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Research Article

From ritual spaces to monumental expressions: rethinking East Polynesian ritual practices

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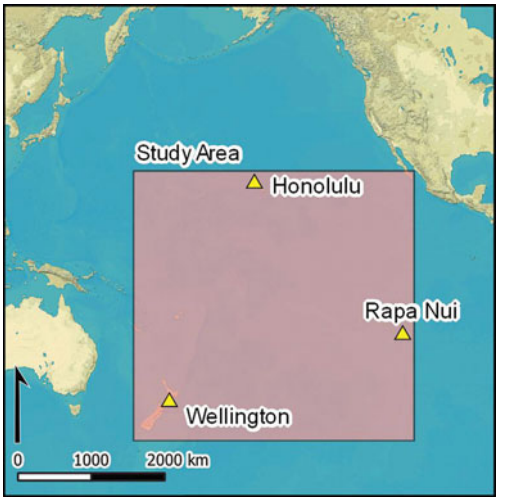

As with the peopling of the Pacific Islands, the monumental ritual architecture of East Polynesia is presumed to have spread from West Polynesia. By re-examining the wealth of absolute dates available from ritual contexts across these diverse islands, the authors challenge this generalisation in Polynesian ideological materialisation, identifying three phases of development. They argue that initial west-to-east migration spread the concept of ritual spaces marked by stone uprights *c.* AD 1000–1300, then the formalisation of monuments diffused in the opposite direction *c.* AD 1300–1600, before mega-structures emerged from localised hierarchisation, perhaps earliest on Rapa Nui *c.* AD 1350–1500.

Keywords: Australasia, East Polynesia, radiocarbon dating, *ahu*/*marae*, monument, migration, interaction

Introduction

This article aims to evaluate the development of ritual spaces and monumental architecture in an East Polynesian context. We use a diachronic perspective to identify East Polynesian ritual spaces and examine their materialisation. The development and interpretation of ritual spaces have been debated for more than a century, drawing on oral traditions, ethnohistory and archaeology (e.g. Handy 1927; Emory 1933; Kirch 2017). The orthodox view is that these structures developed and spread from west to east with initial colonisation. This view is partly challenged in this article. The present availability of extensive archaeological data and radiocarbon dates from ritual sites allow a revised model of the East Polynesian expansion, and the interactions and hierarchisation of such sites. East Polynesia consists of a multitude of islands and island groups located in the Pacific Ocean, with Hawai'i in the north, Aotearoa (New Zealand) in the south-west and Rapa Nui (Easter Island) in the east

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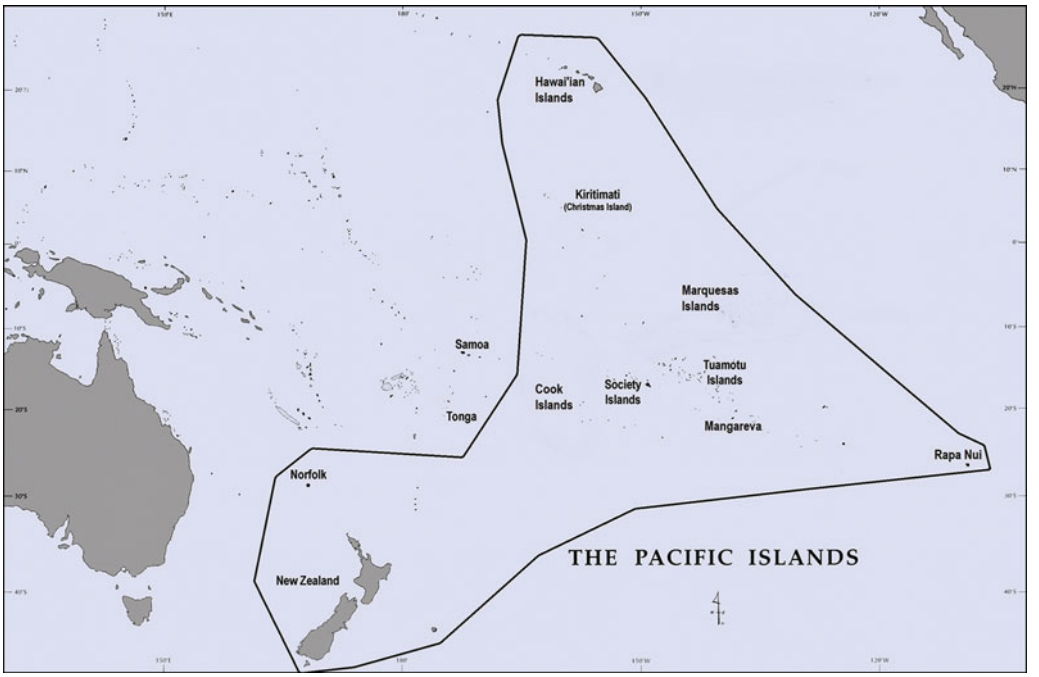

