

material then available. At least the Samoan Islands, for instance, lie outside the Andesite Line or seaward limit of continental-type rocks (Figure 4.1), so the only lithic material locally available in quantity in this group and farther east was basalt (see chapter 4), which is relatively difficult to fashion satisfactorily into implements.

Lapita Culture Transition

Essentially all of the Lapita colonies extending from the Bismarcks through Melanesia gradually lost their original unique status through intermarriage and other cultural amalgamation with any older stock on various islands. Even on previously unoccupied islands, the early culture ultimately underwent at least a few changes, including the loss of manufacture of pottery. Thus, these islands (excluding the Polynesian Outliers) are now ethnographically considered Melanesian. Even Fiji is included in this latter category rather than being classified as Polynesian, although these two major portions of Oceania share a common Lapita ancestry.

POLYNESIAN CULTURE

Beginnings

Once Fiji was reached, it took Lapita People perhaps only another century to discover and colonize the westernmost major Polynesian island groups of Tonga and Samoa (Figure 24.1), completing this possibly by 900 B.C. or so. The interconnected culture of these three island groups then gradually evolved into one that can be recognized as Ancestral Polynesian.

Polynesian Canoes

Some of the Solomon and other Melanesian islands colonized by the Lapita Peoples were within sight of each other, and most of the rest were separated by less than 500 km (310 miles): a maximum of only three or four days' sail in favorable winds. Presumably the watercraft employed for these intra-Melanesian voyages was the **outrigger canoe**, consisting of a single hull with a smaller solid-wood outrigger lashed to two arms extending from one side for stability. This low-set craft could be paddled easily, but was usually equipped with a small sail for longer trips. The discovery of Fiji, however, required a journey of 800 km (500 miles), and it may well be that to accomplish this feat the Lapita Culture had developed at least a primitive form of the **double-hulled canoe**. After the colonization of Fiji and during the discovery and occupation of Tonga and Samoa continued experimentation and progressive improvements to this early version of the twin-bodied craft led to substantially larger and extremely seaworthy vessels that would eventually carry early Polynesians on truly epic ventures farther east into the Pacific (Plate 24.1).

In many parts of Polynesia, hulls of larger canoes were fashioned from planks laced to a keel and to each other. Lashing was done with extremely serviceable braided or twisted sennit cordage of Coconut or *niu* (*Cocos nucifera*) husk fiber. The cracks between planks were caulked with congealed sap of Breadfruit or *'ulu* (*Artocarpus altilis*). In the Hawaiian Islands, however, the great number of giant endemic *Koa* (*Acacia koa*) trees originally available allowed a hull to be formed from a single hollowed-out trunk, some up to 20 m (66 feet) long. To prevent waves from washing into the hull, its gunwales or upper edges were heightened by lashing planks along their length, and wooden endpieces were similarly fastened over bow and stern. For voyaging canoes, two hulls were connected by several lashed-on straight arms (in later versions

often upcurved in the middle) bearing a passenger platform, a design perpetuated in modern catamarans.

Such canoes could carry great stores of provisions within the hulls themselves, as well as several families along with their household goods, domestic animals, and plant propagules on the platform between the hulls. However, these voyaging craft had to rely almost entirely on propulsion by wind, because they were too heavy and their gunwales situated too far above the water to be paddled effectively. The one or two large so-called "crab-claw" sails, made of plaited Screw Pine or *hala* (*Pandanus tectorius*) leaves, were triangular, and repairable at sea in emergency. These sails were spread with the apex downward between a stationary mast and a mobile boom projecting upright from the mast base. Ropework of the rigging consisted of the same Coconut sennit as the lashing. In Hawai'i this cordage sometimes had fibers of the endemic nettle *Olonā* (*Touchardia latifolia* [see chapter 25]) interwoven for increased strength and elasticity. Steering was accomplished with a stern-mounted sweep oar or a pair of them.

