

Visualising Hawaiian Sacred Sites: The archives and J.F.G. Stokes's pioneering archaeological surveys, 1906–1913

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ABSTRACT

In the early 1900s, Australian-born archaeologist John F.G. Stokes was the first to extensively use modern surveying techniques and photography to document Hawaiian archaeological sites. Stokes carried out fieldwork for a Bishop Museum-based research program driven by interests in Polynesian origins and Hawaiian religious change, focusing specifically on the monumental temple sites called *heiau* in Hawaiian. Using a sample of the visual record of plan maps and photographs from Stokes's work, we examine how Stokes represented sacred sites, including the variable level of architectural detail offered. Stokes's reliance on Native Hawaiian informants is notable, as it may have played an important role in shaping his view of the archaeological landscape. Stokes's survey record provides an important dataset for understanding the paradigms at work in Polynesian archaeology in the early 20th century, and the influences of this work in subsequent approaches to monumentality in the archipelago and beyond.

Keywords: Hawaii, heiau, visualisation, history of archaeology, Polynesia

INTRODUCTION

Maps provide an important avenue for understanding the changing ways in which archaeologists have viewed ancient sites over the evolution of the discipline. Examination of maps can provide significant insights into the development of regional traditions in archaeological cartography, including the feedback between site visualisation and theoretical understandings of the past (Bowden & McOmish 2011; Flexner & Kirch 2016). This kind of reflection on the development of the field requires accessible, complete, and high quality archival information. For example, the Bishop Museum has recently created a web archive of 55 detailed and annotated maps of cultural sites by the *kānaka maoli* (Native Hawaiian) scholar Henry E.P. Kekahuna (Bishop Museum 2013). These maps, which include draft versions, are searchable by keyword, in English and Hawaiian, and downloadable in high-resolution format. The collection of John F.G. Stokes's maps in the Bishop Museum Archives likewise offers a remarkable record of one archaeologist's work at recording spatial data using early 20th century technology. Methodologically, these maps represent an approach to documenting site locations and forms that was unprecedented in Pacific

archaeology, and was for the time innovative in terms of archaeological approaches to survey globally (see below). These documents provide valuable information about site locations, architectural forms, preservation, and local knowledge obtained from Native Hawaiian informants (Stokes 1991). Together with maps and other documents from subsequent archaeologists including Kekahuna, Emory, McAllister, and others, these types of archives represent the legacy of pioneering systematic archaeology in the Hawaiian Islands and Polynesia more broadly.

Several factors have obscured a full reckoning of the quality and quantity of field recording by Stokes. After a falling out with Herbert Gregory, then director of the Bishop Museum, Stokes was relieved of his appointment at the Museum and never published his results. His draft maps and notes have been used in several publications, notably Dye's (1991) edited volume of Stokes's Hawai'i Island *heiau* survey, and Summers's (1971) gazetteer of archaeological sites on Moloka'i Island. These published volumes present only a portion of Stokes's work. For example, 25 years ago, Dye (1991:ix) reproduced 47 maps of Hawai'i Island sites, reporting that 'The originals of Stokes's plans are lost, and the glass plate negatives of the old copy photographs would yield few prints of publishable quality. Thus the plans that appear in this text have been redrawn from copy photographs.' More recent work in the Bishop Museum Archives has succeeded in relocating hundreds of original early archaeological maps from Stokes and others. Some basic facts about Stokes's body of work remain unclear: How many sites did he map on each island? What quality are those maps? And, how many of these original

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documents have survived to the modern day?

In this article, we focus on 209 maps and 432 photographs produced by Stokes during his pioneering archaeological surveys of *heiau* and other sites and landscapes in the Hawaiian Islands, currently curated in the Bishop Museum Archives. These are only part of a larger corpus of Stokes's material that includes maps, notes, and photos from islands of the Hawaiian group, as well as from his later fieldwork in the Austral Islands. We report on a small sample of Stokes's larger work, but these maps offer an important insight into archaeological practice from the first systematic surveys of Hawaiian sacred sites in the early 20th century. Future research will allow us to refine and expand upon these initial observations.

THE FIRST FORMAL ARCHAEOLOGICAL SURVEYS OF HAWAIIʻI

John F.G. Stokes arrived in Hawaiʻi from Australia in 1899, having been invited by William T. Brigham, the first Director of the Bishop Museum, who appointed Stokes as Curator of Polynesian Ethnology in 1903. In 1906, Stokes embarked on the first major formal archaeological survey of *heiau* sites on Hawaiʻi Island, starting in Kailua, Kona. Stokes's methodology first involved interviewing local Native Hawaiian elders to find the locations of sacred sites such as *heiau* (temples) and *koʻa* (shrines). He then used a transit to determine the precise geographic coordinates of the sites, using the method of triangulation from a series of first-order benchmarks that had been established by the Hawaiian Government Survey in the late 19th century. At sites where substantial stone structures remained, Stokes used his survey instruments to make precise and sometimes highly detailed plans as well as cross-sections of the structures. Beginning in the Kona District, Stokes then proceeded to the districts of Kaʻū, Puna, Hilo, Hāmākua, and Kohala before returning to Honolulu after about five months in the field. Over the following decade, Stokes expanded his fieldwork in the Hawaiian archipelago to Molokaʻi in 1909–1910, Oʻahu and Kauaʻi in 1911, and Kahoʻolawe in 1913 (Dye 1991:7–14; Spriggs this volume). Our initial sample of maps and photographs includes images from all of these islands (Table 1), and additional work should increase the geographic coverage and variety of sites represented.

Stokes's work was carried out at the behest of Bishop Museum Director Brigham, who was writing an account of the ancient Hawaiian religion (Brigham, n.d.). Based on Hawaiian oral traditions collected by Abraham Fornander (1878) and others, Brigham had developed a theory that Hawaiian temples had changed over time, and wished to test this theory with archaeological field data (Dye 1989). Brigham hypothesized that the original temple form consisted of open platforms, which were later replaced by enclosed, walled temples. According to the traditions, this change was attributed to Pāʻao, a Tahitian priest known

Table 1. Islands represented in Stokes's maps and photographs

Island	Maps	Photographs
Hawaiʻi	61	143
Hawaiʻi?	2	0
Kahoʻolawe	5	12
Kauaʻi	2	92
Maui	0	3
Molokaʻi	67	152
Molokaʻi?	7	0
Niʻihau	0	7
Not Marked	52	19
Oʻahu	12	4
Oʻahu?	1	0
Grand Total	209	432

from ancient Hawaiian chronicles, who not only introduced the enclosure form of temple to the islands, but other associated ritual practices including the worship of the god Kū and the practice of human sacrifice (Kamakau 1991:3–5; Kirch 2010:86–87). Stokes ultimately decided that the *heiau* data he compiled from his mapping efforts on Hawaiʻi and Molokaʻi Islands were too complex to reflect a clear and sudden revolution in ancient Hawaiian religious practice and temple form as suggested by the oral traditions (Dye 1991:15). Perhaps in part due to this failure to find a clear answer to Brigham's hypothesis, as well as to Stokes's well-known reticence to publish prematurely, his Hawaiian temple surveys were never published in his lifetime. The Hawaiʻi Island surveys were later edited and published by Dye (1991), while the Molokaʻi temple surveys were only partially incorporated into the island-wide survey of Molokaʻi sites by Summers (1971).

While the theoretical and methodological landscape of Hawaiian archaeology has moved on substantially since Stokes's time, his detailed field notes, maps, and photographs continue to provide an important record that inspires and informs research in Hawaiian archaeology. Below, we present a preliminary analysis of the visual record produced from Stokes's fieldwork during this period, particularly his maps from his surveys on the islands of Hawaiʻi and Molokaʻi.

