Chapter 2
Ex Oriente Lux: Amerindian Seafaring and Easter Island Contact Revisited

Atholl Anderson

1 Introduction

In archaeology, *ex oriente lux* (light from the east) refers to a model of cultural diffusion from western Asia to western Europe (Montelius 1885) that was adopted by Gordon Childe (1939), and epitomized as "the irradiation of European barbarism by Oriental civilization" (Childe 1958: 70). More recently, and stripped of its social-evolutionary labels, *ex oriente lux* has contextualized research on the dispersal of early ceramic technology in East Asia (Jordan and Zvelebil 2009), and I use it similarly here to approach the issue of putative South American residence in Easter Island (Rapa Nui).

The wider context of this enquiry is so well known as to require only a brief introduction. The pre-European existence in Easter Island of the South American sweet potato (*Ipomoea batatas*) and its name (Quechua *cumar* becoming Polynesian *kumara*) indicate that irrespective of whether kumara drifted or was carried to East Polynesia, there must have been contact between Amerindians and Polynesians, if only to transfer the name (Anderson and Petchey 2020; Muñoz-Rodríguez et al. 2018; Wallin 2014, 2020). One hypothetical explanation is that kumara and items or knowledge of material culture were carried into East Polynesia by Amerindian rafts (Emory 1933; Heyerdahl 1952). In direct contradiction, another hypothesis argues that sweet potato from South America was obtained exclusively by Polynesian return voyaging (Dixon 1934; Green 2001). From purported evidence of Polynesian chickens in south central Chile (Thompson et al. 2014; Herrera et al. 2020; *contra* Jones et al. 2011; Storey and Matisoo-Smith 2014), an older idea has been revived

A. Anderson (✉)
Ka Waimaero | The Ngai Tahu Research Centre, The University of Canterbury, Christchurch, New Zealand
e-mail: atholl.anderson@anu.edu.au

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of sailing from Polynesia to South America in temperate westerlies, coasting north to Ecuador-Peru, and returning to Polynesia in tropical easterlies. Separate one-way passages to Chile by Polynesians and from Ecuador by Amerindians would account more simply for the same data (Anderson et al. 2007).

In considering alternative propositions, it is important to acknowledge consensus about the origin of the first people on Easter Island. That they were Polynesian is indicated by bones and mtDNA of the Polynesian rat (*Rattus exulans*) in the oldest confirmed habitation site, at Anakena (Skjølsvold 1994: 114, Martinsson-Wallin and Crockford 2002: 259; Barnes et al. 2006). The point is significant here because it implies that any later non-Polynesian influence might have had little opportunity to reproduce its cultural inventory before being overtaken by hybridization or extinction in a dominantly Polynesian cultural milieu. New forms of material culture might have been competitively re-shaped quite briskly, leaving only partial traces of their original type or function. In that case, and in the absence of definite Amerindian evidence, e.g. of ceramics, obsidian, jade, or metals, Heyerdahl's (1952) largely homomorphic arguments for the existence of Amerindian material culture on Easter Island were fated to be studiously ignored (e.g. Sahlins 1955) or seen as ambiguous, partial, or unconvincing (e.g. Skinner 1955; Holmes 1958; Suggs 1960: 212–224), and they have continued to be debated up to the present.

A critical problem was the absence of persuasive evidence that pre-Columbian Amerindian people had ever lived on Easter Island. This is now changing as the result of recent human genetic research on Easter Island and across East Polynesia. Among various studies, some found no evidence of prehistoric Amerindian ancestry (e.g. Feren-Schmitz et al. 2017, by DNA analysis on several bone samples from *Ahu* Nau Nau), and others that there is evidence of pre-European Amerindian contact (e.g. Thorsby 2012, on HLA alleles but not in DNA analysis). Now, the latest analysis of genome-wide variation in human DNA from tropical East Polynesia indicates strong support for transfer of Amerindian DNA from Central America (notably Colombia and Ecuador) into the eastern archipelagos of Polynesia, especially the Marquesas, northern Tuamotus, Gambier Islands, and Easter Island (Ioannidis et al. 2020). The Amerindian-Polynesian admixture is estimated as occurring about AD 1150–1230 for all localities except Easter Island where it is set at about AD 1380. Moreno-Mayar et al. (2014) dated the prehistoric Amerindian-Polynesian genetic admixture on Easter Island to AD 1280–1495, and Thorsby (2016) to around AD 1340. Younger admixture could reflect relatively high Amerindian genetic input after about AD 1800 (Ioannidis et al. 2020), or several episodes of prehistoric Amerindian seafarers reaching the eastern margins of Polynesia (Wallin 2020).

The increasing probability that Amerindian people did reach Easter Island before the sixteenth century provides an impetus to reconsider the crucial and long-standing questions: how persuasive is the archaeological evidence of an American presence, and how might Amerindians have arrived there?

2 Amerindian Material Culture in Easter Island?

The earliest scholarly discussion about a possible Amerindian origin of monumental architecture on Easter Island seems to have been in January 1870 at a meeting of the Royal Geographical Society in London, following a paper by J. L. Palmer, Surgeon on the Royal Navy *Topaze*, about his visit to the island in 1868. C.R. Markham, an Inka specialist in the audience, said that "it was impossible not to be struck with the resemblance between [Inka] remains and those on Easter Island" (Palmer 1870: 117). However, in a manner presaging the larger debate to come, others in the audience including Sir George Grey, former Governor of New Zealand and schooled in Maori tradition, appealed so strongly to the Polynesian cultural and linguistic heritage of Easter Island that the Chairman conceded, "he was to a great extent convinced by the reasoning that had been opposed to the Peruvian theory" (Palmer 1870: 119). Later propositions of Easter Island influence carried by Polynesians to Peru (Imbelloni 1940), of Polynesian voyagers bringing Peruvian architecture to Easter Island (Handy 1927), and of Peruvian voyaging to Easter Island (Emory 1933) kept the issue alive. It was dismissed by Métraux (1940) in favour of independent local development of the architectural similarities, but only just ahead of influential support for the Amerindian diffusion model by Heyerdahl (1941).