Figure 1. Map of the Pacific with the East Polynesian cultural sphere indicated (drawing by P. Wallin).

(Figure 1). Wilmshurst and colleagues (2011) describe a general settlement model in which people from West Polynesia settled East Polynesia and arrived in the Society Islands *c.* AD 1025. This was followed by a rapid expansion to Rapa Nui, Marquesas, Hawai'i and, finally, New Zealand around AD 1200 (Wilmshurst *et al.* 2011: 1818; DiNapoli *et al.* 2020; Rolett & Dye 2024).

The migration process from West Polynesian core areas such as Tonga and Samoa to East Polynesia is not disputed here. Migrants carried genes and language, brought plants/animals, material culture, ideas of social structure and ritual practices (Kirch & Green 2001). Ovens and mounds were already constructed in West Polynesia *c.* 1500 years ago (Clark *et al.* 2024) and similar features are reflected in early East Polynesian ritual contexts, but the *marae/ahu* architecture discussed here developed later in East Polynesia. Thus, what we challenge is the static west-to-east colonisation and dispersal suggested for East Polynesia and the idea that Rapa Nui was only colonised once, then developed in isolation. Genetic research reveals evidence of pre-European South American interaction in East Polynesia, particularly on Rapa Nui (Ioannidis *et al.* 2020; Moreno-Mayar *et al.* 2024). The genetic connection highlights aspects of ritual architecture, the presence of sweet potatoes and the birdman concept in the cultural expressions of Rapa Nui and East Polynesia (Martinsson-Wallin 1994; Anderson 2022a).

In discussing why ritual spaces changed and ideologies materialised into ritual places, we embrace a practice-theory based perspective in our explanations. We consider the Polynesian people to be active agents who structured and changed these sites using various scales of

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relationships and interactions. Thus, our ideas about change are explained by more than just the passage of time and the existence of resources. In our view, change is the sum of conscious decisions and actions based on shared values and norms, intrinsic to and entangled with living people, myths and genealogies.

Material and methods

Our analysis is based on existing data compilations, as well as on our own contribution of radiocarbon dates from settlement and ritual sites in East Polynesia (Yamaguchi 2000; Anderson *et al.* 2002, 2019; Wallin & Solsvik 2010; Wilmshurst *et al.* 2011; Martinsson-Wallin *et al.* 2013; DiNapoli *et al.* 2020; Rolett & Dye 2024). In particular, we assess dated samples from various ritual sites, combining radiocarbon estimates with detailed analysis of stratigraphy and inter-site relationships. All dates used in this study are considered in relation to their specific archaeological contexts. Bayesian statistical modelling is undertaken to help classify periods of activity on different islands or island groups (see the online supplementary material (OSM) for individual models and Table S1 for data). All dates are calibrated using the SHCal20 calibration curve, at 95.4% confidence (Hogg *et al.* 2020), with marine corrections when necessary, and Bayesian modelling was performed in OxCal v.4.4.4 (Bronk Ramsey 2021).

