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Stone architecture of the ancient Tongan state on Tongatapu Island, Kingdom of Tonga

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Abstract

On Tongatapu Island stone structures were used by senior chiefly lines to manifest title and lineage status. Stone slabs were used to demarcate house and sitting platforms, to face the royal tombs of the paramount, set upright as standing stones, and at Heketā used to make a unique monumental gateway. Slabs were also used to make stone burial vaults and the material was quarried from coastal locations around Tongatapu and other islands in Tonga. Recent work has increased the number of stone structures recorded in previous archaeological survey. This shows that their distribution is strongly focused on the east of the island where traditional history has the first monumental stonework constructed by the 11th Tu'i Tonga around AD 1250. In addition to describing and classifying stone structures that incorporate quarried slabs of carbonate stone, we show that the distribution of stone architecture is primarily associated with the central places of the Tu'i Tonga and high-ranking leadership demonstrating that stone architecture held an important role in manifesting political authority in the Tongan state.

Keywords: Tonga, Tu'i Tonga, stone architecture, monumental sites, political development

Résumé

Sur l'île de Tongatapu, les structures lithiques monumentales étaient utilisées par les chefs les plus puissants pour marquer leur titre et leur lignage. Des dalles de pierres étaient utilisées dans le marquage des plateformes de maison ou de réunion, et étaient dressées pour former la façade des tombes des chefs les plus importants. Elles étaient également utilisées pour la construction de caveaux funéraires et dans la construction d'un portail monumental unique sur le site de Heketā. Ces dalles, extraites dans plusieurs carrières de Tongatapu et d'autres îles des Tonga, étaient également utilisées dans la construction de la voute des tombes. Le nombre de structures lithiques sur l'île a récemment été réévalué à la hausse grâce à de nouveaux travaux de terrain. L'ensemble des prospections effectuées montrent que la répartition de ces structures est fortement concentrée sur la partie Est de l'île, dans une région connue par les traditions orales comme le lieu des premières constructions monumentales érigées par le chef portant le titre de 11ème Tu'i Tonga autour de 1250 AD. En plus de décrire et de proposer une classification des structures intégrant des dalles de roche carbonatée, nous montrons que la répartition de l'architecture en pierre est principalement associée aux lieux centraux du pouvoir des Tu'i Tonga et des dirigeants de haut rang, et qu'elle jouait ainsi un rôle important dans la manifestation de l'autorité politique dans l'empire tongien.

Mots-clés : Tonga, Tu'i Tonga, architecture en pierre, sites monumentaux, développement politique

Introduction

In prehistoric Tonga a chiefly dynasty of semi-divine origin established religious and political control over the scattered islands of the archipelago by at least AD 1100-1200 and expanded its influence to neighbouring islands with a maritime network based on large voyaging canoes. The development of the Tongan State under the paramount Tu'i Tonga ('Lord of Tonga') is associated with major changes to land ownership, religion and methods of food production. As in other parts of the world such changes were accompanied by a degree of urbanization, the emergence of a religio-political centre, and a dramatic increase in ritual practice (e.g. Heckenberger *et al.* 2008; Smith 1995: 47, 63). Centralization in Tonga was materialised by elite structures to show the status of the paramount and to create spaces for secular and ritual activities involved in the complex intertwining of power

and ideology found in archaic states (Trigger 2003). The architectural innovations that displayed the new political and social formations were not static and were responsive to a range of factors including (among others) the level of centralised power and state cohesion, population size and density, success in warfare and, the emphasis leaders and communities put on exhibiting religious authority and manifesting the political hierarchy (Smith 2019).

In this paper we provide an updated inventory of stone structures on Tongatapu Island which builds on McKern's (1929) pioneering study of Tongan architecture, sites reported by Swanson (1968) and Spennemann (1989a), in addition to previously unreported stonework identified in our fieldwork. We report structures made with quarried slabs of carbonate beach rock or in rare cases the harder reef limestone which excludes prehistoric constructions made with unmodified stone. Beach rock (*makapapa*) is formed in the intertidal zone by cementation of coral/limestone sediments and the lithified sediments can fracture to produce natural slabs that were taken to face or outline a structure or space. Similarly, unmodified coral heads and coral/limestone cobbles were also used to build impressive constructions such as chiefly pigeon snaring mounds and to face canoe wharfs (Burley 1996; Clark *et al.* 2008; McKern 1929). The use of quarried carbonate stone required significant labour and transport costs (Burley 1998) and unsurprisingly many of the worked stone structures are associated with locations of Tonga's senior chiefs. The largest stone structures on Tongatapu contain more than 250 stone slabs and while individual slab size and weight is highly variable the largest are 5-6 m in length and weigh 10-20 tons. Dressed stone architecture accompanied the paramount Tu'i Tonga system of government and the distribution highlights the spatial development of the polity as it spread from eastern Tongatapu (Heketā and 'Āfa) to Lapaha beside the Fanga 'Uta Lagoon where the polity reached its greatest extent. In addition, the updated structure list demonstrates significant variability within functional categories such as stone-faced tombs that overlap in size with other stone architecture such as house and sitting platforms.

Tongatapu Stone Structures

The best-known structures made with quarried slabs/blocks on Tongatapu are the royal tombs of the Tu'i Tonga known as *langi* (Tongan 'sky') along with house platforms (*paepae*) and sitting platforms (*'esi*). Included in our review is a monumental trilithon at Heketā that is a discreet structure (Clark and Reepmeyer 2014). Quarried stone was also used to make architectural elements such as stone vaults (*foualoto*) that were placed inside an earth/sand mound or stone-faced tomb, to outline chiefly bathing wells, used as chiefly backrests or as framing for a funerary house (*fale tōli'a*) built over a royal tomb at Heketā (McKern 1929: 38-39). We do not include these elements in our review nor other stone items such as isolated stone slabs or a limestone monument reputed to be a finger-sacrifice stone at Lapaha known as Levulevukefu/Tokomatupa (McKern 1929: 93).