STOKES'S MAPPING TECHNIQUES

The particular mapping techniques and instruments used by an archaeologist directly affect the nature and quality of the maps and data obtained. A rough sketch map will not be nearly as accurate as a map made with compass and tape, but the latter may be less precise than one constructed using a theodolite. Stokes did not leave a written description of the techniques he used in his *heiau* survey on Hawaiʻi and Molokaʻi, but a close examination of his maps allows us to infer much about his methods. First, we

know that he used an optical transit, both because such an instrument is occasionally visible standing on its tripod in his photographic plates of sites, and also because on some maps he wrote ‘Transit’ next to the symbol for an instrument station (triangle with a dot in the center). Most likely this instrument was a simple transit rather than a theodolite (the latter having the capability to record vertical angles or altitude as well as horizontal azimuths). Photographs indicate that Stokes measured distance by stadia (see below).

Stokes confronted two kinds of mapping problems in his *heiau* surveys: (1) determining the precise geographic locations of the sites he was shown by his native informants; and (2) making precise plans of the stone structures. In this age of GPS, it is easy to forget that the task of determining a site’s geographic coordinates was not a trivial matter in the initial decades of the 20th century. In order to map site location geographically, Stokes used the classic method of triangulation from known ‘benchmark’ stations, as is well documented on several of his ‘transit line’ maps. This required the prior existence of a geodetic network of

primary trigonometric stations or benchmarks situated on prominent landmarks across the islands. Fortunately, such a geodetic network of benchmarks had been established by the Hawaiian Government Survey (HGS), beginning in the 1870s (Moffat & Fitzpatrick 2004:23).

Stokes’s map of site locations on Kalaupapa Peninsula¹ illustrates this method of triangulation (Figure 1). When Stokes carried out his Moloka’i fieldwork in 1909, the most detailed available map would have been the HGS 1:90,000 1897 map compiled by W.D. Alexander and M.D. Monarrat (reproduced in Moffat & Fitzpatrick 2004:42–43). Three primary trigonometric benchmarks had been established in the vicinity of Kalaupapa, at Leinaopapio (a point at the mouth of Waikolu Valley), Kauhako Crater, and Kalawao (a small hill near the northern tip of the peninsula), and are shown on the 1897 map. Stokes’s triangulation map shows that he set up his transit at each of these benchmarks, taking careful sightings of the azimuths to each *heiau* location, and recording these in minutes, degrees, and seconds of arc. In order to properly see the *heiau* sites across distances covering four kilometres

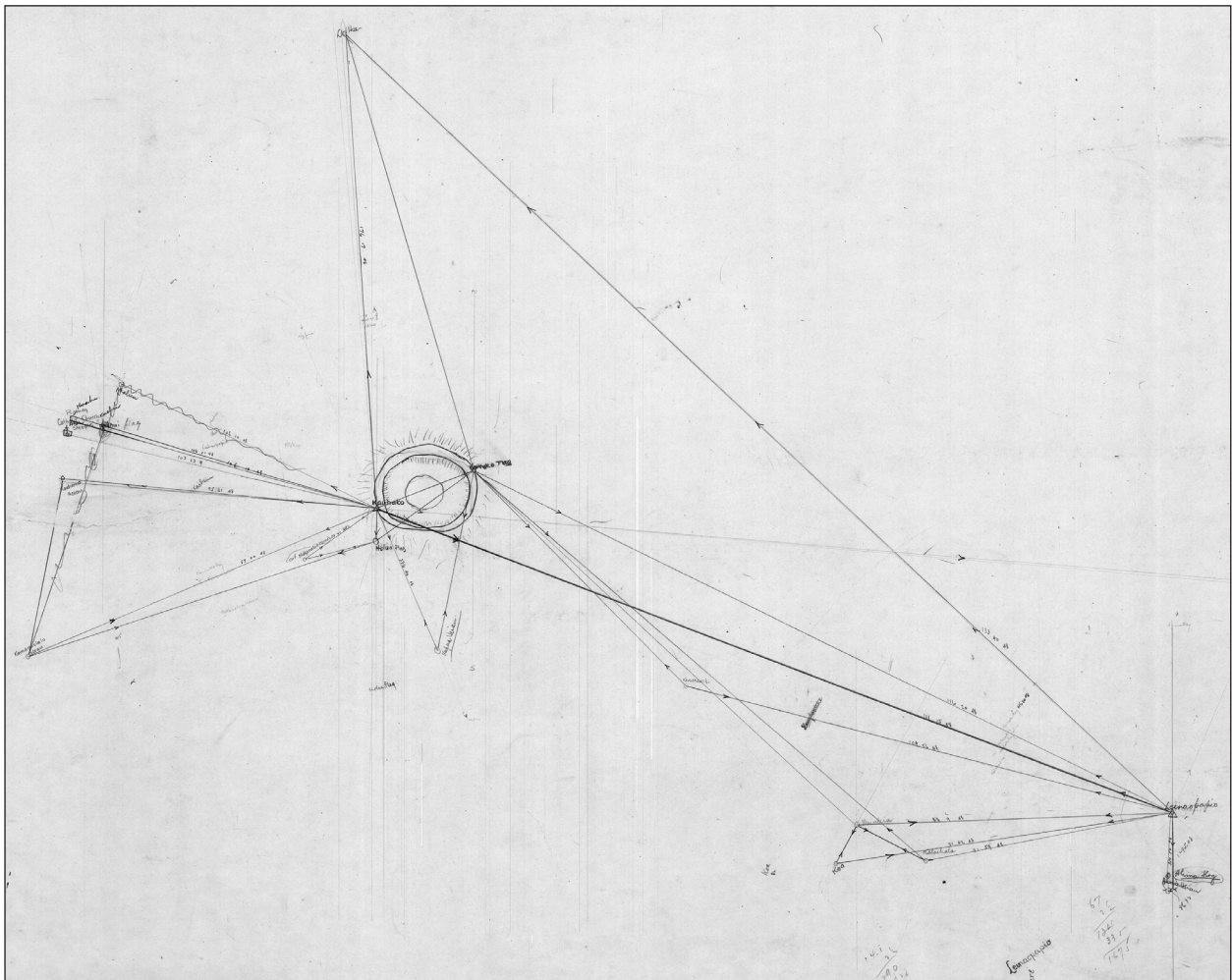


Figure 1. Transit map of site locations at Kalaupapa, Moloka’i (SP 208970; by J.F.G. Stokes, Bishop Museum Archives).

or more, he set up white flags on poles on each structure. These flags are visible in some of the photos that he took at the time (Figure 2). Plotting out the intersecting bearings from the primary benchmarks, the position of each *heiau* was accurately determined, as shown in Stokes’s plan. This work, which required visiting each site to place the flags, then moving his surveying gear by foot or horseback (or by canoe in the case of Leinaopapio) from benchmark to benchmark must have taken several days of strenuous effort.

Having fixed the geographic coordinates of his sites in space, Stokes then proceeded with the task of preparing detailed plans of the individual structures, typically at scales of $1''=5'$ or $1''=10'$. Close examination of his field drawings (those typically done in pencil and not inked) reveals that he took a series of azimuth bearings and distanc-

es to a variety of points around each structure, often the corners or junctions of walls, terraces, or platforms. These points are indicated by a circle-and-point, and next to each is written a number which appears to be an elevation relative to 100, which was the arbitrary height assigned to his transit telescope. Plotting out the points on his field drawing, Stokes then ‘connected the dots’ by drawing in lines that represented the wall or terrace faces, platform edges, and other features of the structure’s stonework. The elevations showed the relative heights of these features, and allowed him to construct cross-sections through the sites (Figure 3). This approach to documenting site locations and forms was a remarkable contribution to Polynesian archaeology. Previous work had focused on individual sites, and even after Stokes there was a habit of ‘guesstimating’ site locations at the island scale, even in apparently



Figure 2. Evidence for Stokes’s surveying methods in photographs. Above: tripod presumably used to support the optical transit (SP 1250; by J.F.G. Stokes, Bishop Museum Archives). Below: white flag used to locate sites from a distance (SP 1274; by J.F.G. Stokes, Bishop Museum Archives).