To understand ritual spaces, we first need to explore ritual expressions prior to the emergence of formalised *ahu/marae* structures. The words used for ritual spaces first appear in proto-Polynesian lexical reconstructions of the words for an open cleared space (*malaqe) and for a platform/heap of stones (*afu) (Kirch & Green 2001); in West Polynesia, the term *marae* or *mala'e* refers to an open area that serves as a meeting place for the community. Stone uprights are the earliest and most basic material manifestation of ritual space in Polynesia (Emory 1933; Garanger 1964: 8; Green *et al.* 1967: 142; Sinoto 1996: 551). As such, it is essential to identify whether there are any upright stones in early-dated activity spaces in East Polynesia. However, when upright stones are incorporated as part of a more complex materialised ritual *marae* structure, we interpret them as representations of an early ritual idea and practice. Other activities connected to initial ritual spaces served different purposes and functions; these are identified through features such as storage pits/houses (and other houses), burial grounds, feasting activities and ovens (Yamaguchi 2000; Kirch & Green 2001: 249–50; Wallin & Martinsson-Wallin 2022).

Assessment of early ritual expressions and spaces in East Polynesia

Since there is an initial West to East driven migration trend in Polynesia, we initiate our assessment with a site in Rarotonga on Cook Islands (RAR-12). The site is located on a small coral island called 'Motu Tapu'. Toru Yamaguchi (2000: 145–47, fig. 4.1.10) describes the site as a court surrounded by small basalt uprights. Three charcoal samples from ash and charcoal-filled depressions associated with the uprights indicate early ritual actions dated to *c.* AD 1000–1400 (Yamaguchi 2000: 295). These actions can be associated with the initial settlers of the Cook Islands *c.* AD 1250–1281, or even earlier (Wilmshurst *et al.* 2011:

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Figure 2. The upright slab at Vaito'otia/Faahia site, Huahine, Society Islands (photograph by P. Wallin).

1818). Yamaguchi (2000: 285) suggests that ovens are also used for ritual purposes at this time.

The general dating frame of the early settlement in the Society Islands, French Polynesia, is estimated to *c.* AD 1025–1121 (Wilmshurst *et al.* 2011: 1818). During excavations at Vaito'otia/Fa'ahia on Huahine in the Society Islands in 1974, Yosihiko Sinoto uncovered a fallen basalt upright (Figure 2) placed in a carved coral foundation. This cannot be interpreted as a ritual *marae* site (see below), but the additional presence of a well, a small stone pavement and post holes for several stilt houses (interpreted as storage houses) separate from what is interpreted as the main area of activity suggests the area was used for religious purposes (Sinoto 1988: 114–16). The area has been extensively radiocarbon dated to *c.* AD 1050–1300 (Anderson *et al.* 2019: 7–8). On Maupiti, a small island west of Huahine, Emory and Sinoto (1964) excavated an early burial ground on Motu Paeao, uncovering an irregular line of 10 upright stones as well as ancient earth ovens containing basalt stones and charcoal in the eroded banks. Anderson and colleagues (2000: 52) reinvestigated the site in 1999, collecting material for new radiocarbon dates that indicate the burial ground was in use *c.* AD 1300–1450, but they could not locate the fireplaces or ovens.

The settling of the Marquesas Islands has been dated to *c.* AD 1200–1277 (Wilmshurst *et al.* 2011: 1818), but data from the Hane site suggests that settlement may have occurred up to 200 years earlier (Rolett & Dye 2024: 14). Plans of the Ha'atuatua site on Nuku Hiva, drawn in 1956 (Suggs 1961: 62), record a stone upright, human burials, several fire pits, pig bones and burials, and a small rectangular stone pavement. The upright stone and surrounding features permit classification as a ritual site, and associated dates indicate activity *c.* AD 1200–1450 (Sinoto 1966: 303; Rolett & Conte 1995: 205, 224–25).

During investigations on Kiritimati (Christmas Island), in the Line Islands, two ritual structures were excavated (Anderson *et al.* 2002). Both were outlined by a beach-rolled upright slab and hard-pan uprights placed in rows. These 'courts' had small ovens/fireplaces and small hard-pan pavements, and both were dated to *c.* AD 1350–1450 (Anderson *et al.* 2002: 70).