Colonization of Eastern Polynesia

From the Tonga-Samoa **Polynesian Homeland** the eastward human movement seems to have paused for somewhere between 500 and 1,000 years. The reason for this interlude is unknown, but may well have been related to the time needed for further experimentation with, and perfection of, an extremely reliable double-hulled voyaging canoe. Learning to use the various sailing winds more skillfully and efficiently undoubtedly also required an extended period of time. At any rate, development of the distinctive Polynesian Culture evidently advanced considerably during this Homeland stay. The initial colonization of East Polynesia was then accomplished, perhaps shortly before the beginning of the Christian Era. The first landing was likely in either the Cook or Society Archipelagos, between 1,800 and 2,400 km (1,100 and 1,500 miles) east of the Homeland islands (Figure 24.1).

This general initial landing area is suggested by a variety of evidence, including very recent studies of mitochondrial DNA nucleotide-pair sequences of numerous insular populations of the accompanying Polynesian Rat (*Rattus exulans* [see chapters 19, 25]), which seems incapable of independently reaching isolated islands by "rafting." The primary archaeological evidence involves the presence of a few Polynesian Plain Ware pottery fragments or shards in habitation deposits of the Cook Islands. Petrographic analysis revealed that the material incorporated in at least a few of these Cook Islands ceramic remains was from Tonga, indicating prehistoric interchange between the two island groups sometime very early in the Christian Era. Pottery shards were also archaeologically retrieved in the Marquesas Islands and were found to include material from Fiji. Recent radiometric dating, however, has shown these to be historic in age, so they were likely from relatively modern Fijian pottery brought to the Marquesas on early Western sailing ships. The very small amount of other ceramic material recovered in the Marquesas proved to be of local manufacture. Extensive archaeological investigations elsewhere in East Polynesia have thus far yielded no ancient pottery.

Other types of artifactual evidence suggest that once a Cook or Society island was discovered and settled, extensive canoe travel soon occurred both within its own archipelago, as well as to and among other centrally located East Polynesian island groups. In addition, longer voyages of discovery were obviously made in all directions out of this nuclear dispersal area. As a result, all of the remaining *inhabitable* Polynesian islands had been colonized within about a millennium, probably before A.D. 1000 or, at the very latest, by 1200 (Figure 24.3).

POLYNESIAN NAVIGATION

The question of what drove the early Polynesians to make these long ocean voyages can never be answered with certainty. It is, however, most interesting to speculate on the matter.

Intentional Voyages

Some workers have postulated that the discovery of new Polynesian islands resulted from either unintentional drift voyages of storm-blown coastal sailors or relatively precipitous departures of ostracized individuals such as those defeated in battle or guilty of breaking taboos. It seems highly improbable, with the prevalence of the easterly trade winds (see chapter 7), that any significant number of drift voyages—at least from west to east—could have occurred. And hasty embarkations would hardly have allowed the extensive provisioning of canoes required to successfully carry out most long journeys.

The time between colonization of a particular large island group (for example, the Marquesas) and emigration of some of the colonists' descendants to initially populate another group (for example, the Hawaiian Archipelago) was often no greater than a very few hundred years. All desirable land of the first island group could not possibly have been occupied in that short