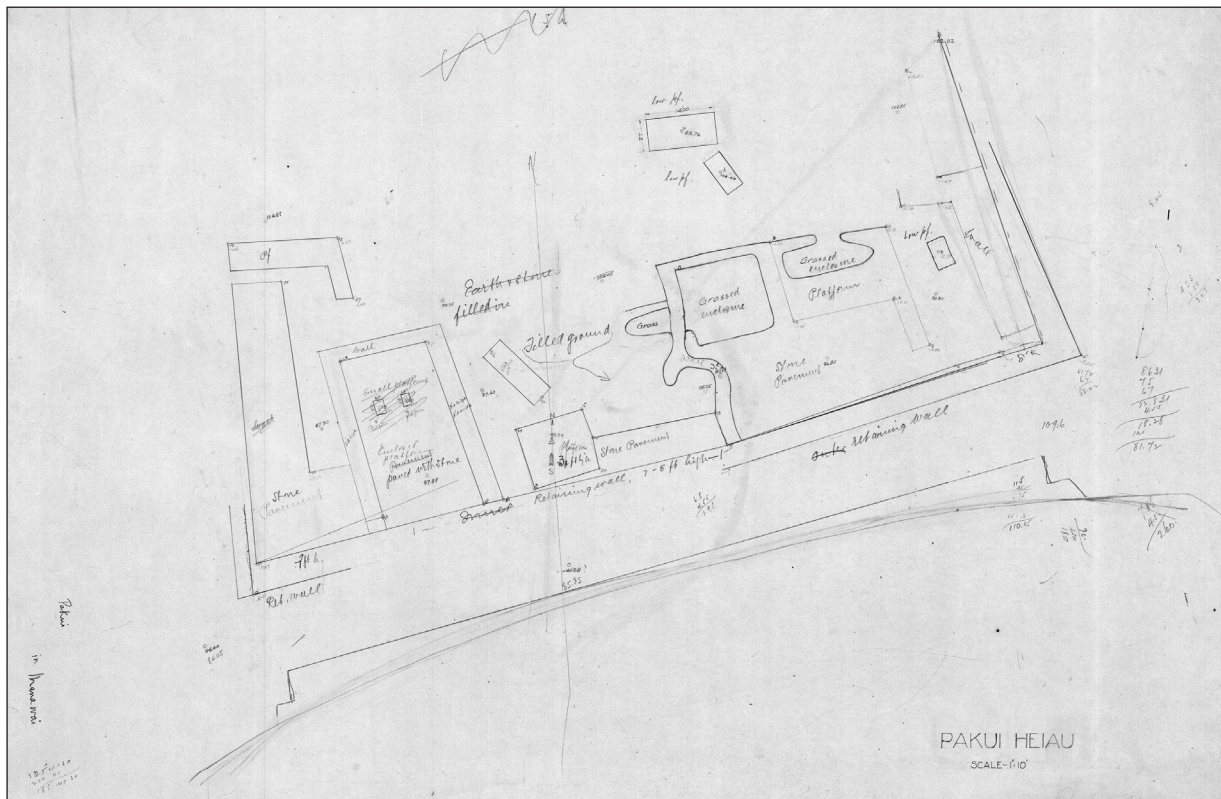


Figure 3. Plan of Pakui Heiau, showing calculations and cross-section drawing of the site (SP 208991; by J.F.G. Stokes, Bishop Museum Archives).

systematic surveys. For the time, this level of cartographic precision was rare in archaeology anywhere, and unique in the Pacific. In many ways, Stokes prefigured the later ‘settlement pattern’ approach to Polynesian archaeology by over 50 years (see Flexner & Kirch 2016:18–20).

THE VISUAL CONTENT OF STOKES’S MAPS

To identify patterns in Stokes’s mapping practice, we characterised each map by ‘style’, ‘content’, and ‘quality’ (Table 2). The primary *styles* consist of ‘Outlines’ in which the edges of walls, platforms, and terraces are represented by simple lines (usually in pencil); ‘Individual Stone’ maps in which individual stones are depicted across an entire site or a portion of the site; and ‘Transit Line’ maps in which the geographic coordinates of sites are mapped using the transit. There were also one each of a landscape drawing and a site reconstruction (the latter drawn by Y.E. Tseu but included in this analysis as it was done ‘under Stokes’s instruction’). The *content* was categorised among ‘Annotated Plans’ (the most common category by far); ‘Cross-Sections’, which were often included with the plans; ‘Perspective’ drawings, and ‘Survey’ data. Finally, *quality* was assessed as ‘Sketchy’ (lines barely visible, not straight, or crossed out); ‘Basic’ (minimal outlines and little or no labelling); ‘Detailed’ (clearly identified complex features, individual stones, and abundant labelling and other information);

and ‘Finished’ (feature outlines that have been inked for publication).

Plans dominate Stokes’s maps, with some examples including cross-sections. In one case there is a drawing that consists of a cross-section only.² Stokes also produced three perspective drawings, an important interpretive technique in early mapping work in Oceania that fell out of favour in the second half of the 20th century (Flexner & Kirch 2016). Two of the perspective drawings were of Pu‘ukoholā Heiau, Kamehameha’s major temple site at Kawaihae on Hawai‘i Island, one of which is a reconstruction including drawings of the thatched houses (*hale*) and priest’s tower (*‘anu‘u*) that would have stood on the *heiau*.³

The majority of Stokes’s maps were classed as ‘Outlines’, and the majority of these were classed as either ‘Basic’ or ‘Finished’ in quality (see Table 2). In other words, in most cases where Stokes produced a map of a site, it was a fairly simple measured line drawing showing the basic outlines of walls or platforms (Figure 4). Most of these outline maps appear to have been prepared while Stokes was in the field, and are thus likely to be his original plots of his survey data. In many cases, the drawing was later inked over in preparation for publication, though as noted above, the vast majority of inked drawings were never formally published in the end. The method of simply drawing the outline of a structure would have allowed Stokes to group *heiau* into platform and enclosure ‘types’, thereby

Table 2. Visual content of Stokes's maps.

Quality	Basic	Detailed	Finished	Sketchy	Unknown	Grand Total
<i>Individual Stone</i>		6	4			10
Annotated Plan		5	3			8
Annotated Plan; Topolines		1				1
Cross-Section; Schematic			1			1
<i>Individual Stone (partial)</i>	1	2				3
Annotated Plan	1	2				3
Landscape		1				1
Perspective Drawing		1				1
<i>Outline</i>	64	19	69	23		175
Annotated Plan	61	16	51	22		150
Annotated Plan; Cross-Section	2	1	11			14
Annotated Plan; Cross-Sections		2	1			3
Cross-Section	1		1			2
Perspective Drawing			1			1
Plan?				1		1
Survey			4			4
<i>Outline (lost)</i>					1	1
Plan (lost)					1	1
<i>Reconstruction</i>			1			1
Perspective Drawing			1			1
<i>Transit Line</i>	17					17
Survey	17					17
<i>Transit Line or Outline</i>				1		1
Survey or Plan				1		1
Grand Total	82	28	74	24	1	209