The presence of Heyerdahl (1952) and Heyerdahl and Ferdon (1961) looms over any discussion of potential Amerindian influence in Easter Island prehistory to the extent that it is difficult to avoid covering much of the ground already worked over, indeed fought over, by him and his many critics. The latter were provoked, above all, by his hyper-diffusionist conceit of ancient Europeans carrying high civilization into the eastern Pacific (Holton 2004). More important, and seldom readily conceded, is that Heyerdahl's archaeological expeditions in the Pacific and South America produced abundant scholarly material pertinent to the question of prehistoric Amerindian-Polynesian contact. Consequently, and irrespective of arguments about how similarities should be explained, it is worth re-considering several types of material culture on Easter Island which bear particularly intricate resemblance to cognate items from the northwest Andean region of pre-Columbian South America and have no obvious antecedents in East Polynesia. These, noted in previous publication (Anderson et al. 2007; Martinsson-Wallin 1994; Martinsson-Wallin et al. 2013), are *Ahu* Vinapu 1, *tupa*, and birdmen.

2.1 Ahu Vinapu 1 (Ahu Tahiri)

Several *ahu* (ritual platforms) in Easter Island exhibit unusually accomplished, close-fitting masonry which has been attributed variously to local development of Polynesian technology (e.g. Métraux 1940: 289–291), or Amerindian influence (Emory 1933). On the Cook expedition in 1774, William Wales described rowing

ashore in Hangaroa and seeing "a sort of breast work of very neat hewn stone which we conceived had been the work of some Europeans". Once ashore, and finding that it was a native edifice, he observed that "the workmanship was not inferior to the best plain piece of Masonry that I have seen in England" (Beaglehole 1961: 820–821; this was *Ahu* Hangaroa, later largely destroyed). Wales and others walked across the low ground from Hangaroa to the east coast at Vinapu where Johann Forster wrote that "in some places these elevations [i.e. *ahu*] are made of regularly hewn square stones, sitting as regularly & as finely as can be done by a Nation even with good tools. In what manner they contrived these structures is incomprehensible to me . . . " (Hoare 1982: III: 468–469). Forster recorded the *ahu* as Hanga-to-bow, referring to Te Pau bay at Vinapu, and it is almost certainly the one known now as *Ahu* Tahiri or *Ahu* Vinapu 1.

This has a seaward façade (Fig. 2.1) that, although damaged in 1886, is still strikingly evocative of pre-Columbian megalithic masonry in Bolivia and Peru particularly in the period of the Inkan state (AD 1400–1532). The façade exhibits many of the characteristics of high-status Inkan walls. It has slight curvature in plan shape with rounded corners, features noted especially in outlying regions of the Inkan empire (Hyslop 1990: 7–8). The blocks are of vesicular basalt, finely cut, precisely fitted, and prismatic or trapezoidal rather than strictly rectangular in shape, with several being polygonal. These, together with pillow facing on the blocks to emphasize the pattern of joints, are all Inkan characteristics (Isbell et al. 1991). In addition, some joints between large blocks in the Vinapu 1 façade are formed by the

Fig. 2.1 Detail of *Ahu* Vinapu 1 façade (author)

typically Inkan method of corner cutouts with fitted small blocks (Protzen and Nair 1997), and one block has a shaped boss, also an Inkan trait. Lastly, the façade blocks are laid in the Inkan pattern of "quasi-courses" in which, as the height of a single course is never perfectly uniform, no line of joints is strictly horizontal (Protzen and Nair 1997). The Vinapu 1 stone block thickness (0.5–0.7 m) overlaps the usual Inkan range of 0.65–1.0 m (*contra* Skinner 1955, Golson 1965). The Vinapu 1 wall batter is 12^0, which is greater than the common 3–5^0, but still within the Inkan range of 3–15^0 (Hyslop 1990). The façade has, understandably, no sockets cut to secure blocks with metal cramps (Protzen and Nair 1997). Overall, the intricate similarity of the Vinapu 1 façade to Inkan examples is compelling, and further underlined by the relative proximity of Easter Island to South America and an absence of comparable evidence elsewhere in Oceania.

So long as it was proposed (Heyerdahl 1952) that Vinapu 1, and *ahu* in general, had an Andean derivation in Tiwanakan culture (AD 400–1100), and while that was consistent with archaeological chronologies suggesting that Easter Island *ahu* were constructed AD 600–1100 (Martinsson-Wallin 1994: 112), then it was apparent that Inkan comparisons could not be sustained. Typical Inkan monumental stone construction is dated to around the end of the fourteenth century in the Lake Titicaca region, and Inkan authority did not extend to the Pacific coast of northern Peru and Ecuador until around AD 1430–1460 (Marsh et al. 2017) where, moreover, monumental construction was largely in adobe brick. Now that the Easter Island cultural chronology begins around AD 1200 (DiNapoli et al. 2020; Hunt and Lipo 2018), the Andean parallel comes into focus, although there are few reliable radiocarbon ages for Vinapu 1.