Many of the structures made with quarried stone were initially recorded by McKern (1929) who identified 35 on Tongatapu. The majority were chiefly tombs located at the central place of the Tongan state at Lapaha (n=27) with one near Makaunga, three each at 'Āfa and Heketā and one at Longoteme. McKern's publication organised structures by their traditional function with tombs identified as *langi* if they were remembered as burial places of the Tu'i Tonga or his immediate family. However, some tombs with stone walls were identified as *langi* when there was no indication of who was buried in the tomb while burial sites of derived chiefly lines such as the Tu'i Ha'atakalaua and Fale Fisi were also grouped with the 'royal' Tu'i Tonga tombs. A synthesis of Tongatapu sites surveyed by Green and Terrell in 1965 recorded additional stone-faced tombs at Kanokupolu, Neiafu and Hamula and added another five structures to the Heketā group (Swanson 1968). Finally, Spennemann (1986, 1989a) identified two new stone structures at Lapaha-Talasiu during site mapping for a total of 45. Our fieldwork on Tongatapu has expanded the number to 63 stone structures with another seven at Lapaha-Talasiu, nine in 'Āfa adjacent to the Heketā complex, one at 'Ahau and one at Makaunga (Figure 1, Table 1). The new stone structures reported here were recorded after discussions with Town Officers and informants from several parts of Tongatapu, as

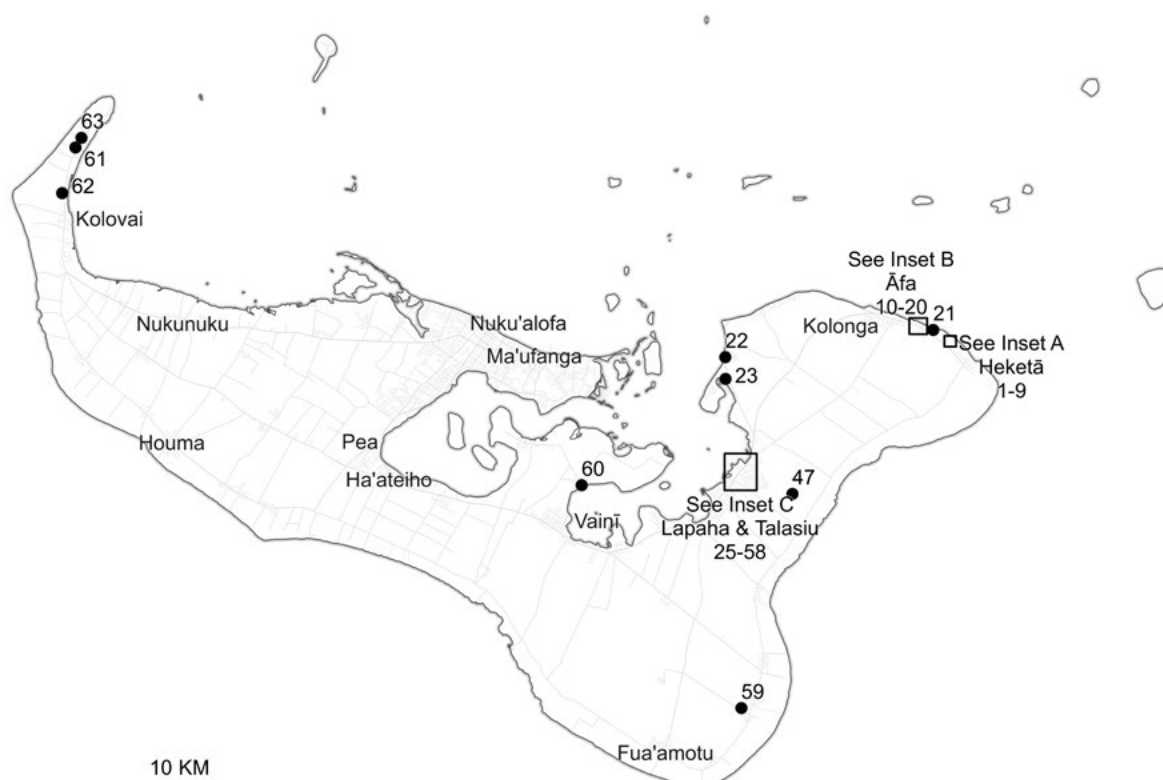


Figure 1. Location of stone structures on Tongatapu.

Number	Location	Name	Identification	Area	Number of Levels	Typology	Length-Width Ratio	Code
1	Heketa	Ha'amonga-a-maui	gateway	na	na	na	na	TO-Nt-1
2	Heketa	Makafakinanga	sitting	56	1	1b	1.8	TO-Nt-2
3	Heketa	Heketa langi	tomb	374	3	2	1.5	TO-Nt-3
4	Heketa	Heketa Unnamed	house	598	1	1a	1.7	TO-Nt-4
5	Heketa	Heketa Unnamed	house	664	1	1a	1.7	TO-Nt-5
6	Heketa	Heketa Unnamed	?	126	1	1b	1.6	TO-Nt-6
7	Heketa	Heketa Unnamed	house	664	1	1b	1.7	TO-Nt-7
8	Heketa	Heketa Unnamed	?	219	1	1b	1.4	TO-Nt-8
9	Heketa	Heketa Unnamed	?	100	1	1b	1.1	TO-Nt-9
10	Āfa	Mo'ungalafa a	tomb	679	1	4a	1.1	
11	Āfa	Mo'ungalafa b	tomb	180	1	1a	1.1	
12	Āfa	Mo'ungalafa c	tomb	340	1	1a	1.1	
13*	Āfa	Utukakai	tomb	315	1	1a	1.4	
14*	Āfa	Fokai 1	sitting	28	1	1b	1.3	
15*	Āfa	Fokai 2	sitting	27	1	1b	1.6	
16*	Āfa	Fokai 3	sitting	61	1	1b	1.3	
17*	Āfa	Fokai 4	?	164	1	1b	1.4	
18*	Āfa	Toa 5	?	171	1	1b	1.2	
19*	Āfa	Unnamed 6	?	206	1	1b	1.6	
20*	Āfa	Unnamed 7	?	244	1	1b	1.4	
21*	Āfa	Unnamed 8	?	450	1	1b	na	

Table 1. Tongatapu stone structures (see Figure 1 and Figure 4 for locations). Numbers marked with an asterisk are new structures recorded by the authors.