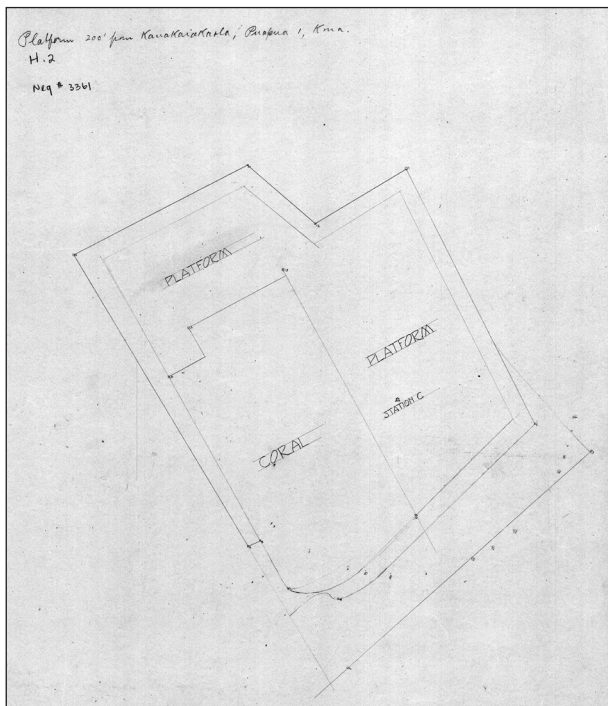


Figure 4. A typical outline plan from Stokes's survey work (SP 209021; by J.F.G. Stokes, Bishop Museum Archives).

meeting his primary goal of testing Brigham's theory regarding the progression from platforms to walled *heiau* in Hawai'i. What Stokes found instead was a much more complex combination of features and spatial organisation that couldn't be easily classified.

Among the detailed or finished maps, further patterns emerge. It is likely that in many, if not almost all cases, the line drawings were produced in the field and then finished drafts showing individual stones were completed later, though there is also evidence that suggests Stokes may have marked particular stones, paved areas, or walls on his plans in the field. One interesting possibility is that Stokes's wife Margaret prepared the inked drawings, though this is a matter for future research. Stokes produced a highly detailed finished map of Ke'eku Heiau, Hawai'i Island, which includes different conventions for the various methods of paving and wall construction around the site.⁴ For Pu'ukohola and Mo'okini Heiau on Hawai'i Island, there are finished plans that include the outline only. On the plan of Kapioho Heiau on Moloka'i, it appears that Stokes began filling in individual stones on the original sketch, but did not finish the work.⁵ At Pu'uolelo Heiau, Stokes notes the site was 'full of holes', and drew each individual hole, suggesting these were culturally significant (Figure 5).

Stokes occasionally mapped sites besides *heiau* and

ko'a. One site is described as a 'Kapa-making place' (*kapa* means barkcloth in Hawaiian), though only a basic outline was drawn.⁶ On all of Stokes's fishpond maps, the individual stones are drawn, or at least a convention was used to fill in the outlines, including in one case depicting the places where the walls had begun deteriorating and stones were more diffused closer to shore at Keawanui on Moloka'i.⁷ The map of the fishtrap Ka Pakule on O'ahu is richly detailed.⁸ In this map, Stokes filled in the stones for the fishtrap, but only the outline of a 'Tabued Enclosure' on shore. At Na Imu Kalua Ua, Moloka'i, Stokes drew a highly detailed plan of the distinctive 'rain *heiau*' (Figure 6), which was mislabelled as a detail of the paving of a *holua* sled track at Makanalua.

MARGINALIA AND LOCAL KNOWLEDGE

Drawings can offer valuable insights into early anthropological fieldwork settings, especially where they appear as marginalia or informal sketches in original documents (Ballard 2013). These unguarded moments can be telling in terms of understanding some of the cross-cultural perceptions and interactions that took place in the fieldwork setting. While rare in Stokes's maps, there are a few interesting examples of marginalia (Figure 7). A possible

self-portrait is sketched onto one of the Menehune Ditch sketches.⁹ An inked plan of features around Hōnaunau features a fingerprint, possibly from Stokes himself. A survey map from Pu'uluahine, Moloka'i showing site locations features a sketch of a waterfall and an island hillside.¹⁰ Possibly these were drawn in a moment of boredom while Stokes was waiting for his survey crew to move from one station to the next. The survey map for Hālawā, Moloka'i includes a drawing of a rifle, as well as the words 'Mauna Kea', 'Maunaloa', 'Ua Mau Ke Ea o Ka Aina' (a portion of the Hawaiian national motto), a stylised 'Puupa', and the enigmatic phrase, 'Presented by the Sure'.¹¹ On the plan of Mo'oiiki Heiau, Stokes spelled out the word 'Kaenakilo-lani', then drew what appears to be a shell or spiral above the word.¹² Another map contains dozens of drawings of fish and fish skeletons in blue ink in the margins.¹³ Future research may clarify some of the meanings behind these markings and the relationships with local informants that they may represent.

Stokes relied on Native Hawaiian informants not only to find sites, but also to understand site functions and divisions of sacred space, as well as using published translations of Hawaiian traditions (e.g., Fornander 1878). Native Hawaiian and Non-Hawaiian informants would have pointed out all of the site locations to Stokes. The

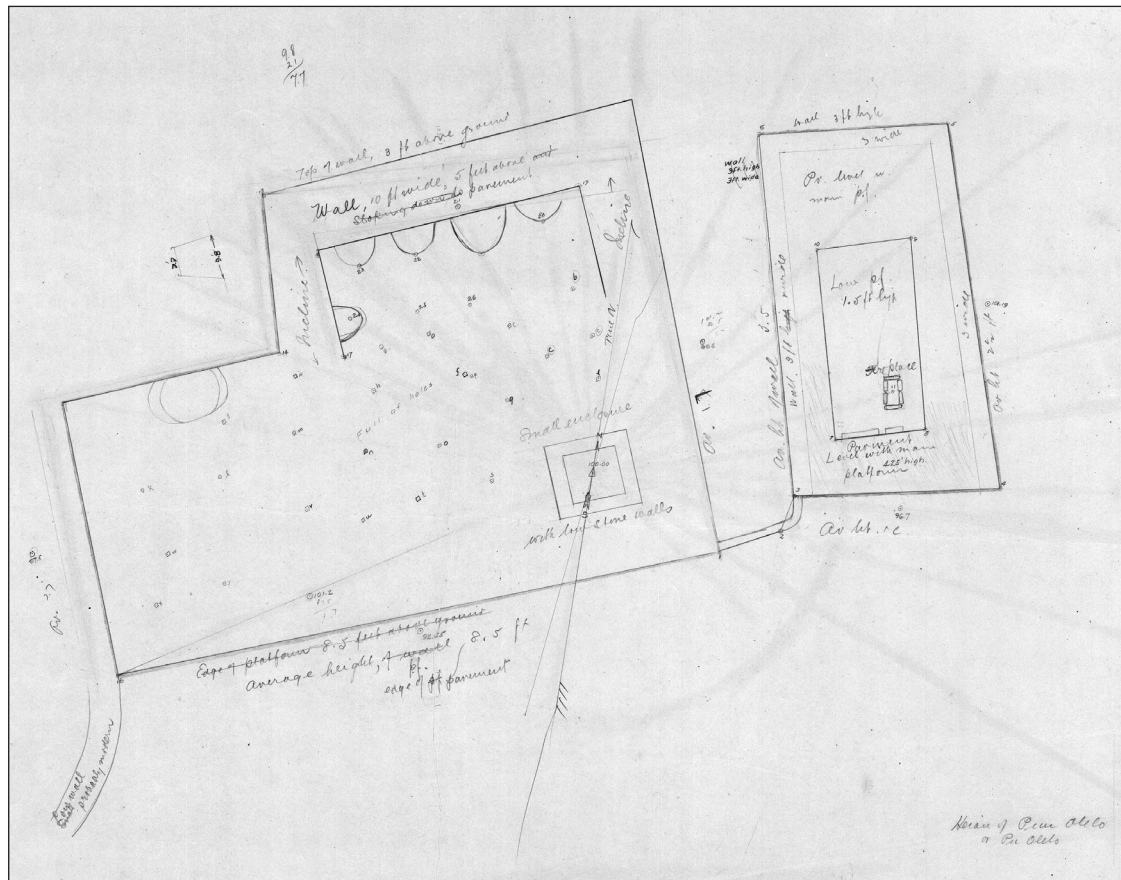


Figure 5. Plan of Pu'uoalelo Heiau (SP 209027; by J.F.G. Stokes, Bishop Museum Archives).

