowledge.
Unfortunately this text did not go into the effect Western cartography played in the Mahele process. The Mahele is a complicated colonial project that warrants a separate manuscript. In more recent times Hawaiians have used GIS technologies to unravel the mess left behind by this conversion to private property. Donovan Preza is a Hawaiian student who will soon be making this case by writing on this topic area. He has been using GIS technologies to georeference the information recorded in legal documents. No doubt there have been numerous inconsistencies in the records that are a result of the ‘new knowledge space’.

An equally important question is how has Western cartography changed or adapted to the spatial understandings of Hawaiian cartographies? I think this question goes hand in hand with how or can Western cartographic techniques and technologies be better utilized to represent Hawaiian and other indigenous cartographies? These are tricky questions to answer because it inevitably highlights the differences between these two cartographies and potentially makes any answer suspect to dichotomous conjecture. Nonetheless, when you get right to the core of the ‘difference’ it is about the manner in which spatial knowledge is presented.

Western cartography distances object, the landscape being represented, from the subject, the map reader, both physically and temporally. Hawaiian cartographies bring the landscape and the map reader closer together in an interactive presence. Both are performances that record spatial knowledge, but Western cartographies are performances of inscription and Hawaiian cartographies are performances of oration.
One way to bring these two traditions together is to remove the panopticon of linear perspectivism by introducing landscape as a three dimensional object. When the lens is moved from a planimetric point of view and oriented according to a more realistic engagement with landscapes we provide the illusion of the body being able to interact with it. Another way these two traditions can meet closer to middle ground is to bring an element of interactivity into Western cartographic performances. Google Earth has already presented a venue for this very concept. Anyone in the world can share their experience of place with anyone else in the world just by uploading digital pictures, audio, and video files almost instantaneously. A map user can launch Google Earth, upload multiple files of a place they want to learn more about and interactively experience that place through the internet. Now while this is still a ‘cinema’ performance of place, it is at least a way to acknowledge place as a repository of a multiplicity of meanings.

What this means for Hawaiian place names is truly exciting. Not only does the technology exist to correctly ‘label’ places on the landscape according to the way they should be pronounced. This same technology is also proof that Hawaiian philosophical concepts about place as a repository of a meaning can begin to reshape our Hawaiian consciousness. Recall, as technology continues to modify our relationship with our own local landscapes it is also reshapes, yet again, the way we relate to the world, though this time it will be the ‘world as landscape’, instead of the ‘world as picture’.

However, this ambitious text was not just concerned with answering questions about Hawaiian place names and the nature of Hawaiian cartographies. It also
attempted to acknowledge the need for indigenous methodologies in geographic research and recognize the need for more cartographic research that provides for diverse epistemologies. I certainly didn't begin this research thinking about either of these needs, but as I became enveloped by a strangely familiar cultural learning, these issues became necessary to address.

**INDIGENOUS METHODOLOGIES AND EPISTEMOLOGIES**

When I first began this research, my knowledge of indigenous methodologies was limited to Smith's *Decolonizing Methodologies*. I expanded my learning by organizing sessions on indigenous methodologies at the Association of American Geographers Annual Meeting. As my knowledge of indigenous methodologies grew, I was able to identify four common principles: relational accountability, respectful representation, reciprocal appropriation, and rights and regulation. Furthermore, I was able to identify four differences between research done within an indigenous context using Western methodologies and research done using indigenous methodologies: accepting/advocating of indigenous knowledge systems, positioning of the indigenous community members and the researcher in the research, determining a research agenda, and directionality of sharing knowledge.

Although I cannot say this research uses indigenous methodologies because the community did not define the research agenda, I can say I did everything else necessary to acknowledge the need for using indigenous methodologies in any kind of geographic research. Before undergoing this research, I waited for some divine inspiration that
connected me with the essence and spirit of Kapukapu. It came to me in the form of several dreams, thereby establishing a relationship to which I was accountable.