Number	Location	Name	Identification	Area	Number of Levels	Typology	Length-Width Ratio	Code
22*	Makaunga	Utuaangi	?	729	3	2	1.0	
23	Makaunga	Tamatou	tomb	621	2	2	1.2	
24*	Talasiu	Faletoonga/Tu'itonga	tomb	825	2	2	1.3	J33
25	Talasiu	Langalangafehi/Malomaloa'a	tomb	273	1	1a	1.4	J19
26	Talasiu	Nakulikilangi	tomb	465	2	2	1.1	J18
27*	Talasiu	Unnamed	?	na	1	1b	na	
28*	Talasiu	Falekitangata	burial	260	1	1b	1.3	
29	Lapaha	Malomaloa'a/Olomaloaa	?	281	2	2	1.3	J23
30	Lapaha	Namoala	tomb	860	3	2	1.5	J21
31	Lapaha	Paepaeotelea	tomb	1170	3	2	1.6	J20
32	Lapaha	Leka/Puipui	tomb	1850	4	2	1.2	J17
33	Lapaha	Pau and Ngau/Maluatonga	tomb	640	1	1a	1.1	J16
34*	Lapaha	Unnamed	tomb	120	1	1b	na	J30
35	Lapaha	Fa'apite	tomb	1570	3	2	1.3	J15
36	Lapaha	Fo'ou	tomb	117	1	1a	1.4	J14
37	Lapaha	Tofaua	tomb	170	1	1a	1.5	J13
38	Lapaha	Nukulau'uluaki/Nukulau b	tomb	260	1	1a	1.1	J12
39	Lapaha	Nukulau'ua/Nukulau a	tomb	260	1	1a	1.2	J11
40	Lapaha	Tauhala	tomb	2730	1	1a	1.0	J10
41	Lapaha	Tauatonga/Leka	tomb	2130	4	2	1.3	J09
42	Lapaha	Tafaua	tomb	350	1	3	1.6	J08
43	Lapaha	Maluatonga	tomb	220	1	1b	1.4	J07
44	Lapaha	Taetaea	tomb	580	1	1a	1.3	J06
45	Lapaha	Sinae	tomb	270	1	1a	1.1	J05
46	Lapaha	Kofe	tomb	270	1	1a	1.2	J27
47*	Lapaha	Ha'atufunga	tomb	117	1	4b	1.4	
48*	Lapaha	Aponima	tomb	76	1	4a	1.4	J28
49*	Lapaha	Lili	tomb	na	1	1a	na	
50	Lapaha	Tuofefafa	tomb	1300	2	3	1.0	J04
51	Lapaha	Katoa	tomb	1580	5	2	1.2	J03
52	Lapaha	Fanakavakilangi/Tauatonga	tomb	440	1	1a	1.4	J02
53	Lapaha	Tuoteau	tomb	650	1	3	1.1	J01
54	Lapaha	Loamanu a Falepulemaalo	tomb	434	1	1a	1.5	a
55	Lapaha	Loamanu b Loamanu/Luani	tomb	633	1	1a	1.3	b
56	Lapaha	Loamanu c Faletuipapai	tomb	183	1	1b	1.3	c
57	Lapaha	Loamanu d Loamanu IV	tomb	357	1	1a	1.2	d
58	Lapaha	Loamanu 1 (beside 54)	tomb	476	1	1a	1.2	1
59	Hamula	Unnamed	tomb	178	1	1b	1.1	
60	Longoteme	Loamanu I	tomb	141	1	1a	1.2	
61	Kanokupolu	Malae Kanokupolu	tomb	420	1	3	1.1	TO-Ka-9
62*	Ahau	Volokamanu	tomb	170	1	3	1.2	
63	Neiafu	Mataeleha'amea	tomb	360	1	4b	1.6	TO-Ka-12

Table 1. Continued.

well as from site discovery after clearing and excavation at locations at Lapaha-Talasiu and Āfa, in addition to two sites recorded with the Culture Division (Ministry of Tourism) after Cyclone Gita in February 2018.

It is clear that additional structures remain to be found while several have had slabs removed, others have been damaged/destroyed by development as local informants have identified locations where stone has been removed by road building, sports field levelling and house construction. Identification of structures as tombs (*langi*), house platforms (*paepae*) or chiefly sitting platforms ('*esi*') is difficult as use can change over time when house or sitting platforms mounds were used for chiefly burials (or vice versa). We include identifications of structure function based on traditional history and evidence for burial such as exposed stone vaults/human bone, deposits of volcanic funerary stones (*kilikili*) and observation of stratigraphy, but acknowledge that the complicated use-life of some prehistoric structures may have obscured their original function. Different labelling systems have been used to record stone structures and names also vary significantly among accounts and informants. For example, McKern (1929: 37) records Faletoonga as an earth mound while informants from Talasiu and Lapaha identify a structure in Talasiu with two stone tiers (24) as Faletoonga. To avoid confusion, we have sequentially numbered structures from the east to the west of Tongatapu and include previous site codes used by previous researchers (Clark *et al.* 2008; McKern 1929; Spennemann 1989a).

The sites made or outlined with quarried stone slabs in Table 1 provide an estimate of site area and shape, number of stone levels or tiers, and a structure typology (Figure 2) that builds on McKern's (1929: 35, Figure 17) and Kirch's (1988: 45, Figure 23) classification of stone and earth structures. The length of the longest wall divided by the length of the shortest wall is a ratio that indicates whether the basal stone wall is square or rectangular.