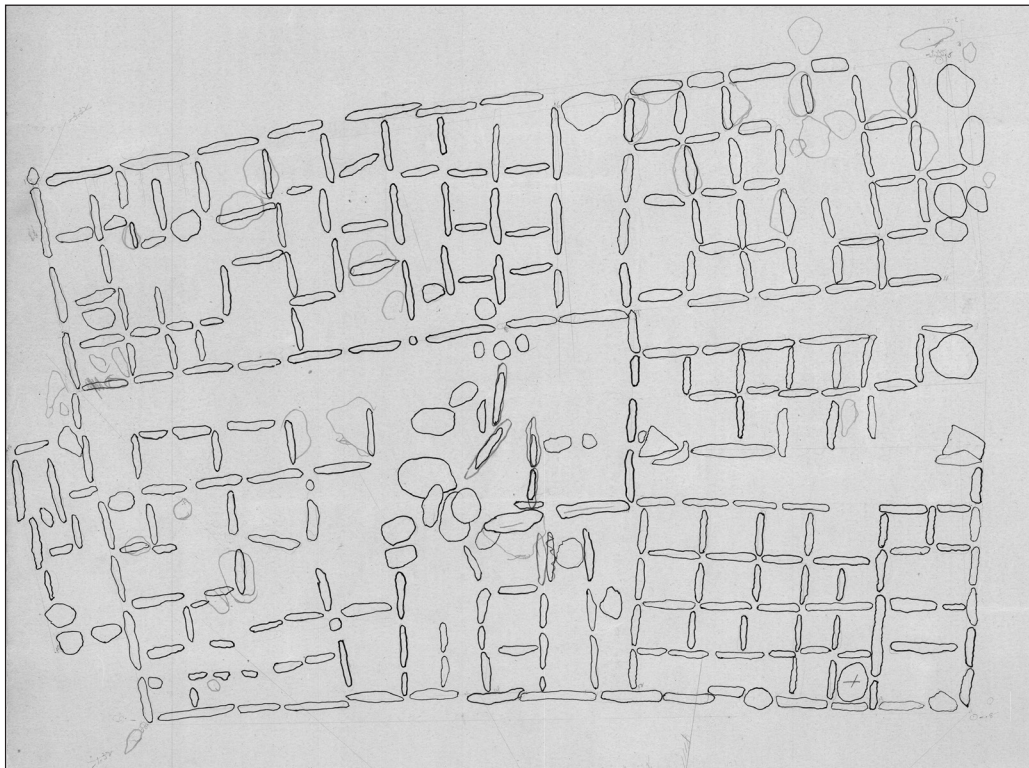


Figure 6. Detail of stone paving from a Na Imu Kalua Ua Heiau, Moloka'i. Mislabeled on the original as 'a sample of ^probably the paving for Makanalua holua slide' (SP 208960; by J.F.G. Stokes, Bishop Museum Archives). The issue of mislabeling is one of many that will need to be addressed as the research progresses.

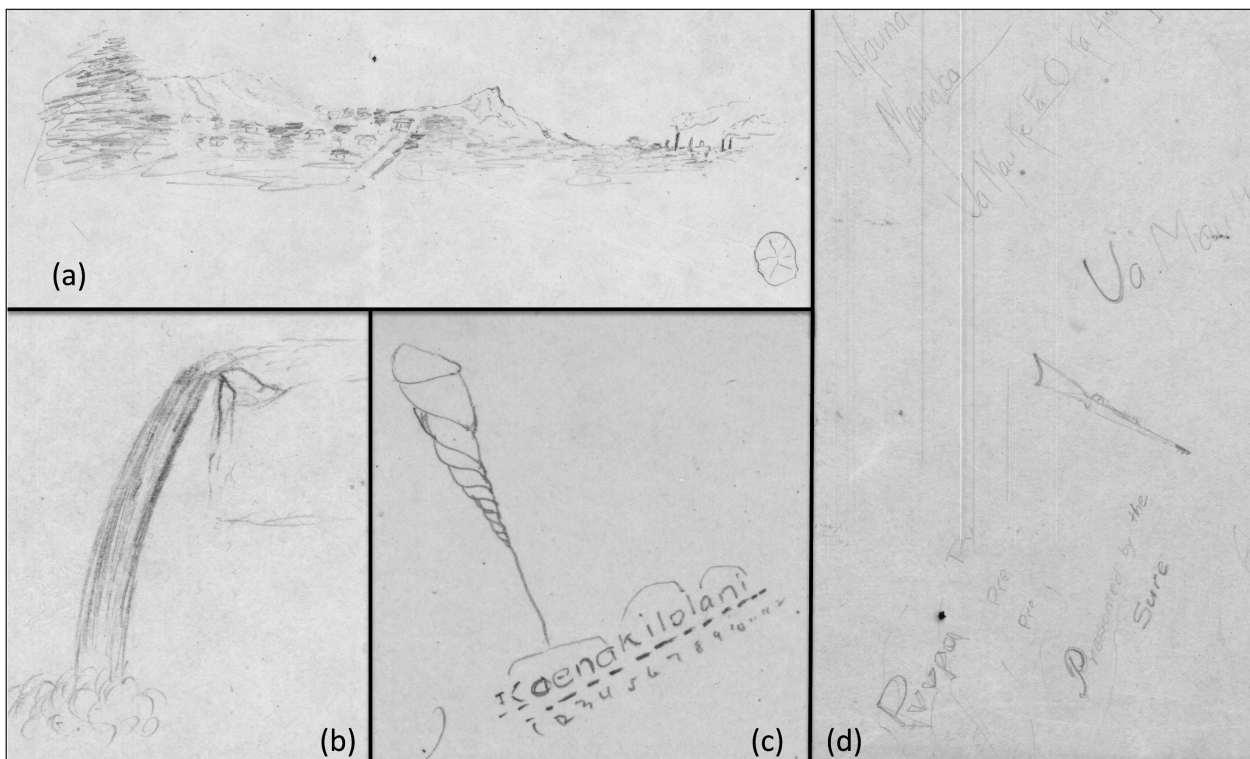


Figure 7. Marginalia from Stokes's maps (a, b: SP 209019; c: SP 208962; d: SP 208968; by J.F.G. Stokes, Bishop Museum Archives).

plans themselves also often include indigenous knowledge. Stokes was apparently generally disappointed with the level of knowledge local people offered on Hawai'i Island. In the Ka'u District, where people still practiced traditional religion, Stokes asked to tie his mules up to feed in a *heiau* enclosure and thus offended the Native Hawaiians camped nearby. This led to disengagement by the local people and meant that a golden opportunity was missed (Dye 1991: 11–12). Nonetheless, Stokes's maps do contain some evidence for continued detailed Native Hawaiian knowledge of site component names and functions. Roughly 22.5% of the maps (47 out of 209) have some kind of integrated local knowledge, ranging from site locations and names to labels of Native Hawaiian names of individual stones (Table 3). Details on Pu'ukohola were apparently derived from the LMS missionary William Ellis's (1823) descriptions. On other plans, such details presumably would have come from local elders. In one case, a highly detailed plan, which may be schematic in nature, as unlike most of Stokes's plans it lacks any visible measurements, provides Hawaiian names for almost every structure, but then concludes enigmatically, 'What *heiau*? Where?'¹⁴

THE PHOTOGRAPHIC RECORD

The photographs that Stokes took along with his survey are valuable today as a record of the form of architecture at a time before vegetation and industrial development became more widespread across the landscape. The Bishop Museum Archives contain a collection of printed photos attributed to Stokes bound in three photo albums. Of these photos, most are from his surveys of Hawai'i and Moloka'i, with others from locations on Kaua'i, Kaho'olawe, Ni'ihau, O'ahu, Maui, and some without specific island attributions (see Table 1). A small number of these images are likely not by Stokes but by later Bishop Museum researchers.