Excavation of Vinapu 1 disclosed three phases of its construction, with the façade and its supporting ramp in the first (Mulloy 1961a). There was no evidence that, in this early phase, the *ahu* carried any *moai* (statues), or was designed to do so. Mulloy (1961a: 105) suggested that it was simply "a gigantic open-air altar" oriented quite precisely to face the rising sun at the summer solstice (Mulloy 1961a: 94). Only one radiocarbon date from a sealed context dates this phase. It is from just above the upper surface of the first-phase ramp (Smith 1961: 394, K-523). At 440 ± 100 uncal. b.p. on unidentified charcoal it provides an uncertain *terminus ante quem* of about the early sixteenth century. An age of 730 ± 200 uncal. b.p. on human bone from a crematorium "adjacent to" Vinapu 1 (Smith 1961: 394) is even more problematic. Later excavations indicated that *Ahu* Vinapu 2 and almost certainly Vinapu 1 situated only 20 m away stand on a surface containing roots and burnt timber from clearance of the original palm forest. Charred palm nut samples date the surface to AD 1300–1440 at 2σ (Martinsson-Wallin 2004; Martinsson-Wallin et al. 2013: 409), an approximate *terminus post quem*. (The Vinapu area is discussed in further detail by Martinsson-Wallin, this volume.)

If the Vinapu 1 façade originated in the fourteenth century, it might reflect Andean monumental stone construction of the Late Intermediate Period (AD 1000–1450), such as the Cyclopean masonry at Sacsayhuaman. It is generally accepted, however, that the quite sudden rise of typical Inkan monumental construction traits around AD 1400 had antecedents among the various states and cultures that were

involved in the growth of the Inkan polity AD 1100–1400, notably of Killke culture after AD 1200 (Bauer and Covey 2002), although no specific course of development has yet been traced. The Vinapu 1 façade is open, therefore, to several explanations. In ascending order of plausibility, these are, first, that it is a comparatively late, local, Polynesian innovation that converged with extraordinary verisimilitude upon Inkan forms. The conjunction of novel technical procedures and multiple details of design emerging suddenly and contemporaneously in the Oceanic island nearest to the place where they have demonstrable origins, and only there, is implausible to say the least. Second, the façade might represent Andean stone-working before AD 1400 and, third, it could be Inkan in architectural origin and age.

Amerindian influence in the singularity of the Vinapu 1 façade remains the most plausible proposition, as it has been over many years (e.g. Emory 1933; Heyerdahl 1952; McCoy 1979; Martinsson-Wallin 1994: 128; Anderson et al. 2007), even to those who saw that influence as transmitted by Polynesian voyagers (Green 2005; Jones et al. 2011). Now, it might be attributed more directly to Inkan workmanship.

2.2 Tupa

About 27 broadly circular structures of piled stone, 2–5 m in diameter and 2–3 m tall, called *tupa*, occur almost exclusively on the northeast and southeast coasts of Easter Island. There is no agreed definition of type although "a slab-roofed masonry tower with a very small and generally square entryway near the ground on one side" (Heyerdahl 1961a: 517) will serve. Variation in size and form (see sketches of *tupa* by Ferdon 1961: 337) does not clearly separate some *tupa* from *hare moa*, so-called chicken houses, or elliptical stone structures, as depicted by Bernizet in 1768 (Heyerdahl 1961b: 58–59). The problem of separating and characterizing the similar structures has been debated (Ferdon 1961; McCoy 1979), and it is critiqued cogently by Commendador (2005: 99–109).

Few *tupa* have been investigated archaeologically and "our understanding of these structures is vague" (Martinsson-Wallin 1994: 116). By late historical consensus, *tupa* were "turtle watchtowers", yet most are not obviously positioned to suit marine observation, and they seldom have formed access to the roof (Métraux 1940: 189; Heyerdahl 1961b: 517–519; Mulloy 1961b: 323; Arana 2014: 681). Recent consideration emphasizes a sacerdotal role (Vargas et al. 2006) or use as astronomical observatories (Edwards and Edwards 2013: 186), but although marine or celestial observation might have occurred it had no obvious need of the characteristic internal architecture of *tupa*.

Tupa have thick walls through which a narrow passage leads to an interior chamber, several metres long, of informally corbelled stone with a slab ceiling (Arana 2014: 681). The chamber was suitable only for occasional shelter, and Métraux (1940: 190) points out that there was hardly any need for that because *tupa* were located near dwellings. There are references to fishermen or priests sleeping in *tupa*, and Mulloy (1961b) found midden and domestic artefacts in an unusual

tupa associated with a cave, but Ferdon (1961: 331) added to Métraux's point by noting, "the lack of evidence of preserved fire-pits, or fire ovens, in those [*tupa*] we observe".

The probability that *tupa* had another, and perhaps more fundamental, use can be inferred from the first historical record of them, by the Cook expedition in 1774. At this early stage of contact, Rapanui residents allowed Europeans to enter their low thatched longhouses (*hare paenga*) and explore the interiors, but as relatively few such dwellings were seen, the visitors wondered where most of the people slept. Captain Cook (Beaglehole 1961: 356) saw "vaulted houses built of stone and partly under ground" but added, "I never was in one of these". George Forster observed similarly that besides the *hare paenga*, "we observed some heaps of stones piled up into little hillocks which had one steep perpendicular side, where a hole went underground. The space within could be but very small, and yet it is probable that these cavities likewise served to give shelter to the people during night". Yet, "the natives always denied us admittance into these places" (Thomas and Berghof 2000: 307). Insofar as foreigners were concerned, it seems that *tupa* were tapu.