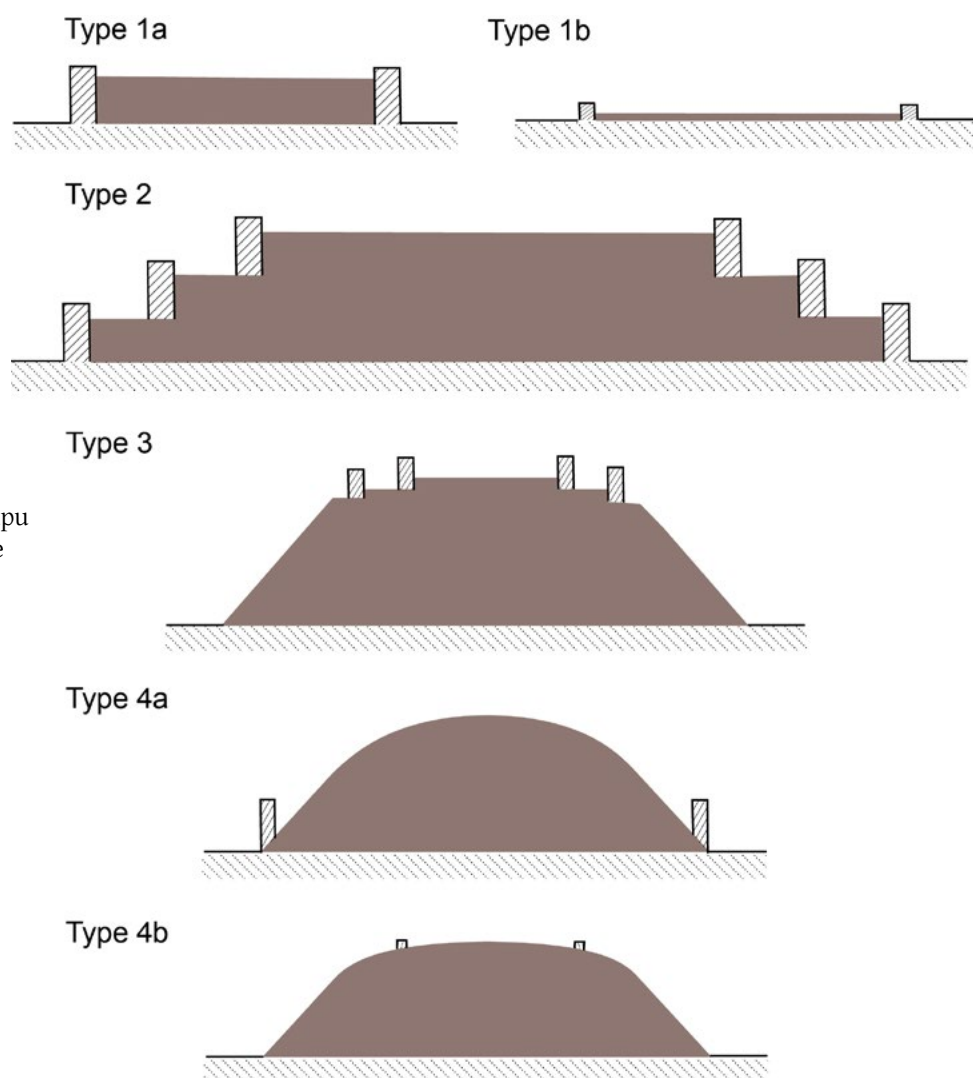


Figure 2. Tongatapu stone structure typology.

Type 1a

These have a single level of stone facing with a marked step from the exterior ground level to the interior platform surface (n=24). There is significant variation in structure area with the smallest, Fo'ou (36, 117 m²) and the largest, Tauhala (40) at Lapaha (2730 m²), which is clearly an outlier with all other Type 1a structures under 670 m². Excluding Tauhala (40) the average area of Type 1a constructions is 353 m² with a group of five structures with similar areas of 260-273 m². Most are located in the central place of the Tongan state encompassing Lapaha-Talasiu (n=18) and are subsidiary tombs associated with the larger 'royal tombs' of the Tu'i Tonga as well as tombs of the Tu'i Ha'atakalaua (54, 55, 57, 58 at Loamanu) and Fale Fisi (25, Langalangafehi) lineages that were derived from the Tu'i Tonga family (Bott 1982; Gifford 1929). Most Type 1a structures were used for burial but there are two structures (4, 5) at Heketā that are likely to be house platforms. Both are identified in Tongan traditions as house sites, particularly structure 4, which is reputed to be the residence of the 11th Tu'i Tonga Tu'itātui (Clark and Reepmeyer 2014). Excavation to recover material to radiocarbon date structure 4 did not record any evidence for burial and the centre of the platform contained a large posthole surrounded by thin oval shaped layer of coral gravel consistent with a house floor. In tombs with burial vaults, a thick deposit of coral gravel was placed around and over the stone vault, but neither feature was observed in excavation of structures 4 and 5 at Heketā. The association of Type 1a burial structures with locations where larger royal tombs (*langi*) were built indicates they may have made for lower ranked chiefs and family members of the Tu'i Tonga, and that tomb use developed from stone house and sitting platforms found at Heketā and 'Āfa.

Type 1b

The structure type (n=17) is similar to Type 1a in having a single level of dressed slabs, but differs in having a low wall height and reduced volume of earth fill over the ground surface. Damage to slabs can reduce their height and in such cases excavation of the platform fill is needed to estimate the original wall height. Testing of the platforms at 'Āfa has not been undertaken due to the proximity of domestic buildings and their status as Type 1b structures is therefore tentative. Several Type 1b platforms appear to have had a low curbing of carbonate stone rather than a 'wall' potentially consistent with the use of left over quarried stone. Some support for this might be that several Type 1b structures appear to be incomplete including two platforms at Heketā (7, 8) and one at Talasiu (27). Type 1b structures are generally the smallest with 14 of the 16 structures with a measurable area under 265 m² including Heketā structure 2 that traditions identify as a chiefly sitting platform ('*esi*). As most Type 1b structures do not appear to have been used for burial they might also have been used as chiefly activity areas. At Talasiu, the presence of a modern cemetery has obscured the original function of the Falekitangata (28) site which has an area of 450 m² marked with low slab walls and at least two 'pillar' stones. Local traditions indicate the site was a cemetery that might be of late prehistoric-early historic age. The largest Type 1b site at Heketā (7) has an area of 664 m² is unlikely to be a burial site and is similar in size and shape to two nearby house platforms (4, 5). The length-width ratio indicates most Type 1b structures are rectangular (average 1.4) and only an isolated burial platform (59) reported by Swanson (1968: 12) at Hamula has a square form.

Type 2

The distinguishing mark of Type 2 structures (n=12) is two or more tiers of stonework extending upward from the ground surface. The largest of structures are identified as royal tombs (*langi*) of the Tu'i Tonga and immediate family members. Exceptions include a small tomb with an area of 281 m² known as Malomaloa'a (29) at Lapaha which has no burial information. Malomaloa'a was built on reclaimed land as were the large tombs of Namoala (30) and Paepaeotelea (31), but was placed in a low-lying area close to the water table. The second potential exception is the two-

tiered tomb of Nakulukilangi (26) at Talasiu located on the edge of the old shoreline. This tomb is relatively small (465 m²) and is the burial place of the Tu'i Lakepa family of the Fale Fisi lineage that began around AD 1700 (Bott 1982), although the tomb may date older (see below).

The remaining Tu'i Tonga tombs include the smallest and probably oldest Type 2 royal tomb at Heketā (3) with three levels of stonework (374 m²) and the three tombs at Makaunga (22, 23) and Talasiu (24). Both Utuangiangi (22) and Faletoonga (24) are currently used as burial grounds and only a few slabs can be used to estimate structure area and the number of stone tiers. In contrast, Tamatou (23) has two tiers and is in relatively good condition on private land. This tomb is associated with the 12th Tu'i Tonga who installed a wooden 'king' which is said to have been buried in Tamatou (23). Excavation of the tomb by McKern (1929: 55) supported this as he did not find a stone vault nor human remains, but one Lapaha tradition suggests instead that the wooden 'king' was buried at Faletoonga (24) at Talasiu and that Tamatou is a more recent construction (Clark, unpublished field notes).