According to Athens and colleagues (2014) the Hawaiian Islands were initially settled around AD 1000–1100, but Wilmshurst and colleagues (2011: 1818) indicate a date of AD 1219–1266. There, simple ritual structures are made up of rounded heaps of stones and

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basalt uprights (Kamakau 1976: 130–33), and date within the time frame *c*. AD 1200–1400 (Kirch & Ruggles 2019: 64–65).

Excavations at Emily Bay on Norfolk Island in the Southwest Pacific revealed a small sandstone-slab paved area, with three irregularly placed upright stone slabs located on a ridge about 20m east of a domestic area. Anderson and Green (2001: 44–50) argue this is a *marae* in the form of an open space without *ahu*. They record other features suggesting it is an early ritual space, such as a small house, and a shallow oven with marine mammal bones (including elephant seal), indicating high-status feasting in connection to the pavement. The site is radiocarbon dated to *c*. AD 1250–1400 (Anderson & Green 2001: 44–48).

In New Zealand, the word *marae* signifies a gathering place and specific houses; the idea to erect stone uprights for ritual purposes called *tuahu* was brought by the first settlers, *c*. AD 1250–1295 (Anderson & Green 2001: 49; Bunbury *et al*. 2022: 6). Additionally, there are fenced-in areas, wooden images and pavements dated to *c*. AD 1300 (Anderson 2014: 273–85). It is possible that the *ahu/marae* as a merged concept did not exist in central East Polynesia before the departure of the groups that settled in New Zealand (Wallin & Solsvik 2014: 81).

Rapa Nui, the easternmost island of East Polynesia was settled *c*. AD 1150–1290 (DiNapoli *et al*. 2020). During investigations at Anakena in 1988, an area named 'Nau Nau East' was excavated and initially interpreted as a secondary ritual space associated with the adjacent *ahu* Nau Nau (Martinsson-Wallin & Wallin 1994). The site has recently been re-evaluated as the, so far, earliest ritual space in Anakena (Wallin & Martinsson-Wallin 2022). This assessment is based on the findings of a small, crude upright-stone image, several stone-filled refuse pits, fire pits, postholes and a double stone row that may be the stabilising foundation stones of an upright plank or a fence (Figure 3). Special activity areas with animal bones, especially from sea mammals, found in the area indicate feasting (Martinsson-Wallin & Wallin 1994: 134–41, 184, 189). Two radiocarbon dates place the site in the early colonisation time frame of *c*. AD 1161–1314. The site is also situated higher than the initial settlement at the beach area (Martinsson-Wallin & Wallin 2022: 132–34).

The emergence of the *ahu/marae* monuments in East Polynesia

After the initial colonisation, early ritual space materialised to form the East Polynesian *ahu/marae* complex. The most noticeable development of the ritual places was the construction of a raised platform (*ahu*), but these places also included upright stones or statues and a courtyard/pavement/terrace, sometimes enclosed by a wall. Attached were additional refuse pits, earth ovens/fires and wooden structures such as sacrificial altars and ritual houses (Emory 1933: 14; Wallin 1993: 49; Martinsson-Wallin 1994: 54, Kahn & Kirch 2014).

Contrary to the early dispersal of open ritual spaces that followed the West to East settlement pattern, our assessment of the development of the early *ahu/marae* complex begins in the far East Polynesian island of Rapa Nui. Here, we find the earliest materialisation of this ritual consolidation (Martinsson-Wallin *et al.* 2013). The dating of *ahu* structures in Rapa Nui has been discussed in detail by several authors (Martinsson-Wallin 1994; Martinsson-Wallin & Crockford 2001; Hunt & Lipo 2006; Wilmshurst *et al.* 2011; Martinsson-Wallin *et al.* 2013; Mulrooney 2013; DiNapoli *et al.* 2020; Wallin &