This may have been because they were burial sites. The earliest probable description of *tupa* as burial structures is by J.L. Palmer in 1870 (Heyerdahl 1961b: 73) who was shown *hare moa*, and doubted that they were originally hen-houses, "as some very similar [structures], but with white-washed tops, were used, we were told, for sepulture". Most burial sites on Easter Island were above ground, perhaps for fear of the deity Makemake trapping the spirit of the dead if it could not escape readily to the air (remarks of Commander Geiseler 1882 and Paymaster Thomson 1886 in Heyerdahl 1961b: 80–81, 86–88). Burial occurred often, therefore, in a range of above-ground structures from numerous piled mounds or cairns, recorded by Cook and confirmed as burial mounds by La Perouse, through *tupa* and similar structures, probably including *hare moa*, to natural caves and internal spaces or crematoria in *ahu*. As Easter Island studies concerning burial focus almost exclusively upon *ahu* (e.g. Shaw 1998), not much is known about its other contexts. Nevertheless, Mulloy's (1961a) *tupa* excavation found human bone throughout the interior deposit, with European material mixed in at the top, and his "isolated tomb" at Vinapu (Mulloy 1961a), although elliptical rather than round, has the internal structure of a *tupa* and contained an extended burial. The data are few at present, but a burial function for *tupa*, and *hare moa*, probably for people of rank (Geiseler 1883 in Heyerdahl 1997: 15), is suggested, and it has been argued persuasively for *hare moa* by Ferdon (2000).

A structural similarity between *tupa* and stone buildings with a similar name, *chullpa*, which were made and used from the twelfth to seventeenth centuries in Andean Peru and northern Chile has often been observed (e.g. Martinsson-Wallin 1994: 116), but with a reluctance to hypothesize any actual connection because they had different assumed functions. Whereas *tupa* were thought to be dwellings or observatories, "*chullpa*" in the Aymara language meant "containers in which they placed their dead" (Morales et al. 2013: 2394). It is widely assumed that Easter Island "*tupa*" is a local rendering of "*chullpa*" which might be so, but *tupa* occurs elsewhere in East Polynesian languages. There, it has meanings such as to hollow

out or excavate in Tahitian, and something dried up or hard in Maori, and *tupapa'u* or *tupapaku* are the common words for corpse in Tahitian and Maori, respectively (Davies 1851: 289; Williams 1971: 455). All these terms are associated with burial, including desiccation of corpses and body parts kept above ground. The Aymara-East Polynesian congruence of term, meaning, and architecture supports the notion of a common origin, or at least a convergence of ideas and practices, but when and how that occurred remains to be investigated, a task with profound implications given that cognates of *tupapaku* occur throughout Polynesian languages.

During the period of Inca domination, AD 1450–1550, *chullpa* were large, often of dressed stone, and had decorative cornices and other features. During the preceding Late Intermediate Period AD 1100–1450 however, and especially after about AD 1200, *chullpa* were relatively rudimentary: circular, 2.0–2.5 m in diameter, domed structures of undressed stone in thick walls surrounding a chamber accessed through a narrow, east-facing entrance and passage (Hyslop 1977; Stanish 2012), very much as in Easter Island *tupa*. *Chullpa* provided above-ground burial, with mummification increasing during the Inca period (Nystrom et al. 2010) and associated ancestor veneration (Epstein and Toyne 2016), with some genetic data indicating mainly patrilineal burial across generations (Bongers 2019: 72). *Chullpa* also served to demarcate access to resources and mark territories (Bongers et al. 2012). These points are interesting and pertinent in the Easter Island context, and *tupa* generally are worth much more archaeological investigation, but the main point here is that in form, function, and age, *tupa* and *chullpa* are quite similar and have no parallel elsewhere in East Polynesia.

2.3 Birdmen

"Birdmen" figures (the gender is seldom defined) can be found worldwide, but the manner in which they are depicted is highly varied, even within Polynesia. Birdmen figures (*tangata manu*) are encountered most frequently in the rock art and portable artefacts of Hawai'i, New Zealand, and Easter Island, i.e. in the margins of East Polynesia (Barrow 1998). Early Maori and Hawaiian rock art (Dunn 1972: 11; Stasack et al. 2006) has bird-headed figures with legs and arms extended but lacking fingers and toes. Some Maori instances have feathered wings. These figures are not unquestionably human, although in form and stance they follow artistic conventions for figures that are more obviously human. Conversely, in both the older and younger Easter Island styles (Lee 1992) birdmen have characteristics not found elsewhere in East Polynesia. Most have long, hooked beaks and sometimes a gular pouch, both traits suggestive of a frigatebird model. The eyes are huge and circular, often with a pupil depicted (Lee 1992: 65–74). In some cases, the eye is also the head. Many figures are clearly shown with human hands and feet.

The typical body shape in Easter Island birdmen is flexed or crouched with a bent back and elbows almost in contact with knees. Lee (1997) is right to point out that the flexed body shape occurs commonly in Maori rock art and, although rarely, in

Hawaii, but it is also common in late prehistoric Andean art. The flexed form might reference the bundle burial tradition, common in Oceania and South America, and imply, in turn, that such figures were to be seen as ancestral. Whatever its meanings, the usefulness of the flexed body shape in inter-regional linkage of rock art depends first upon determining its Pacific dispersal, insular and continental, another task yet to be undertaken.