Sitting with Aunty Moana and listening to her stories was a lesson in protocol that I learned as part of the research process. I respect everything she shared and know there is a limit to what can be shared with others. Aunty Moana made sure most of what was shared was not taped and only those stories I repeated back to her were the one I could share with others. Her only request, which was also shared by other community collaborators, was that, “they get the names right.”

In this case the 'they' she is referring to are those government agencies (Federal, State, County) responsible for putting the names on the maps. In fact, many of the community members I spoke with are irritated that maps don’t reflect the correct geography and government agencies do not seem to care that future generations are going to be confused about their own local geographies. Giving something of value back to the community that shared their knowledge with you is vitally important.

Since April 1999, I have been working with the Hawai‘i Board on Geographic Names (HBGN) to include Hawaiian orthography for those Hawaiian place names whose meanings are known. After speaking with so many passionate community members, I became a catalyst for the community to make necessary corrections to the Hawaiian place names in this research area. The corrections are more than just a matter of public record. They are considered the legally recognized spelling. That means that any signs or projects funded by the Federal government must use the legally recognized
spelling. Thus far, the board has completed 95 of 124 US Geological Survey (USGS) 1:24,000 scale topographic maps or nearly 77%, (Figure 70).

Knowledge shared by community collaborators about the meanings of Hawaiian place names derived from this research have been presented to the HBGN for correction and those community member's names have been recorded as the source for the correction. Lastly, I have written this document in a manner that both academics and community collaborators can understand. I made sure each story shared recognizes the community member that shared them. These are their stories, their experiences and their voices. It is important to ensure that Indigenous voices are heard and incorporated into any kind of Indigenous scholarship as long as it is agreed upon by the Indigenous people and/or community. Aunty Moana agreed to the (re)presentation and strategy for analysis before she died. It would have been good to have her 'sign off on
the final work, and in lieu of that I invited her to come to me in my dreams and tell me if there is anything more or less she expects from this work. Thus far I haven’t had any dreams redirecting my efforts.

In relation to recognizing the need for more cartographic research that provides for diverse epistemologies, I have been corresponding and co-authoring articles and presentations with Margaret Pearce from Ohio University. Some of our work is quoted in this text. We are both concerned with the fact that given the multitude of cultural mapping projects, conferences and forums, and guidebooks, a majority of cartographic development is still currently focused on technological progress as opposed to epistemological evolution. We both believe within the modern advances of Western cartographic techniques and technologies lies the seeds of their alternatives and intend to passionately pursue them.

Insofar as my own personal views on the subject, I believe mapping for the sake of mapping does nothing to empower Indigenous people. Mapping that uses a Western framework continues to marginalize Indigenous voices. Mapping to extract cultural knowledge without protocols deprives an Indigenous community of their dignity and, ultimately, their cultural identity. I believe mapping should reinforce Indigenous knowledge systems, acknowledge Indigenous cartographic traditions, and strengthen Indigenous community control over their cultural resources. It should empower Indigenous communities in their management of environmental knowledge and cultural
heritage especially when used to create intergenerational and intercultural dialogues of learning.

This text intended to extend the margins of understanding in regards to the significance of place names in Hawaiian spatial knowledge systems. It is a continuation of the work Meyer, Andrade, and Oliveira have accomplished on Hawaiian epistemology as it relates to Hawaiian geographical understandings. This text does not mean to make light of other Hawaiian scholars’ works that have also extended the margins of academic thought. Their struggle to be heard in their respective disciplines is a humble reminder that we are all working toward a similar goal – bringing the indigenous voice from the ghostly shadows of misrepresentation toward enlightened awarenesses. It is my hope those future generations of scholars passionate about Hawaiian storied place names or Hawaiian performance cartographies will not only deepen our understanding of Hawaiian spatial knowledge systems but will also strengthen the bond between Hawaiian cultural identity and the significance of multigenerational experienced place.
**APPENDIX A – DVD**

This is a DVD with computer data files and can be accessed through a computer DVD drive. It will NOT work in a DVD player for a television. It contains eleven .avi files that can be accessed via Windows media player 10. This DVD is not included in the downloadable version of this text. On-line readers may obtain the original works there video clips were based on from the original source as noted in the text.
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338