The handful of Stokes's photos that have been published (such as Dye 1991; Summers 1971) are a good representation of what would appear to be his ideal composition: the main stone architecture of a *heiau* with a single unnamed person, presumably included to evoke the scale of the construction. In the photographs from Moloka'i it was common for Stokes to take two to four photographs at a site, with a small number of *heiau* with a greater number of photos, as at 'Ili'iliopae (n=10), Kapioho (n=6), Kapua (n=6), and Mana (n=5). In some photos, his goal was to show the height of stone terraces, as at Kapioho Heiau, in others the goal was to record both the height and the large footprint of sites, as at 'Ili'iliopae. It should also be noted that around 20% of the Moloka'i images are not of archaeological sites, but portraits of people and landscapes. In addition, many of the photographs were not of *heiau*, but shrines (*ko'a*), ritually important natural stones, places of refuge, and sled tracks (*holua*). While several Moloka'i fishponds were mapped, they do not appear in photographs.

A closer examination of the images gives us some clues about Stokes's survey methodology on Moloka'i. In several photographs Stokes captures his tripod and survey instrument as well as a stadia rod (imperial on side shown; Figure 8). There are no images showing the 'chains' sometimes used in this era of surveying. While there are no images that are of high enough definition to describe his survey instrument based on photographs alone, the lack of elevation data in survey maps suggests an optical transit rather than a theodolite (see above). In addition, the titles given to the photos and a few marginal notes may help identify who is pictured in images of sites and in portraits. For portraits, the location of the image may prove helpful in identifying people or their homes. In the survey, it seems likely that the men who most often appear in his photos were helping Stokes find and map sites. In the photograph of two people launching a canoe into the strong surf at Pelekunu, handwritten notes suggest the identity of two of the men in the image.¹⁵

The images Stokes took also give us a potential window in to the role of local people in his survey and life on Moloka'i in the early 20th century. For example, when McCoy (2006, 2008) was researching the ritual landscape of Kalaupapa, he discovered that Stokes had mapped and photographed a set of dense agricultural terraces at the base of the north shore cliffs near the island's well-known leprosarium. An intensive survey of the area in 2002 showed that about 100 meters away from these terraces is a stone foundation that is much more likely the *heiau* in this location whose name and traditions were relayed in Stokes's manuscript on Moloka'i. Returning to the transcript and photographs of the survey of this section of the island to try and identify the source of Stokes's error, one possible explanation emerged by examining the photographs. On the start of his survey of Kalaupapa, two men appear in photos, and as the survey drew closer to the leprosarium only a single man is photographed. In the last photo taken, the image of the agricultural terraces, no one is shown. It may be that instead of having been led directly to this location, Stokes was merely given an indication by his informants of where it should be. Without someone to lead him directly to the site, Stokes apparently mistook the agricultural terraces for the *heiau*.

STOKES'S LEGACIES IN HAWAIIAN ARCHAEOLOGY

Stokes brought several state-of-the-art technologies to Hawaiian archaeology. His use of a transit to determine the precise geographical coordinates of *heiau* and other sacred sites relative to established surveying benchmarks and prominent landmarks resulted in survey data that remain useful in the present. He was also a pioneer of the use of photography in Hawaiian archaeology. Certainly Stokes deserves his place as an important figure in Hawaiian archaeology (Dye 1991: 20; Kirch 1985: 10–13; Spriggs this volume). Early photos and maps from Stokes's field-

Table 3. Representations of local knowledge in Stokes's maps (continues opposite)

Island
Ala Pavement'
Anuu,'Lele','Lono', Idol locations
Depressions labelled as 'Rest House'; 'Prayer House'; 'Food House'
Detailed interior features based on Ellis.
Enclosure in upper left of map labelled 'Hale Rea[Pea]'; 'Kapuahi 0.7ft deep'
Hakaana'; 'Puahaunui' marked with arrows (sites or place names?)
Hale mana; 'Hale waeia'; 'Covered communication of King'; 'Kipapa Malo'; 'Hale Pahu'; 'Eatua Aronah'; 'Anuu'; other features marked.
Hale o Papa; 'Lananuulamau'; 'Kipapa'; 'Lele'; 'Iliili'; 'Hale pahu'; 'Waiea'; 'Hale umu'; 'Mana'; 'Uuanuu'
Kahua hoomaho'; 'King's Quarters'; 'Kuahu'; 'Pou lele' marked.
Kahua' marked
Ke Alo; 'Kipapa'; 'Lele'; 'Iliili'; 'Hale Pahu'; 'Mana'
Kipapa; 'Hooniho'; 'Hakahaka'; 'Pau'; 'Hoomoe'; 'Hooku'
Kipapa; 'Lele'; 'Papahola'; 'Ke alo'; 'Laranuu'; 'Waiea'; 'Hale Pahu'; 'Hale o Papa'
Kumahaula?'
Kuula' and 'Hina' Stones marked; 'Pa Ohia'
Lele; 'Hale Pahu'; 'Mana'
Locations of Hale o Papa/Women's House; Lananuumamao; Makaiwa Moi Makaiwa; Lele; ili ili; Kahua; Hale Pahu/Drum House; Waiea; Papaholo; Mana; Luanuu; Hale Umu
Locations of heiau sites around Kalaupapa
Locations of interior structures (based on Ellis?)
Locations of kii, pits, priest's house, kipapa, lele, etc. same as other plan
Locations of local heiau; writing from a local informant?
Locations of priest's tower, hale, etc.
Lua Pau' marked; along with a well, garden (associated with modern house marked on plan?); Fresh water bathing place also marked.
Makai' side noted
Mana; Priest Houses; Kipapa; Popoholo; Lele; Anuu; Hale Pahu; Waiea
Mauka marked on plan
Mauka' and 'Makai' marked on plans; 'Ala Pavement'
Mooiki = Land Kaenakilolani'; 'Kaenakilolani' marked with a count of how many letters, and also a shell? Or spiral?
Papa or Halawaiki heiau'
Place names.
Site locations
Site names and locations; some functional interpretations.
Site of mana; 'Anuu'; 'Chief Idol'; 'Stand for Fruit Offerings'
Site of Mana; 'Drum House Site'; 'Lele'; 'Chief + Idol'; 'Anuu'; 'Stand for Fruit Offerings'; 'Idols'; 'Luopau'
To the Hale o Papa'
Extensive notes in Hawaiian
Unuu; 'Mana'
Unuu; 'Mana'; 'Lele', etc.
(blank)
Grand Total

Table 3. *Continued.*

Hawai'i	Hawai'i?	Kaho'olawe	Kaua'i	Moloka'i	Moloka'i (not marked)	Moloka'i?	Not Marked	O'ahu	O'ahu?	Grand Total
						1				1
					1					1
				1						1
1										1
1										1
				1						1
1										1
							1			1
1										1
1										1
							1			1
1										1
							1			1
1								1		1
									1	1
							1			1
				2						2
1										1
1										1
				1						1
1										1
1										1
1							1			2
1										1
							1			1
				1						1
							1			1
							1			1
								1		1
		2		4			2			8
1										1
1										1
1										1
1										1
1										1
							1			1
							1			1
43	2	3	2	56		6	39	10	1	162
61	2	5	2	66	1	7	52	12	1	209