Many Easter Island birdmen are shown in pairs. This is not uncommon in Maori rock art, but there it involves manifestly human figures and they are shown back to back, as mirror images. These do not seem to occur in Easter Island art. The most typical pairing of Easter Island birdmen is face-to-face, often joined at their feet, hands or, less often, at the beak (Barrow 1998: 348, notes some facing pairs of bird, not birdmen, heads on Maori patu handles). In addition, Easter Island birdmen often hold a round object in their hands (Lee 1992: Plate 25; Figs. 4.48; 5.14, 21, 23, 24, 24, 40, 44; 6.8, 20), which is usually interpreted as an egg, in reference to the annual enactment of the birdman ceremony adjacent to Orongo village, where most birdmen images are recorded.

Birdman petroglyphs were made into the nineteenth century, but how early they began is uncertain. It is generally agreed that the birdman cult originated relatively late in Easter Island (e.g. Rull et al. 2018), but the chronological data are ill-defined. At ‘Orongo, where 86% of birdmen figures occur, the earliest houses date AD 1540–1600 (Lee 1992; Robinson and Stevenson 2017), but the majority of birdman petroglyphs are on rock faces nearby and they are undated. Whether the ‘Orongo village was built during, or at some time after, the establishment of the ritual site, is unknown. The older birdman style of incised depictions partially erased by those in bas-relief (Lee et al. 2015–2016) suggests some time depth. Lemaitre (2012) reports a fourteenth-century age from an engraving (non-birdman) at ‘Orongo, but the charcoal sample composition and precise provenance are not disclosed.

The closest Oceanic parallels to the Easter Island birdmen are found in coastal South America, where bird-headed human and feline figures are part of an artistic tradition extending into the Inka period (Isbell 1988: 178). There is a well-known spindle whorl from Puna Island, Ecuador, on which are incised two birdmen in the Easter Island form, placed face-to-face (Fig. 2.2). The archaeological context of this item is unknown, and examination of hundreds of spindle whorls in Ecuadorian and north Peruvian museum collections (Anderson, A., Martinsson-Wallin H., and K. Stothert, unpublished notes and images) failed to find a duplicate. Nevertheless, the depiction of two birds, or occasionally of two other figures (jaguars, caimans etc.) shown side on in facing pairs, with large, circular eyes, flexed legs and arms, and sometimes holding a rounded object is common on spindle whorls and ceramic pots, notably those of the Manteño-Huancavilca culture of coastal Ecuador, dating 1100–1520 AD, and also in the preceding Guangala culture (Ricaurte 1993; Shaffer 1985). Those cultures had a strong maritime focus (Marcos 2000).

The birdman motif is found elsewhere on the South American coast of Ecuador and northern Peru, notably at Tumbes where it is seen in the mounds (*huacas*) of Túcume, dating to the late Sican-Lambayeque culture of coastal north Peru, AD 1100–1375. Here, the birdman motif is seen in male and female forms upon rafts

Fig. 2.2 Above (left) late prehistoric Ecuadorian bead (after Shaffer 1985; Fig. 6, masked men talking) and (right), Facing pair of birdmen (after Lee 1992: Fig. 4.42). Centre: spindle whorl Puna Island (Anderson et al. 2007: Fig. 7.5). Below: Ecuadorian figure holding round object (after Shaffer 1985: Fig. A-1) and birdman holding round object (after Lee 1992: Fig. 4.48)

at sea, the male figure wearing a headpiece indicative of a deity. Around the rafts are friezes of waves expressed as anthropomorphic figures holding round objects, possibly *Spondylus* shells, which also figure prominently in the art as a whole. A small silver ornament with the birdman motif was also found during archaeological excavations at Túcume (Heyerdahl et al. 1995: 226, Fig. 177).

2.4 Evaluation

To argue that complex similarities of birdmen, *tupa*, and at least one *ahu* are shared between Easter Island and more or less contemporary material cultures in the northwest Andean region is not to imply that all of the numerous such arguments in Heyerdahl (1952) and elsewhere have comparable merit. The double-bladed "dancing paddles" of Easter Island, some shown in rock art, and ceremonial paddles or staves of very similar late prehistoric Amerindian design are plausible (Heyerdahl 1998), but reed bundle boats, megalithic human figures, carved wooden poles of human figures, and *patu* weapons occur elsewhere in the Americas and Pacific, or further afield. A thorough review of all the material culture at issue, in the light of modern archaeological and ethnological evidence, is much needed.

At present, though, the strong and apparently exclusive similarities in the eastern Pacific between *Ahu* Vinapu 1, *tupa*, and birdmen on Easter Island, and cognate evidence from Peru and Ecuador, plus a broad similarity in age, sustains the plausibility of direct Amerindian craftsmanship on Easter Island. It is worth noting also that these features have a common significance as ritual items concerned with ancestry in Easter Island and South America.

It seems unlikely, but cannot be ruled out, that innovations on Easter Island arrived with returning Polynesian voyagers as detailed memories that were then materialized with astonishing accuracy. This is, in part, a question about the relative seafaring capabilities that might have been involved.

3 Amerindian Voyaging to Easter Island?

Conventional opinion in East Polynesian prehistory takes Polynesian voyaging as the exclusive mode of interaction within and beyond the region. How secure is this assumption for seafaring in the far eastern Pacific?

3.1 Polynesian Voyaging

It is argued that Polynesian seafarers made return passages by intricate astral navigation in large, fast, double-hulled canoes which had weatherly (windward sailing) capability under the oceanic spritsail. Elsdon Best (in Johnstone 1980: 203) thought Polynesian canoes would be untroubled by sailing to America because they were "built so as to sail closer to the wind than any other craft built by man", and Holmes (1958: 129) argued that "it is more logical to assume that [contact with South America] was made by a seafaring people like the Polynesians". This long-standing hypothesis provides the orthodox model of cultural transfer between South America and east Polynesia (e.g. Dixon 1934; Buck 1938; Suggs 1960; McCoy 1979; Green 2001, 2005; Howe 2006; Jones et al. 2011; Kehoe 2016: 63–74).