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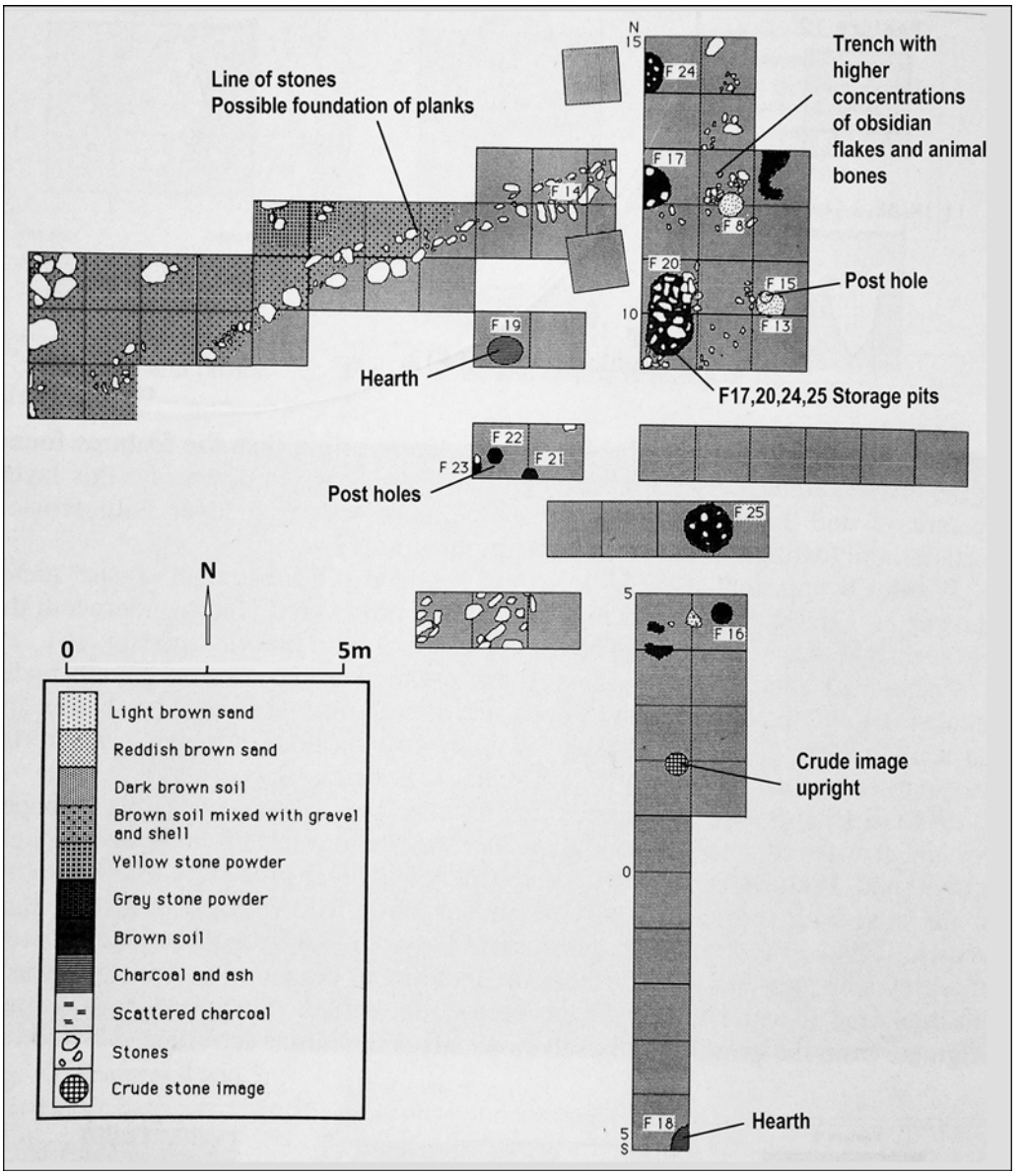

Figure 3. Excavation plan of the early ritual site called Nau Nau East, Anakena, on Rapa Nui (drawing by P. Wallin).