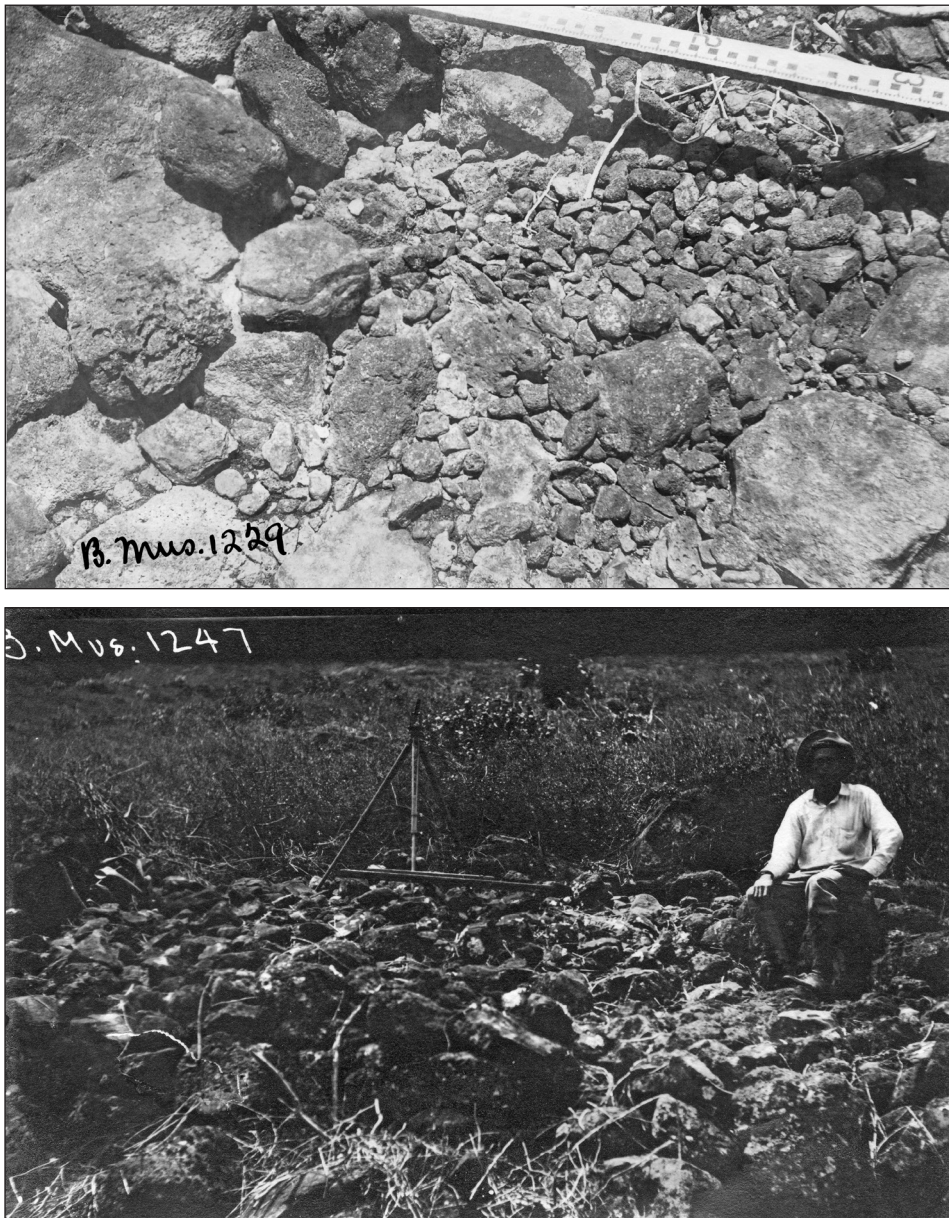


Figure 8. Above: photograph showing stadia used in survey (SP 1229; by J.F.G. Stokes, Bishop Museum Archives); Below: photograph of tripod used for transit mapping (SP 1247; by J.F.G. Stokes, Bishop Museum Archives).

work have been regularly integrated into archaeological survey work (e.g., Kirch & Kelly eds. 1975; Summers 1971; McCoy 2006) and continue to inform archaeological studies in the islands.

Heiau and other sacred sites remain an important area of interest in archaeological work in the Hawaiian archipelago. Stokes laid the foundation for later research on the topic, which in the 20th century was taken up by Kenneth Emory (e.g., 1928) in a similar vein, with particular interest in Polynesian origins (though Emory similarly found no simple link between *heiau* form and chronology). During the second half of the 20th century, driven in part by the chronological revolution of radiocarbon dating, ar-

chaeologists turned towards more ‘processual’ approaches that were concerned with environmental adaptations and the relationship of agricultural expansion to political economy (Kirch 1985). Significantly, Stokes did not map any agricultural field systems, though he did map some of the fishponds that were an integral part of Hawaiian food production systems. More recently, archaeologists have returned to the question of religious ideology as a component of Hawaiian chiefdoms and archaic states (e.g., Baer 2015; Kirch 2010; Kolb 2006; McCoy *et al.* 2011; McCoy 2014; Mulrooney & Ladefoged 2005). Here again the data produced in Stokes’s original surveys have been and continue to be extraordinarily useful.

Besides providing data for academic analysis, Stokes's maps are important for what they reflect about the changing modern landscapes of the Hawaiian Islands. Even in Stokes's time, capitalist development was having a negative impact on site preservation. For example, the plan of Mamala Heiau shows a concrete tank built on the sacred structure.¹⁶ The plan of Kapalama in Kohala, Hawai'i Island, shows sugarcane encroaching from the north.¹⁷ Stokes noted that for the Hilo and Hāmākua districts, sugarcane planting activities had destroyed almost all of the *heiau*, limiting the feasibility of archaeological work in these areas (Stokes 1991: 154–163). In cases where Stokes noted sea level or coastal features, we might examine the extent to which rising sea levels are impacting sites. Even where the archaeological site may not survive, its location relative to known survey benchmarks could be used to track sea level variations.

FUTURE DIRECTIONS

We are currently in the process of inventorying and digitizing the many folders containing maps, drawings, and notes from Stokes's pioneering field research in Hawai'i. While we believe what we have uncovered so far represents much, probably most of Stokes's work, the Bishop Museum Archives contain many hidden gems and there will likely be more exciting discoveries to come. With support from the Hawai'i Council of the Humanities and in collaboration with the Ka Ipu Makani Heritage Center in Kaunakakai, Moloka'i, we have recently developed a public online database of Stokes's maps and related documents concerning the *heiau* of Moloka'i. Future work will seek to integrate the complete collection of Stokes's maps into a GIS and online database and to make these important documents available for researchers and local communities. One of the concerns raised in consultation with *kanaka māoli* (Native Hawaiians) is the possibility for misuse or desecration of their sacred sites, so this database has and will continue to be developed with an eye towards cultural sensitivity and ongoing consultation and collaboration with Hawaiian communities. These projects are part of the Bishop Museum's Ho'omaka Hou Research Initiative, which seeks to utilize existing museum collections to learn more about the past (Mulrooney *et al.* 2016; Wong *et al.* 2015).

Part of the challenge for this project will be assigning location information to unnamed *heiau*, sites not located on one of Stokes's survey maps, or sites not attributed to a specific island. In some cases, fieldwork in collaboration with local communities may help to add further detail to these maps, building on the simple outlines to produce more detailed plans with information from Native Hawaiian communities where sites survive. Where sites do not survive currently, we can use technologies such as GIS to reclaim some understanding of their past locations. Stokes's records provide a valuable starting point for

developing archaeological research that involves Native Hawaiian communities as they continue to engage with their sacred landscapes in a 21st century context (Kawelu & Pakele 2014; Tengan 2009). Over 100 years after Stokes's initial trip to Hawai'i, these documents continue to speak to us across time and place to offer *'ike* (knowledge) for Hawaiian archaeology.