It is based on "traditionalist" beliefs about long-range return-voyaging (Anderson 2018) that arose in the re-working and embellishment of Polynesian traditions (e.g. Best 1918; Smith 1915) at a time when Polynesians were facing demographic extinction. Their sympathetic memorialists, mainly European, produced romantic narratives of the Polynesian past which later became accepted as traditional migration history by Polynesians and Europeans alike. Yet, much about Polynesian migration that is assumed to have been in the early traditional records is, in fact, absent (Anderson 2014), including evidence about prehistoric Polynesian sailing rigs and performance, and there is a similar scarcity of archaeological data. There are alternative constructions of Polynesian seafaring.

From historical evidence primarily, it is argued that the oceanic spritsail, which had weatherly potential and has been adopted for experimental canoe voyaging,

probably developed after about AD 1500, replacing the double spritsail, an ancient sailing rig with not much more than broad-reaching capability (Anderson 2000, 2008, 2018). Under double spritsail during the preceding era of island colonization in East Polynesia, seafaring would have been substantially slower, significantly confined in relation to wind directions (Goodwin et al. 2014), and much more difficult overall than it appears in modern experimental voyaging. Even with an oceanic spritsail rig, Finney (1994: 283) thought an eastward passage in mid-latitude westerlies would be "immensely difficult" and none has been accomplished in an experimental voyaging canoe, or on a raft; Eric de Bisschop's raft got to within 1300 km of Chile in 1958 before she broke up (Danielsson 1960). A direct route from Easter Island to Peru, using El Niño or winter westerlies (Green 2005), would demand more persistent wind reversals than is currently apparent, or greater windward sailing capacity than is plausible; Irwin (2011: 250) acknowledges that there is no evidence either way of weatherliness in prehistoric East Polynesian sailing.

In short, while opinions are clearly divided, traditionalist assumptions about ancient East Polynesian canoe performance, accepted without demur in Howe (2006), are at least open to question. Polynesian voyages to South America would have been very difficult, but that does not rule out the possibility of success by chance. As Irwin (2011: 255) observed, "boats, on occasion, can sail from almost anywhere to anywhere else, although the odds may be against it".

3.2 Amerindian Voyaging

Various kinds of seagoing vessels existed historically, and were depicted archaeologically, along the northwest coast of South America. The largest was the balsa raft. In debate about its possible role in transferring South American items, such as sweet potato, to Polynesia, specific objections to the sailing raft have been raised: that it had little weatherly ability, a limited range at sea through rapid absorption of seawater by its balsa logs, and that it was at the mercy of ocean currents (Lothrop 1932; Means 1942). Moreover, perhaps it was not even Amerindian in origin but delivered by Polynesians?

Taking as his model an 1825 Mangarevan sailing raft that "stands alone among the watercraft of the Pacific" (Nelson 1961: 185), Green suggested that there were once palm-log rafts in Easter Island—of which no evidence exists—and that "the idea of an ocean-going sailing raft, if not an actual vessel, was [then] taken by Polynesians to South America . . . [where] balsa logs were substituted for wooden ones" (Green 2001: 70). He saw this as either the initial introduction of the raft to South America or as Polynesians, having canoed to South America, then building a balsa raft to sail back home. This expression of Polynesian chauvinism requires no further comment for it simply ignored historical observation and an existing alternative hypothesis that sailing rafts were developed independently in South

America, wholly or in part (Norton 1986; Zevallos 1988: 143–168; McGrail 2001: 399).

Beginning AD 1526, the earliest Spanish observations of oceangoing Amerindian watercraft in Ecuador and Peru described large offshore rafts constructed from balsa logs, propelled by cotton sails, with up to 50 crew, and carrying cargo of up to 20–30 tonnes on long offshore passages (Sámano-Xerex 1967; Heyerdahl 1955; Sandweiss and Reid 2016: 315–317). These sources reference "the ability of the rafts to sail close-hauled to windward in remarkably effective fashion" (Doran Jr. 1971: 135). That capacity stemmed from the use of movable daggerboards, *guara*, that were pulled up or pushed down in combinations that steered the raft and operated as a keel. Ling (1970) argued that *guara* are of Asian origin which is quite possible, but the Asian evidence is modern (i.e. post-AD 1500), with the exception of unconvincing *guara* in a ninth century AD engraving at Borobudur, Java (McGrail 2001: 310) where the items in question appear to be stem and stern posts. Conversely, wooden implements which may have been *guara* occur as early as 300 BC at Ica, Peru. Some authorities regard these as digging boards or ceremonial spades (Kvietok 1987; Bruhns 1994: 285–286), but heavy examples up to 2.3 m long with top handles suited to pulling up or down are more certainly *guara* as observed historically (Emanuel 2012), and *guara* imply sailing rafts because daggerboards have no purpose without sails.

Most balsa rafts were probably constructed in Ecuador, the ecological centre of balsa (*Ochroma pyramidale*) forest distribution (Edwards 1965: 113). Balsa wood has a specific gravity about six times lighter than water, yet it is inherently stronger than pine, oak, or hickory. In addition, undried balsa logs retain substantial buoyancy for months at sea and as the lashings pull into the logs, they avoid failure by abrasion common on bamboo rafts. A pioneer species on open ground, balsa probably became especially abundant when land was cleared extensively for agriculture in the late Holocene (Anderson et al. 2007). Seagoing balsa rafts were constructed by agricultural communities for fishing and coastal trade, just as other forms of shipping developed globally during neolithic phases (Anderson 2010).