The area of Type 2 structures shows a clear division with seven in the range 280-860 m² separated from five over 1000 m² in area (1170-2130 m²). The five largest tombs (31, 32, 35, 41, 51) are all in Lapaha and have between three and five levels of stonework. There is a reasonable correlation between tomb area and the number of stone levels ($r^2=0.59$) indicating that structures were probably planned to have a set number of levels and a larger base was needed to accommodate the loss of area to the upper platform caused by the addition of 'internal' stone tiers. The smallest of the tombs with an area over 1000 m² is Paepaeotelea (31) dated to AD 1300-1400 (Clark *et al.* 2016) while the youngest tombs may be Tauatonga (41) and Katoa (51) which have display stones in the southwest corner of the top tier, which is an architectural addition that appears to postdate the construction of tombs at Heketā and of Paepaeotelea at Lapaha (Clark 2014). As Tauatonga (41) is the largest Type 2 tomb (2130 m²) and Katoa (51) has the most levels of stonework (five tiers) it is apparent that there was sustained investment in this form of mortuary architecture at Lapaha compared with the smaller Type 2 tombs at Heketā (3) and Makaunga-Talasiu (22-24). A rectangular walled structure is common for Type 2 tombs apart from Utuangiangi (22) that is poorly preserved and Nakulukilangi (26). At Lapaha other large 'royal' tombs tend to have square stone walls (see below).

Type 3

These are all chiefly tombs (n=5) that have one or two levels of stone slabs placed on top of an earth mound. This is a labour efficient means of increasing structure height without using multiple levels of stonework that require hundreds of quarried slabs as used in Type 2 structures. McKern (1929: 35) described his similar Type C tombs as having a rectangular earth base with rectangular stone walls intermediate between the base and top of the mound. While some mounds are rectangular (42, 62), the three largest at Lapaha (42, 50) and Kanokupolu (61) are relatively square and this is reflected in the shape of the stone walls and their length-width ratios (1.0-1.1). On these mounds the stone walls were placed on the top of the mound to demarcate an inner platform holding a central vault/burial. The earth mounds may have been purpose built to hold stone walls or were used as burial sites and the stone walls added later. The square form is also found in the large Type 1a tomb at Lapaha (40, Tauhala) likely to be of late prehistoric age suggesting that a change from rectangular to square walled tombs occurred in late prehistory. This is indicated by the Tuoteau tomb (53) at Lapaha that was built before AD 1777 for the 35th Tu'i Tonga and two tombs of the Tu'i Kanokupolu lineage (61, 62) that likely began around AD 1600. Although only a small number of Type 3 tombs have been identified the type may be under-represented as erosion has been observed to result in the collapse of low stone walls placed on the upper part of a mound. The status of Taufaua (42) at Lapaha as a Type 3 mound is uncertain as McKern (1929: 57) has it as a low rectangular mound with slabs half-way up the mound unlike other Type 3 structures.

Type 4a

There are two Type 4a structures that consist of an earth mound with a perimeter wall of stone around the mound base that is either square or rectangular. The larger structure at Āfa (10) has an area of 679 m² and along with two smaller structures (11, 12) forms the Mo'ungalafa tomb complex. The main tomb (10), which is traditionally dated to the time of the 11th Tu'i Tonga, consists of a square-shaped earth mound with a convex upper surface 2.6 m high. Due to mound erosion it is unclear whether the wall slabs held a large amount of tomb fill or the slabs always outlined the mound base. The form of the tomb suggests that the earth mound was built first and the slabs added later. The tomb has several monumental slabs 4-5 m in length and the stone wall originally stood ~1.5 m above the ground surface. With the exception of Heketā where three massive blocks were used to build a trilithon (1), the Mo'ungalafa tomb has the largest individual wall slabs from any part of Tongatapu apart from Lapaha where blocks 4.0 m or greater in length are relatively common. The Aponima tomb (48) is similar in form to the Mo'ungalafa tomb (10) although is much smaller (76 m²). Aponima is a rectangular earth mound with the base outlined with small stone slabs. Excavation of the mound revealed that a low vault had been built into an existing mound that had been a burial site for one or two centuries before the vault was added suggesting that the basal wall slabs were added at the same time as the stone burial chamber. Type 4a structures are rare and likely represent the addition of stonework to existing earth mounds.

Type 4b

Both of the two Type 4b structures are rectangular earth mounds with a low stone wall or curbing on the mound top. The larger structure of Mataeleha'amea (63) at Neiafu is identified as the tomb of the 4th Tu'i Kanokupolu while the other example from inland Lapaha is said to be the tomb of the Ha'atufunga (47) undertaker clan that was responsible for organising the funeral of the Tu'i Tonga and other senior chiefs (Gifford 1929: 67). Mataeleha'amea (63) is in poor condition and might have been a Type 4a structure that has experienced extensive damage to its wall slabs, but this does not appear to be the case for the Ha'atufunga tomb which has small stone slabs projecting ~10-20 cm above the ground and has reportedly never been ploughed. As with Type 4a structures the addition of relatively small amounts of stonework to an earth mound suggest that Type 4b structures are modified burial mounds or tombs of junior lineages/clans who could access only small quantities of quarried stone. Lidar data was used to calculate mound volumes of the Type 4b structures with Mataeleha'amea ~745 m³ and Ha'atufunga ~700 m³. On Motutapu Island, McKern (1929: 104-106) recorded a possible variant of the Type 4b structure which was a circular burial mound with a single layer of slabs arranged in a circle around the upper mound perimeter and a central walled 'vault' lacking floor or covering slabs. The Motutapu burial structure was: 'not known elsewhere in Tonga' (McKern 1929: 109), and the wall slabs were roughly dressed unlike the carefully smoothed wall slabs at Heketā, Āfa and Lapaha-Talasiu.