Martinsson-Wallin 2022). The earliest developed Rapa Nui *ahu* are believed to have been constructed close to the seashore as elevated platforms, with a solid stone-rubble fill, held in place by facing stones (worked or unworked), and a flat stone pavement on the inland side (Figure 4). These features have been observed in excavations at *ahu* Nau Nau (Martinsson-Wallin 1994: fig. 19), *ahu* Vinapu II (Mulloy 1961: pl. 11a), as well as during the restoration of *ahu* Tongariki (Wallin & Solsvik 2014: fig. 12). Small statues of different

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Figure 4. Early ritual structure with pavement and platform at Ahu Nau Nau, Anakena, on Rapa Nui. Above it is the rebuilt elaborated ahu with moai statues (photograph by A. Skjölsvold).

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shapes and stone types (Rano Raraku tuff, red scoria and basalt) were attached to these *ahu*. Excavations indicate that these statues were placed on the pavement/plaza on the inland side of the *ahu* and not on top of the platform as was the case later (Mulloy 1961; Martinsson-Wallin 2022). At least 12 *ahu* dated to *c*. AD 1300–1400 show these early development traits (Martinsson-Wallin *et al*. 2013; DiNapoli *et al*. 2020).

Mangareva is located east of Rapa Nui, around halfway to Tahiti. Classical ritual sites of the *marae* type with an *ahu* platform, uprights and courtyard have been described but not dated. However, Conte and Kirch (2004: 55) provide a date for what we interpret as a ritual site. A large basalt block sits on top of a stone platform (*paepae*) and a basalt upright is placed 35m to the east. Between these, about 20m east of the *paepae*, are two or three shallow depressions that could be storage pits. These features show some similarities with the earliest *ahu* sites on Rapa Nui. The activity at the site is dated to *c*. AD 1430–1470 (Conte & Kirch 2004: 48–55).

Excavations of *marae* structures in central East Polynesia, focusing on the Society Islands, have produced a series of dates for *marae* of different types and sizes (Kahn 2011; Kahn & Kirch 2014; Wallin & Solsvik 2014). On both the Leeward Island of Huahine and the Windward Island of Mo'orea, the ritual sites composed of *marae* with *ahu* (Figure 5) provide the earliest dates to *c*. AD 1400–1500.

Marae on the Tuamotu Islands return later dates. In a synthesis of Tuamotuan ritual practices, Molle (2016) argues that *marae* with *ahu* probably date to the fifteenth century, and suggests that *marae* without *ahu* probably indicate earlier ritual spaces, but no secure dates support this statement. Weisler and colleagues (2024) date dog bones from two *marae* sites on Reao Island to *c*. AD 1200–1300. Pig bones from the same layer dated to *c*. AD 1430. Yet, the dates were not corrected for the marine reservoir effect, which artificially increases the radiocarbon age of marine species and their consumers, so these early dates are questionable.

A coral boulder platform with an upright on top was excavated and dated to AD 1449–1699 on Christmas Island in the Line Islands (Anderson *et al*. 2002: 18, 70). This structure is more similar to Central Polynesian *marae* than the earlier Christmas Island structures mentioned above. The two different ritual site expressions probably show at least two incidences of contact. A basalt core and a flake found in settlement areas, differ in chemical composition from known basalt quarries in Polynesia but show closest similarities with quarries in Tutuila in Samoa, Tahiti or Molokai in Hawai'i (Anderson *et al*. 2000: 286). Furthermore, the island was depopulated before European discovery in 1777.

Ritual places on the Marquesas Islands are divided into two structures: the *tohua*, an enclosed courtyard for social activities, and the *me'ae*, a platform for burying the dead (Linton 1925). Only a few examples of each structure have been excavated, largely between the 1950s and 1980s (Suggs 1961; Heyerdahl & Ferdon 1965; Skjölsvold 1972; Rolett 1989). Existing dates are discussed by Rolett and Conte (1995), who conclude that these structures date to *c*. AD 1400–1600.

In the Hawaiian Islands, larger ritual spaces were called *heiau* and were constructed of a stone alignment enclosing a courtyard, including stonewall enclosures, terraces and platforms (Kolb 1991: 94–101). The earliest elaborate *heiau* developed around AD 1400–1600 (for dates, see Kolb 1991; Kirch & Ruggles 2019: 64–65), and some resemble small Central

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Figure 5. Marae with ahu on Mo'orea, Windward Society Islands (photograph by P. Wallin).