The Gulf of Guayaquil, southern Ecuador, with water navigable for 350 km inland from Puná Island, up numerous tributary rivers, may have been the locus of initial development in sailing raft technology on the Pacific coast of South America (Anderson et al. 2007). The rivers flow southwest and the principal wind direction throughout the year is to the northerly quarter. In other words, the prevailing winds are upstream, as on the Nile where northerly winds enabled vessels to go upstream under sail and downstream with sails stowed. It is to this strategic circumstance that early sailing is attributed in Egypt (McGrail 2001: 16), and it is possible that Ecuadorian sailing developed similarly.

In any event, offshore fishing for tunas and swordfish occurred in Ecuador 5000 years ago, (Currie 1995: 523), and the manufacture of shell artefacts from thorny oyster (*Spondylus* sp.), pearl oyster (*Pinctada mazatlanica*), and *Strombus* sp., all obtained historically by diving, goes back to the mid-Holocene. By the late first millennium AD, these marine shells were in high demand for ritual purposes. Rafts with *Spondylus* divers are shown in early second millennium AD ornaments

from Lambayeque and in clay-plaster reliefs at Túcume and Chan Chan, on the north coast of Peru. Ever-increasing demand for *Spondylus* shell, essential for rain god ceremonies in the polities of northern Peru, stimulated substantial trading activities involving the Manteño-Huancavilca people of coastal Ecuador. Prehistoric trade between Ecuador and as far north as Mexico has been argued across a range of biota and material culture (Anawalt 1992; Marcos 1995), mortuary practice (Kan et al. 1989), linguistic traits (Smith 2003), and metalworking that occur in both areas, but rarely between. The distribution of Andean artefact types suggests movement by direct voyaging between Ecuador-Colombia and West Mexico, a distance of 2500–3000 km (Dewan and Hosler 2008; Hosler 1988).

Sailing rafts were integral to such mobility. An engineering analysis of the construction, size, strength, and durability of balsa rafts, based particularly on the technology evident in the van Spilbergen (1619) drawing, concluded that they "could feasibly measure between 6 and 11 m in length and would require two masts of heights between 5 and 7.5 m. Balsa rafts in this size range had a cargo capacity between 10 and 30 metric tons" (Dewan and Hosler 2008: 36). Furthermore, Ecuadorian rafts were capable of "making at least two round-trip voyages between Ecuador and West Mexico before they became inoperable" (Dewan and Hosler 2008: 36), by waterlogging or *Teredo* worm activity. An average sailing speed of about four knots is suggested by Dewan and Hosler (2008), supported by at least one late historical observation (Heyerdahl 1955: 257), but it seems optimistic given that *Kon-Tiki* made 1.5 knots overall, perhaps hampered by its less efficient square sail and only experimental use of *guara* (Fig. 2.3).

Neither the sailing raft hull, with its *guara* technology and absence of a steering oar, nor the sailing rig was of Polynesian inspiration. The early historical data indicate a tapering two-piece mast stepped in or through the central log of the raft, without forestay or shrouds, in which the topmast section was flexible. A triangular sail, depicted unattached to a spar on the leech, and loose-footed by van Spilbergen (1619), or with a heavy seam or possibly a light boom by Madox in 1582 (Estrada Ycaza 1973: Fig. 2.1), was made from vertically joined cotton strips and tied to the mast along the luff. The clew was fastened at or close to the deck and a running backstay to the masthead enabled the sail to be tensioned. No such system was known to Polynesians or Spaniards, nor were some other early rigs, including a cruciform sheer to which a square sail was bent, recorded in 1572 by Benzoni (1985).

In 1953, Heyerdahl trialled *guara* systematically, and found that it was possible "to tack against contrary wind, and even to sail back to the exact spot where we had set off" (Heyerdahl 1955: 264). If the sailing rafts could make an average passage speed of 2 knots, i.e. the same passage speed as Polynesian double canoes according to the most reliable historical information (Anderson 2018), then a 3000 km voyage from Ecuador to West Mexico would take a little over a month, while substantial windward sailing with long boards out into the Pacific on the return passage could involve up to five months at sea (Callaghan 2003). At 2 knots, a raft could sail before prevailing easterlies from Ecuador to the Marquesas or Tuamotus, about 5000 km distant) in less than two months, and sooner to Easter Island (3500 km distant).

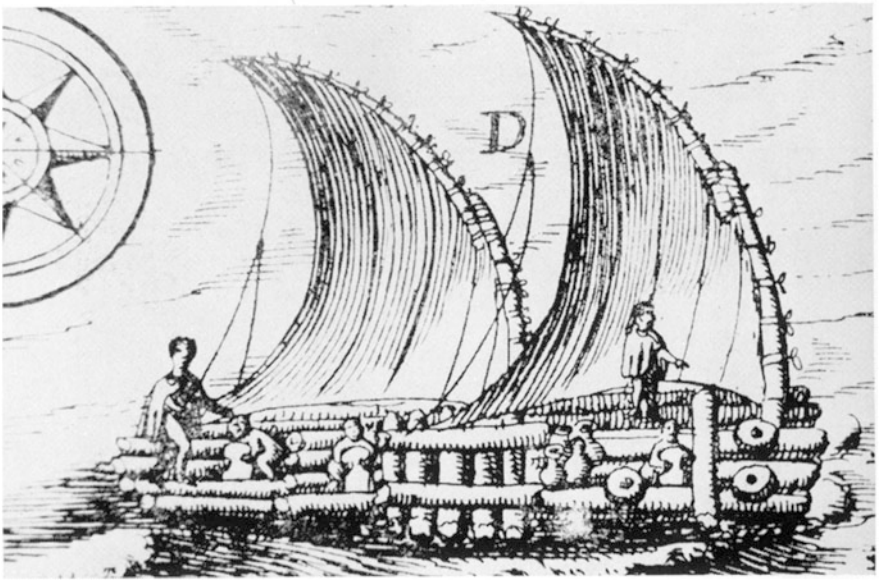

Fig. 2.3 Ecuadorian balsa raft with crescent sail rig, *guara*, and stone anchors (van Spilbergen 1619)