Discussion

Traditions record that the first monumental stone constructions on Tongatapu began with the 11th Tu'i Tonga trilithon (1) at Heketā which is dated to ~AD 1250-1350, but the innovation of quarrying smaller quantities of beach rock and limestone likely began earlier from the use of stone to outline or raise chiefly platforms. In several Polynesian societies unmodified pieces of coral and beach rock were set on end in the ground and used to outline house and burial structures while dressed volcanic and carbonate stones were used in ceremonial and chiefly structures in Rapa Nui, the Marquesas and the Society Islands, but never, or only rarely in Samoa, New Zealand and Hawai'i. In the 'Story of Mailau' the first stone vault in Tonga was made by Finau after the death of her daughter. Members of Finau's family contributed individual stones and their names became the titles of the hereditary undertaker clan of the Ha'atufunga after a Tu'i Tonga saw the tomb and installed the family at Lapaha to make his vaults (Filihia 2001:212-214; see also Gifford

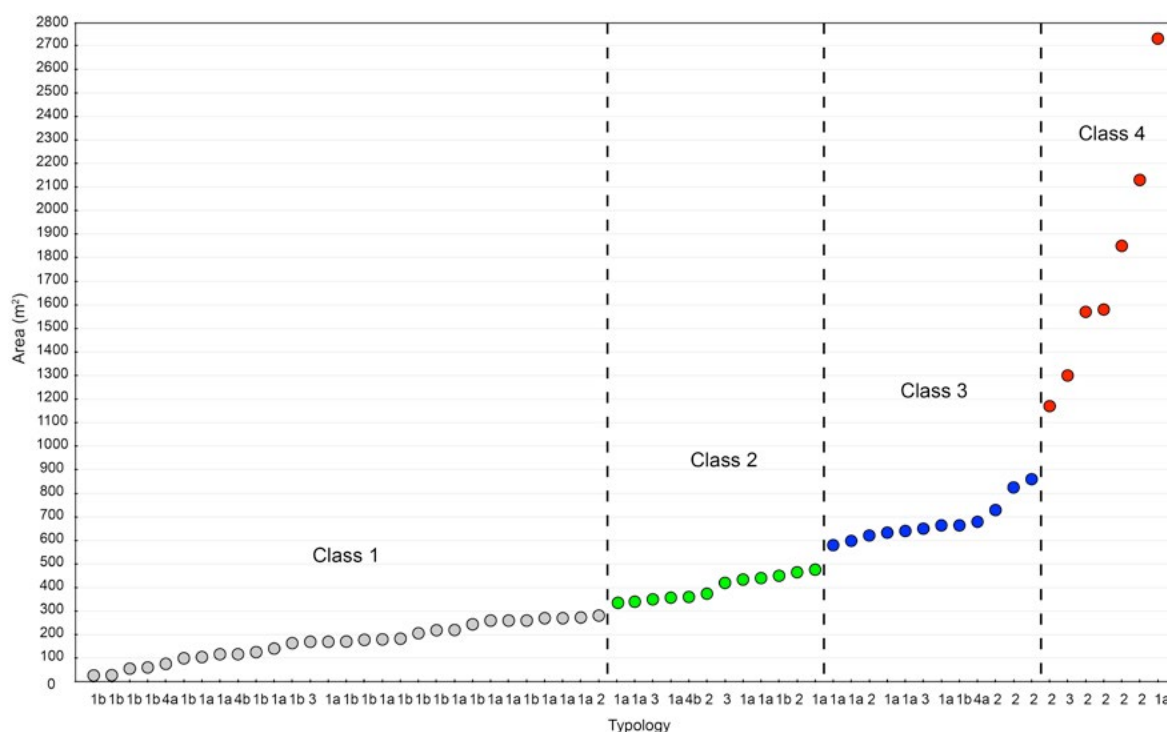


Figure 3. Plot of stone structure area against structure type (see Figure 2) and four potential size classes.

1924:204-205). The sequence implies that stone vaults came after stone facing were being used in architecture at Heketā, 'Āfa and Lapaha. Geophysical study of the Heketā tomb (3) supports this as ground penetrating radar (GPR) did not record a stone vault in all of the large Lapaha tombs (Clark and Reepmeyer 2014).

The two striking aspects of Tongatapu's stone structures is their spatial distribution and size/shape variation. In Figure 3 the relationship between structure area and typology is plotted for the 60 stone structures with the available data (excluded structures are 1, 27, 49).

Structure Area and Typology

Arranged by structure area the Figure 3 plot shows areas where moderate-to-large jumps in size occur which have been used to distinguish four general size classes. The division between Class 1 and Class 2 is small at 281 and 315 m², between Class 2 and Class 3 is 476 and 580 m², and Class 3 and Class 4 is between 860 and 1170 m². The discovery of additional structures could well bridge some of the 'step' changes among smaller structures, but is less likely for the significant divide between the larger Class 3 and Class 4 structures.

There are two significant trends in the form of stone structures over the four size classes. First, the proportion of Type 1 structures (1a and 1b) decreases in each size class (Class 1=86%, Class 2=58%, Class 3=50%, Class 4=14%). Second, the abundance of Type 2 structures increases in each class (Class 1=4%, Class 2=17%, Class 3=33%, Class 4=72%). As the structure typology separates Type 1 and Type 2, in part, by height (single level of stonework versus multiple levels), the plot indicates that structures with a large area and multiple tiers of stonework of Type 2 were the apogee of Tongan funerary architecture. These large Class 4 structures were traditionally the prerogative of the Tu'i Tonga line and were only made at Lapaha.

The largest Class 4 tomb is, however, Tauhala (40) with an area of 2730 m² which is a Type 1a structure with a single level of large stone slabs. The form and size of this tomb is unusual and

requires discussion as it lies between two large Type 2 tombs (35, 41) which are rectangular (as are all seven of the surrounding Type 2 tombs), and the square walls of Tauhala are more common in tombs made after ~AD 1600. The tomb known as 'Tauhala' was recorded by the missionary Shirley Baker who was posted to the Lapaha area in the 1860s and again by McKern in 1920-1921 showing that the tomb name has not changed. Gifford (1923: 127) recorded the name of this tomb as: 'Langitauhala. Royal tomb of the Tamatauhala, an individual higher in rank than the Tamaha ...'. The Tama Tauhala was a male child with extremely high rank born to the Tu'i Tonga's sister (the Tamahā). The Tama Tauhala in Tongan society was: '... the end and consummation of all things, towards whom all ranks and titles converged ...' (Williamson 1924: 181). As the Tamahā title probably began in the early 18th century (Bott 1982), the Tauhala (40) tomb is likely to have been constructed after the two Type 2 tombs (35, 41).