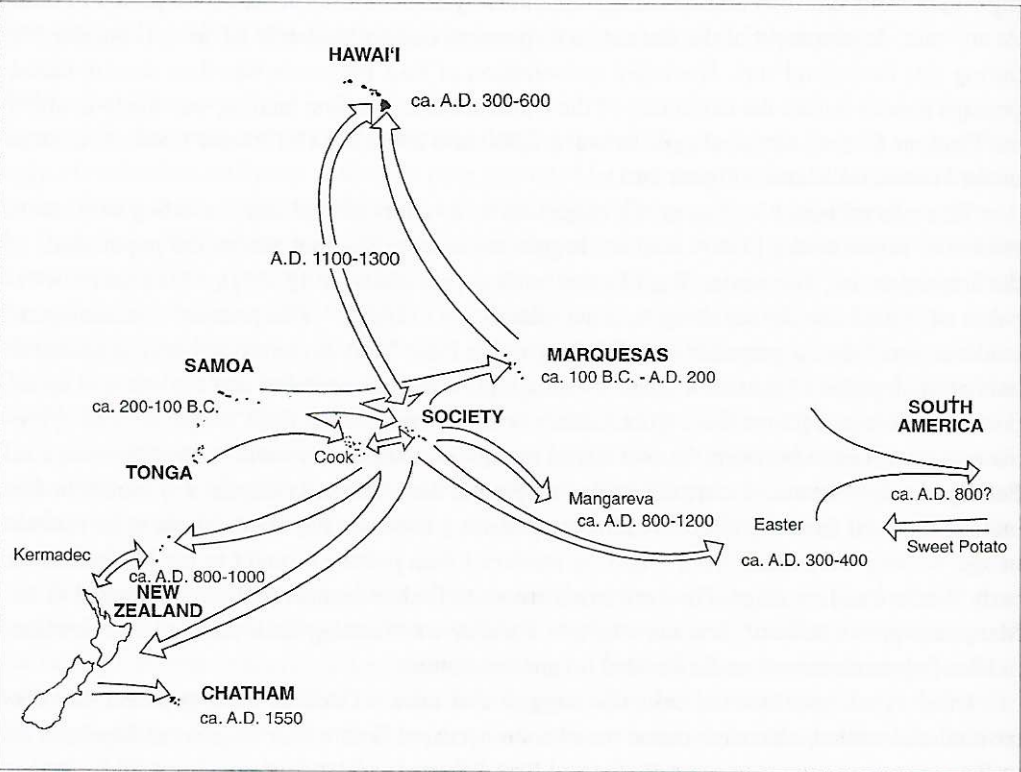


Figure 24.3. Possible settlement pattern of the major Polynesian island groups. A presumed voyage that reached South America and ultimately returned to Polynesia carrying the Sweet Potato is also indicated. (Figure by Keith Krueger.)

period, suggesting that few if any voyages of discovery originating in central East Polynesia were necessitated by such factors as overcrowding, resource shortage, or civil war. Thus, it may well have been simply either a spirit of adventure, the desire for recognition of the ability to discover new lands, or the fact that only the eldest son inherited his father's estate and status that motivated certain islanders or later-born sons to so rapidly and thoroughly explore and colonize all of Polynesia.

It is very likely that not only were most voyages resulting in discovery of new islands carefully planned and executed, but also that the Polynesians were quite willing and even eager to engage in this activity. More than two hundred generations removed from any cultural knowledge of continents, Polynesians undoubtedly envisioned the world as an ocean stretching endlessly to the east in which were imbedded scattered island groups forever available for discovery and settlement. Thus, there was no question in their minds that a multitude of uninhabited islands existed and were just waiting to be found.

To judge from ethnographic accounts of native Hawaiian Culture, undertaking or completion of any major event required performance of specific and frequently complex religious rituals. For example, after the construction of a *luakini heiau* or war temple of the god Kū, a specific requirement had to be met before the *heiau* could be used and the participating chief, priests, and workers released from an onerous *kapu* or restriction that kept them separated from their wives. A mass of floating *limu* or seaweed had to be found and retrieved from far out at sea. Obviously, such a discovery would be extremely fortuitous, so the *kapu* often lasted for many months or even years (reputedly 10 in one instance) before the requisite algal item was located, but this discovery obviously signified that Kū's blessing had finally been received. Similarly, if prospective colonists relied on the occurrence of an equivalent fortuitous event before initiating a discovery voyage, once the event had come about they undoubtedly had no question that their venture would be successful.

Zenith Stars

Still another aspect of ancient Polynesian Culture quite possibly added to the early aspiring colonists' faith that they would surely find new land: the concept of **zenith stars**. There are so many hundreds of relatively bright stars that it is inevitable that at least one of them in its nightly east-to-west passage across the sky will pass essentially directly over each of the numerous Polynesian islands. The one coursing above the island of Hawai'i a thousand or so years ago, for example, was Hōkūle'a ("Clear Star" or "Happy Star"; called Arcturus or the Bear Star by modern astronomers), and the equivalent zenith star of Tahiti was Hōkūho'okelewa'a ("Canoe-guiding Star"; currently called Sirius or the Dog Star). Because the ancient Polynesians had observed a zenith star over every previously discovered island, they would quite reasonably believe that there was a similar bright one passing directly over every other oceanic landmass, each having been divinely placed on such a course to mark the location of that island.