None of these points offer unassailable evidence of the capabilities of pre-Columbian sailing rafts, but the deep archaeology of technology transfer and trade, together with historical observations, implies strongly that a very capable, long-distance, Amerindian sailing capacity had existed for centuries before the colonization of East Polynesia.

3.3 Evaluation

Polynesian return-voyaging to South America, whether directly towards the Andean region, against prevailing easterlies, or by a prodigiously long hypothetical route involving the mid-latitude westerlies, can seldom have been successful, especially if the sailing rig prior to AD 1500 was a double spritsail. The introduction of sailing rafts from Polynesia to South America is highly implausible. In contrast, Amerindian offshore sailing rafts, their distinctive non-Polynesian sails and *guara* well-attested historically, and with an inferred offshore history longer than the human occupation of East Polynesia, were better placed to cross the southeastern Pacific. Sailing mainly in following winds, and with a weatherly capacity, the rafts were highly stable, very seaworthy, capable of long passages with heavy loads and made passages about as fast as Polynesian double canoes. More than twenty such rafting passages have been made since 1946. None of these went near Easter Island,

but had *guaras* been used to hold the southeast trades on the port quarter they could have done so. Using *guara* to sail specific courses must have been part of the prehistoric maritime trading system. Without it, the Humboldt current could push a raft into the Galapagos Islands, yet there is no pre-Colombian evidence of such an occurrence (Anderson et al. 2016).

There may have been reasons for Amerindian sailing rafts to explore westward in greater numbers during the early second millennium AD than earlier. It is possible that Polynesian canoes reaching South America provided an incentive. The encroaching hegemony of the Inkan state upon the Chimu Empire and the coastal polities and trading systems of Ecuador (Volland 1995) might have been another reason for exploration westward. Indeed, the Inkan state itself, in the well-known legend about a year-long voyage of a large flotilla of rafts into the Pacific by the Inka, Tupac Yupanqui, several generations before Spanish arrival, is indicative of the notion despite its implausible discoveries.

4 Conclusions

No definitive answers can be given to the two original questions, but the balance of evidence in both cases now leans towards the Amerindian hypothesis. This reflects, firstly, the recent strong genetic indication of an Amerindian contribution, dating about the late fourteenth century, to the East Polynesian population of Easter Island. As similar genetic data, dating mainly to the thirteenth century, are widely spread in the eastern archipelagos of East Polynesia, there is a reasonable working inference that they represent the former existence of Amerindian colonists; however, those might have arrived. Secondly, Polynesian sailing to South America cannot be ruled out, but the gap between traditionalist assumptions of highly accomplished seafaring, later enacted in experimental voyaging, and the scarcity of supporting historical and archaeological data which indicates less effective technology and sailing ability recommends caution until there is greater resolution. Thirdly, it is apparent that Amerindian rafting was much more capable than is commonly envisaged in Polynesian research. In passage speed and weatherliness, it was at least a match for Polynesian double canoes, and it was more seaworthy with much greater load carrying capacity. Fourthly, updating qualitative trait comparison in the three material types considered here, together with chronological contexts, strengthens the argument that they originated in Andean South America and were taken to Easter Island. Lastly, the view that these three types were not just a random sample of quotidian or decorative items that might have been collected by visitors to South America, but are actually connected as expressions of a system of ritual behavior, makes more sense of an Amerindian landfall in Easter Island, than other scenarios. Doubtful of return, stranded Amerindian sailors may have sought pre-eminently to construct the altars, tombs, and ritual engravings that linked them correctly with their ancestors. It is also consistent with intermarriage and a weakening of Amerindian beliefs over some generations, due to which Inkan block construction

deteriorated and the burial function of *tupa* was partly lost. Birdman engraving continued in a localized ritual until its *tapu* was destroyed by the liberal application of *komari* (vulvae) signs, possibly after European arrival.

It is essential to add to this re-statement that although it takes more, and more recent, evidence into account, it still lacks precise chronological controls and any quantitative analyses using large, paired (Andean-Easter Island), samples of the artefact types and styles in question. Clearly, those matters must be the next step in its evaluation. Such systematization of research has been long delayed by unwillingness on both sides of the southeast Pacific to engage with a mutual problem tainted by controversy. The easy option has been to assume that any mobility across the southeast Pacific was by Polynesian seafaring, thereby minimizing external influence in East Polynesian prehistory (Green 2005), while preserving the continentality of South American archaeology (Kehoe 2003). These tactics serve no intellectual purpose and merely validate Johnstone's (1980: 231) charge that "one thing is certain: the already vast bibliography on the question of trans-Pacific contacts will get even larger before any general agreement on the subject is reached". Instead of routine rejection of the Amerindian hypothesis, it is time to subject it to detailed analyses in archaeological science.

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