The unusual scale of the Tauhala tomb, then, was made to express the high rank of the Tama Tauhala while the single level of stonework was usually used for chiefly lines that were closely linked to the Tu'i Tonga dynasty. Chiefly lineages derived from the Tu'i Tonga that were given secular responsibilities were the Tu'i Ha'atakalaua and Tu'i Kanokupolu and both of these have either Type 1a or Type 3 tombs with a single level of stonework. In the early 19th century, Type 1a structures with a single layer of wall slabs were generally associated with: '... more lowly ranked chiefs' (Filihia 2001: 114). The Fale Fisi line is also associated at Talasiu with a Type 1a (25) and Type 2 (26) tomb, but as mentioned previously one or both of these tombs may be older and they might have been taken over by the Fale Fisi in the 18th century. Circumstantial evidence for this is that the condition of both 'Fale Fisi' tombs is very poor with slab delamination and severe fracturing similar to the slabs of older tombs in addition to the presence of early Tu'i Tonga Type 2 tombs to the north (24) and south (southeast 30 and 31, southwest 34 and 35). A final point is that remains of a partial stone platform (27) adjacent to 25 and 26 once extended over the old shoreline, but most of the walls have been lost to slope erosion and the amount of sediment loss could also indicate that the 'Fale Fisi' tombs date older than AD 1700.

Among the smaller size classes in Figure 3, all structures are tombs/burial sites except for a number of house and chiefly sitting platforms of Type 1a and Type 1b at Heketā and 'Āfa. The smallest structures may be sitting platforms with several in the range of 27-61 m², but there is also a tomb with an area outlined by stonework of only 76 m² (48), although as mentioned above this site may well be an earth mound that had stone slabs added later. Otherwise, all confirmed tombs with stonework are over 100 m². Sitting platforms are likely to have greater size variation and extend to at least ~170 m². House platforms are also difficult to distinguish on size alone as some could have been used as burial sites after the death of a chief except at Heketā where archaeological excavation of two Type 1a structures supported their traditional use as house platforms (4, 5). Both of these structures (598-664 m²) are relatively large, and there are Type 1a and 1b structures at 'Heketā and 'Āfa in the range ~200-670 m² that do not appear to be burial sites that could also be chiefly house or sitting platforms.

Spatial Distribution

The location of stone structures is focused on eastern Tongatapu with the majority (86%) in three loose groupings (Figure 4) before a significant gap in central Tongatapu west of Lapaha and only three structures in the far west of the island.

Heketā, the easternmost group, has nine stone structures most of which are arranged in a column with the long axis of each structure parallel to the coast (Figure 4A). The monumental trilithon (1) is offset from the structures and points toward an area of modified shoreline that traditions and survey indicate was the likely source of the trilithon uprights each weighing over 20 tons (Clark and Reepmeyer 2014). There is debate over whether the trilithon was used in astrocalendrics – a proposition refuted by Velt (2011) – and Spennemann (2002) interpreted the structure as a gateway

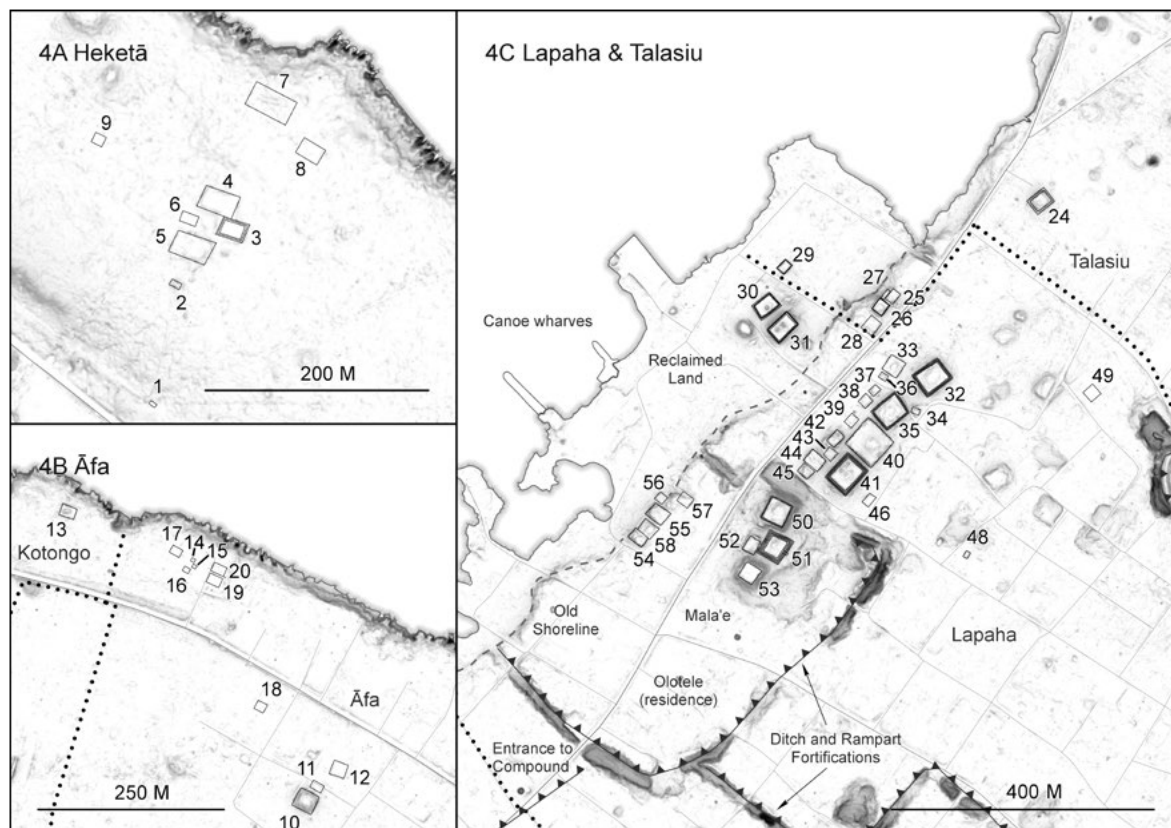


Figure 4. Stone structure groups (see Figure 1 for location and Table 1 for details).
4A. Heketā, 4B. 'Āfa. 4C Lapaha and Talasiu.

to an elite compound. Traditions mention that Heketā held a ground for the chiefly sport of dart throwing and was also the venue for the First Fruits (*'inasi*) ceremony attended by chiefs from Tonga and other islands (Gifford 1924: 49). If the trilithon (1) was a ceremonial gateway then the southwest slope in front of the sitting platform with a stone backrest (2) could have been a natural amphitheatre (*malae*) for ceremonial events.