Polynesian *marae,* such as those on Nihoa and Necker Islands and at Mauna Kea on the Island of Hawai'i (Emory 1970; McCoy 1999: 29).

In the Cook Islands, *marae* structures are largely similar to those found in the Society and Tuamotu Islands further east. These *marae* are characterised by a court, uprights and an *ahu* platform, though some variation exists, and date to *c.* AD 1500–1600 (Yamaguchi 2000: 282–302).

East Polynesian mega(lithic) structures

On Rapa Nui, ritual sites developed to form a large-scale megalithic *ahu/moai* concept (Figure 5). The *ahu* platforms, which had rear walls of dressed stone up to 5.5m in height, crowned with giant *moai* statues and wings to each side, could reach a length of over 100m (Martinsson-Wallin 1994). Based on a multitude of radiocarbon dates, this development is estimated to start around AD 1350, with a peak around AD 1450 (DiNapoli *et al.* 2020: 6). After that time, they were continuously used and reshaped, with evidence for the reuse of destroyed statues in rebuilt *ahu* both pre- and post-European contact (Martinsson-Wallin 1994: 84).

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Figure 6. Late megalithic marae called Taputapuatea, Raiatea, Leeward Society Islands (photograph by P. Wallin).

In the Society Islands, large mega(lithic) structures underwent rapid change *c.* 1600–1765 (Wallin & Solsvik 2006; Sharp *et al.* 2010). The major *marae* of this type was *marae* Taputapuatea at Opoa in Raiatea (Figure 6). According to local legends, this was the first *marae*, built in honour of the war god ʻOro, son of Tangaroa, under the reign of Tamatoa I (Henry 1928: 95, 232; Kahn 2011: 43; Wallin 2014). The same style of monument was raised in several locations, one on the west side of Raiatea and two on Huahine. In the Windward Islands, the earlier platform *ahu* tradition developed such that large ritual sites were constructed by placing several platforms, now faced with worked, rounded stone, on top of each other. The largest structure was *marae* Mahaiatea, built in 10 steps around AD 1765 on the south coast of Tahiti (Henry 1928). These large structures played a new role for the leading chiefs, although a variety of small to medium-sized, earlier-style structures continued to function on different sociopolitical levels (Kahn & Kirch 2014).

The *heiau* of Hawaiʻi rapidly became mega-structures with high walls and terraces/platforms shaping large, often rectangular, courts on which stood wooden images, houses and sacrificial wooden towers/platforms. Thorium dating of beach corals from these sites show that they developed rapidly from around AD 1580–1620 until European contact

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(Kirch & Sharp 2005: 102). These were war temples of the Luakini type (Kirch & Ruggles 2019: 20), tied to the developing kingdom on the islands (Kirch 2010).

In the Marquesas Islands, large ritual places from a similar time were constructed with platforms and enclosures, sometimes with large stone *tiki* statues (Suggs 1961). In Mangareva, *marae* with large *ahu* platforms, especially stepped *ahu* platforms, developed on the island of Temoe (Emory 1939). In New Zealand, monumental *pa* fortifications emerged around AD 1500 and more frequently developed in AD 1600–1700. The *pa* sites are identified as places of protection, ritual activities and storage (Anderson 2022b: 45).