Acknowledgements

The authors would like to thank Emilie Dotte Sarout and Matthew Spriggs for inviting us to contribute to this volume. Two anonymous reviewers offered useful feedback. An earlier version of this paper was presented at the 2015 Australian Archaeological Association conference in Fremantle. We would also like to thank Charmaine Wong, Veerle De Ridder, Susie Stephen, and Kate Leonard in the Anthropology Department at Bishop Museum for their assistance with scanning and inventorying the collections. In the Bishop Museum Archives, we thank Tia Reber, Leah Caldeira, and Karla Heath for their assistance with providing access to the collections and for permission to reproduce images contained herein. Much of the digitization of Stokes's maps and photographs was made possible through a Preservation and Access grant to the Bishop Museum from the Hawaii Council for the Humanities, and also in continued collaboration between the Bishop Museum and the Office of Hawaiian Affairs, and we thank all of these organisations for their support.

Endnotes

- 1 BPBM no. SP 208970.
- 2 BPBM no. SP 208942.
- 3 BPBM no. SP 208956.
- 4 BPBM no. SP 202437.
- 5 BPBM no. SP 209036.
- 6 BPBM no. SP 209035.
- 7 BPBM no. SP 209040.
- 8 BPBM no. SP 209066.
- 9 BPBM no. SP 209083.
- 10 BPBM no. SP 209019.
- 11 BPBM no. SP 208968.
- 12 BPBM no. SP 208962.
- 13 BPBM no. SP 209147.
- 14 BPBM no. SP 208961.
- 15 BPBM no. SP 656.
- 16 BPBM no. SP 208939.
- 17 BPBM no. SP 208941.

References

- Baer, A. 2015. On the Cloak of Kings: Power, Agriculture, and Community in Kaupo, Maui. PhD dissertation, University of California, Berkeley.
- Ballard, C. 2013. The return of the past: On drawing and dialogic

- history. *The Asia-Pacific Journal of Anthropology*, 14 (2):136–48.
- Bowden, M. & McOmish D. 2011. A British Tradition? Mapping the Archaeological Landscape. *Landscapes*, 2: 20–40.
- Brigham, W.T. n.d. The Ancient Worship of the Hawaii Islanders. Unpublished typescript manuscript, Bishop Museum Archives, Honolulu.
- Dye, T.S. 1989. Tales of two cultures: traditional historical and archaeological interpretations of Hawaiian prehistory. *Bishop Museum Occasional Papers*, 29:3–22.
- Dye, T.S. 1991. A Reputation Unmade: J.F.G. Stokes's Career in Hawaiian Archaeology. In: J.F.G Stokes (T.S. Dye ed.) *Heiau of the Island of Hawai'i: A Historic Survey of Native Hawaiian Temple Sites*. Honolulu: Bishop Museum Press, pp.3–20.
- Emory, K.P. 1928. *Archaeology of Nihoa and Necker Islands*. Honolulu: B.P. Bishop Museum.
- Flexner, J.L. & Kirch, P.V. 2016. Field mapping and Polynesian prehistory: A methodological history and thoughts for the future. *Séances de la Société Préhistorique française*, 7:15–30.
- Fornander, A. 1878. *An Account of the Polynesian Race*. London: Trubner.
- Kamakau, S.M. 1991. *Tales and Traditions of the People of Old: Nā Mo'ōlelo a ka Po'e Kahiko*. Honolulu: Bishop Museum Press.
- Kawelu, K. & Pakele, D. 2014. Community-based research: the next step in Hawaiian archaeology. *Journal of Pacific Archaeology*, 5 (2):62–71.
- Kirch, P.V. 1985. *Feathered Gods and Fishhooks: An Introduction to Hawaiian Archaeology and Prehistory*. Honolulu: University of Hawaii Press.
- Kirch, P.V. 2010. *How Chiefs Became Kings: Divine Kingship and the Rise of Archaic States in Ancient Hawaii*. Berkeley: University of California Press.
- Kirch, P.V. & Kelly, M. 1975. *Prehistory and Ecology of a Windward Hawaiian Valley: Halawa Valley, Molokai*. Honolulu: B.P. Bishop Museum.
- Kolb, M.J. 2006. The Origins of Monumental Architecture in Ancient Hawai'i. *Current Anthropology*, 47 (4):657–65.
- McCoy, M.D. 2006. Landscape, Social Memory, and Society: An Ethnohistoric-Archaeological Study of Three Hawaiian Communities. PhD Dissertation, University of California, Berkeley.
- McCoy, M.D. 2014. The significance of religious ritual in ancient Hawai'i. *Journal of Pacific Archaeology*, 5 (2):72–80.
- McCoy, M.D., Ladefoged, T.N. Graves, M.W. & Stephen, J.W. 2011. Strategies for constructing religious authority in ancient Hawai'i. *Antiquity*, 85:927–41.
- Moffat, R.M. & Fitzpatrick, G.L. 2004. *Mapping the Lands and Waters of Hawai'i. Palapala'aina*, Volume 3. Honolulu: Editions Limited.
- Mulrooney, M.A. & Ladefoged, T.N. 2005. Hawaiian heiau and agricultural production in the Kohala dryland field system. *The Journal of the Polynesian Society*, 114 (1):45–67.
- Mulrooney, M.A., Wong, C., Esh, K., Belluomini, S. & McCoy, M.D. 2016. Integrating Research and Collections Management: The Ho'omaka Hou Research Initiative at the Bishop Museum. *Museum Worlds*, 4:51–62.
- Stokes, J.F.G. (T.S. Dye, ed.). 1991. *Heiau of the Island of Hawai'i: A Historic Survey of Native Hawaiian Temple Sites* Honolulu: Bishop Museum.
- Summers, C. 1971. *Molokai: A Site Survey*. Honolulu: B.P. Bishop Museum Press.
- Tengan, T.P.K. 2008. *Native Men Remade: Gender and Nation in Contemporary Hawai'i*. Durham: Duke University Press.
- Wong, C., Mulrooney, M.A. & Moore, S. 2015. Recent approaches to digitizing Hawaiian archaeological collections at Bishop Museum. *Society for Hawaiian Archaeology, Special Publication*, 4:85–91.

Websites

- Bishop Museum (2013) The Maps of Henry E.P. Kekahuna. Institute of Museum and Library Services. <http://data.bishopmuseum.org/Kekahuna/kekahuna.php?b=about> [Last accessed 5 November 2016]

Représenter les sites sacrés Hawaïens: Les archives et les prospections archéologiques pionnières de J.F.G. Stokes, 1906–1913.

RÉSUMÉ :

Au début des années 1900, l'archéologue australien John F.G. Stokes fut le premier à utiliser abondamment les techniques de relevé modernes et la photographie pour documenter les sites archéologiques hawaïens. Stokes mena des travaux de terrain pour le compte du Bishop Museum, à travers un programme de recherche s'intéressant aux origines polynésiennes et au changement religieux hawaïen, en se concentrant spécifiquement sur les sites d'architecture monumentale ou *heiau* (temples). En nous basant sur un échantillon du fond graphique constitué par les plans et photographies réalisés par Stokes, nous examinons la façon dont celui-ci a représenté les sites sacrés, y compris la variabilité des détails architecturaux enregistrés. La dépendance de Stokes à l'égard d'informateurs hawaïens indigènes est notable, car elle a peut-être joué un rôle important dans l'élaboration de sa propre représentation du paysage archéologique. Le fond constitué par les relevés de Stokes fournit un ensemble de données important pour comprendre les paradigmes à l'œuvre dans l'archéologie polynésienne au début du 20^e siècle, ainsi que les influences qu'a eu ce travail dans les approches ultérieures de la monumentalité, dans l'archipel même et au-delà.