While the Heketā site is well known the stone structures at 'Āfa (Figure 4B) are not. In addition to the three tombs collectively known as Mo'ungalafa (10-12) recorded by McKern (1929), there are a further nine structures to the west (13-20) and east (21) of the tombs including Utukakai (13) which is a typical rectangular Type 1a tomb. The function of the other eight structures is unclear and they may be tombs or sitting/house platforms. The west 'Āfa structures are aligned roughly parallel with the coast rather than in a column formation as at Heketā. As quarried stone likely came from offshore islands such as Motutapu (where a large beachrock quarry is located) the series of small platforms could represent a marine access point for the Heketā precinct as the 'Āfa sites are located close to a reef entrance.

Apart from two Type 2 tombs in Makaunga area there are no structures recorded until the concentration of stone tombs at Lapaha-Talasiu (Figure 4C). Rectangular tombs at Lapaha-Talasiu are located with their long axis aligned to the Fanga 'Uta lagoon similar to the east 'Āfa structures, but different from Heketā. Traditionally, the Tu'i Tonga had his residence (Olofele) to the southwest of the main row of tombs with an entrance through a defensive ditch-rampart and a meeting ground (*malae*) beside his residence with stone tombs in a row to the northeast (Figure 4C; see also McKern 1929: 95). Such a configuration with a formal entrance to a ceremonial ground close to a chiefly residence may be similar to Heketā particularly if the Heketā Type 2 tomb (3) was built after the stone house platform (4) as the architectural evidence suggests (Clark and Reepmeyer 2014). An early Lapaha tomb (31) made in reclaimed land away from the Tu'i Tonga's residential area is

consistent with a defensive fortification primarily made to protect the chiefly compound while tombs were located outside the residential area.

The gradual extension of the tombs southward toward the residential zone (Olotele) appears to be a reason for infilling the northern part of the defensive ditch, possibly after the addition of a long linear fortification (Fisi-Tea, Parton *et al.* 2018) made the section of 'internal' earthwork redundant. The Type 3 Tuoteau tomb (53) inside the fortified area was certainly one of the last 'royal' tombs to be made at Lapaha and is the closest tomb to the Tu'i Tonga's traditional residence (Clark *et al.* 2008). Smaller Type 1 tombs lie in a parallel row to the large tombs except for the tombs of the Tu'i Ha'atakalaua line (54-58) that was given the task of secular government and supporting the 24th Tu'i Tonga (Gifford 1929). In return the lineage appears to have been able to make stone-faced tombs for burial ~AD 1450. The association of small tombs with larger stone burial sites is also seen at 'Āfa but not at any of the Type 2 structures at Makaunga and Talasiu (22-24). The row of nine 'companion' tombs west of the four large tombs at Lapaha suggests that several lower-ranked group(s) associated with the Tu'i Tonga, perhaps close family relations, were at some point able to construct individual stone tombs. It is feasible that the construction of these small Type 1a tombs occurred after warfare, territorial expansion and the institution of the Tu'i Ha'atakalaua which grew the politico-religious hierarchy of the Tongan state after AD 1450 (Clark *et al.* 2008; Gifford 1929). The alignment of the small tombs parallel to several large tombs also suggests that an important avenue lay to the east that has now been obscured by the modern road.

Apart from a few small tombs at Hamula (59) and Longoteme (60) there are only three tombs with stonework in the far west of Tongatapu. These tombs of Type 3 and Type 4b all belong to the Tu'i Kanokupolu lineage (61-63) that came from the Tu'i Ha'atakalaua line which was sent to administer west Tongatapu (Gifford 1929). The three tombs with stonework show the developing political foothold of the Kanokupolu lineage in the west of Tongatapu. After prolonged civil war in the 19th century when the Tu'i Kanokupolu gained the paramountcy of Tonga the monarchy established itself in the new capital of Nuku'alofa. The shift was analogous to the Tu'i Tonga's move from outlying 'Āfa-Heketā to Lapaha which improved the maritime and terrestrial networks necessary to maintain the Tongan state on Tongatapu and other parts of the archipelago.

Conclusion

The stone structures of Tongatapu are associated with the life and death of senior chiefs and they served as compound entrances, platforms for dwelling, holding court and the interment of semi-divine leaders. The use of white stone walls was an architectural innovation used to demarcate locations where highly-ranked title holders lived and presided. After death the paramount's body was similarly contained by a stone structure equipped with a stone vault. The quarrying of carbonate beach rock to make tombs and vaults may have built on the use of white beach sand to separate the body (*tapu*) from the earth (*noa*), but this requires confirmation by dating burials placed in beach sand that predate the emergence stonework. The uneven distribution of stone structures around the east of Tongatapu may represent attempts to establish a central place with Heketā fulfilling that purpose until it was deserted possibly after the death of the individual interred in the Type 2 tomb (3). The role of 'Āfa is unclear and whether it was a canoe landing zone to service Heketā, or a distinct chiefly compound connected with the Mo'ungalafa tombs. A degree of trial and error in the placement of tombs is seen at Lapaha where reclaimed land holding the early Paepaeotelea tomb (31) was abandoned for a landward strip where 19 large and small tombs were later built to form a row of monumental tombs. The large Tautonga (41) tomb was made close to the defensive wall of the Tu'i Tonga's compound and might have precipitated the placement of several Type 2 tombs in Talasiu and Makaunga. The construction of a large linear fortification that protected the eastern part of Tongatapu could have been the critical event that allowed a section of the Tu'i Tonga's defensive earthworks to be infilled and another four tombs to be constructed in the residential area (see tomb construction phases suggested by Clark 2014; Kirch 1984; Spennemann

1989b). In a recent paper, Jennings and Earle (2016: 484) suggest that without a strong historical record the Tongan state would not have been recognized, but this is unlikely given the pattern and scale of stone architecture on Tongatapu, particularly the arrangement of chiefly tombs at Lapaha that testify to a central place that existed for centuries. Stone structures are important for reconstructing the political development of the Tongan state and future work should aim to develop a ¹⁴C chronology of stone structures and to investigate their relationship with other parts of the prehistoric landscape such as road networks, fortifications, earth mounds (Freeland *et al.* 2016) and stone quarries. Many of the stone structures on Tongatapu have been negatively impacted by vegetation growth and human activity and the significant cultural heritage values of these sites would benefit from additional study and community-government management.

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