Discussion

A geochronological model of ritual space and monuments in East Polynesia

In assessing the dating of ritual space, initial colonisation and monumental expressions in East Polynesia, we suggest a model with three developmental phases (Table S2). In the first phase, *c.* AD 1000–1300, during lateral settlement expansion from west to east, we see that ritual space is expressed through actions, such as burials and feasting, and these spaces are marked by a stone upright. The structure and organisation of settlement, ritual space and language-use are recreated within similar settings on each new land (Hoëm 2011: 14). Therefore, it is also possible to recognise the materialised expressions of ritual space from one island to another. Our assessment has shown that we can identify early sites on various islands in East Polynesia in the time frame of AD 1000–1300. These shared features express the initial ritual concept associated with a less hierarchical social system. We interpret, with the support of oral traditions, ethnohistorical data (Handy 1927; Henry 1928; Kirch & Green 2001) and consideration of the concept of Hawaiki, the placement of uprights at the ritual space by initial settlers, as a representation of mythological deities or sacred chieftainship; a habitus driven reproduction of an ancestral cult indicating stability at a new place. During the initial settlement expansion, interaction networks were established in East Polynesia that in many cases maintained continuous contact with their homeland population (Kirch 2017: 210–11).

In the second phase, *c.* AD 1300–1600, ritual actions materialised into clearly visible and more complex *ahu/marae* structures. We suggest that the construction of *ahu/marae* sites was carried out to consolidate ritual spaces and transform them into highly visible ritual places. These actions are based on ideas to keep the memory of the ancestors and deities alive (Wallin & Martinsson-Wallin 2011: 44–45). This signals the beginning of a vertical movement of social hierarchisation in different island societies at a time when interaction networks in East Polynesia start to erode *c.* AD 1450 (Rolett 2002; Weisler 2002; Kirch 2017: 211). Ideas surrounding the materialisation of ideology expanded through established networks in the south-eastern Pacific, from the Pitcairn Islands in the east to the Society Islands (Weisler 1998). Genetic studies also indicate contact between the Central Pacific area and Rapa Nui in the fourteenth century (Ioannidis *et al.* 2020). This means that Rapa Nui was reached at least twice and that connections to islands west of Rapa Nui are apparent. Based on our contextual assessment of ritual space and place, we suggest that the materialisation of ritual space developed earlier in the eastern part of East Polynesia, with ideas then

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spreading through established networks in an east-to-west direction. The uprights, ovens and storage pits that demark early ritual space, are incorporated in the formalised *ahu/marae* places.

Reduced dependence on the lateral networks fuelled a third phase of internal vertical hierarchic development and associated power struggles. Based on the contextual assessment of large ritual monuments, we suggest that fundamental hierarchic expressions developed early on Rapa Nui, *c*. AD 1350–1450. Recent DNA research indicates that contact with South America (Ioannidis *et al.* 2020; Moreno-Mayar *et al.* 2024) cannot be excluded as an influence for this development. Hierarchic expressions also developed independently and rapidly in large fertile island groups such as the Society Islands, *c*. 1600–1767, and Hawai'i, *c*. AD 1580–1640 (Kirch & Sharp 2005; Sharp *et al.* 2010; Wallin & Solsvik 2010). In these places in particular, ritual places grew into mega(lithic) structures, and local power organisations expanded to cover whole islands or neighbouring islands (Wallin & Solsvik 2014). In Hawai'i, the social structure resembled an archaic state under the leadership of paramount chiefs/kings (Kirch 2010). This development reflects demographic increase, power struggles over resources and an ideology based on the ancestral cult where powerful chiefs were regarded as divine, and was maintained by elements of warfare/actions of hostility and the concepts of *tapu* (holy/sacred) and *mana* (power).

Conclusion

Consolidation of extensive dating of East Polynesian settlements and ritual archaeology from the past four decades allows us to suggest a new interpretation of expansion, interaction and hierarchisation in different island groups that challenges the traditional model of a single west-to-east dispersal of monumental expressions. We place importance on networks between islands or island groups, through which new ideas were also transferred from east to west, as well as on later internal developments. We identify three stages of development, from initial ritual spaces to formalised places to mega(lithic) structures. While a shared ideology spread between islands with initial settlers, the development of ritual places was affected by external input in the second phase, and in the third they materialised into highly visible, monumental ritual places of stone due to social hierarchisation in local settings. This model is composed of different data sets and has a firm foundation in the contextual assessment of radiocarbon dating related to ritual spaces and places. This research was conducted to clarify and contextualise varied ritual practices and interactions in East Polynesia from a novel archaeological perspective.

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Online supplementary material (OSM)

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