It is not difficult to imagine an ancient Polynesian master navigator pointing out to an apprentice the specific zenith stars that marked known islands or island groups, as well as noting other particularly bright stars under whose overhead trajectories lay islands that had yet to be reached. To arrive at one of these islands, it would only be necessary to sail north or south until its zenith star was passing directly overhead; then, if the island was not sighted at that exact spot, to travel either east or west under the star's course until land was reached. (Successful navigation back to the home island could, of course, easily be accomplished by using this same

technique in regard to that island's familiar zenith star.) This means that ancient Polynesians were not just randomly sailing out into the ocean hoping they might be lucky enough to find a new island; they departed not only certain that more uninhabited islands existed and that they had divine blessing to reach one, but also that their particular destination was there just under its zenith star's course. All the voyagers had to do was sail to that new land.

Thus, a journey that would seem prohibitively hazardous to modern humans—and, in reality, was probably indeed that dangerous—was begun by ancient Polynesians with little or no hesitation and trepidation. (It is pertinent to note that even as late as the early 1800s there are at least two reports of the voluntary departure of canoeloads of several hundred potential colonists from the Marquesas in search of new islands; the outcome of these ventures is apparently not known.)

Obviously, most bright stars in the heavens are *not* zenith stars and, during the many centuries of Polynesian settlement, following them without eventually finding land resulted in numerous voyages ending in disaster, with the deaths of probably thousands of hapless travelers through thirst, starvation, and storms. The fact that a journey had ended disastrously, however, would usually never have been known to the communities from which the voyage originated. If the aspiring colonists had not returned in a year or two to report success it was likely assumed they had not yet had enough time in their new home to, perhaps, replace a badly damaged canoe or amass sufficient provisions for a return trip. And, through the next few generations, the unheard-from colonists would gradually fade from memory. Or it may be that many of the voyagers who went in search of new islands were not even expected to return to their original departure point, at least not until their population had increased to such a level that members could be spared for such a return journey.

Use of the Winds

The fact that in both Northern and Southern Hemispheres the persistent trade winds blow from a generally easterly direction means that original colonization of East Polynesia from the West Polynesian homeland region involved sailing into the wind for a major portion of each voyage. In terms of at least the survival prospects of such voyagers, however, sailing into the prevailing easterly wind was distinctly advantageous, as explained here.

The trades typically die down a number of times a year and westerly winds take over, often for only a few days but sometimes for a week or more—or even months during major El Niño episodes (see chapter 7)—thus periodically providing favorable winds for the initiation of a long-distance sailing journey to the east. (Just such winds were utilized by the modern voyaging canoe *Hōkūleʻa* during parts of its epic Voyage of Rediscovery, as well as for its rapid transit from central East Polynesia to Easter Island, discussed later in this chapter.) Presumably, a departing canoe would sail east before the westerly wind as long as it lasted, then when the trades returned either tack into them or head north or south, sailing as close as possible to the easterly wind for an additional period of time. By dead reckoning (that is, mentally tracing the previous progress of the canoe as apparently affected by wind and currents) a competent navigator would always know roughly the direction and distance traveled from the point of departure, as well as the approximate number of days it would take to return there. When the canoe's provisions had been depleted to the minimum level necessary for this return time, the colonization venture would be abandoned and the canoe sailed downwind back to the island of origin. On the other hand, if the departure direction had been downwind on the trades (that is, to the

west), *timely* return to the east against this usual wind upon finding no land would have been impossible most of the time.

Polynesian Outliers

In regard to possible downwind voyages, however, there are eighteen **Polynesian Outliers** scattered west of the Polynesian Triangle, all in Melanesia except for two in Micronesia (Figure 24.1). Although dual colonizations of most of these islands is obvious from the various degrees of Melanesian or Micronesian traits present, their culture is predominately Polynesian. Variation in, at least, the style of Polynesian-type artifacts excavated on Outliers strongly suggests that many of the individual islands were reached at different periods (and in some cases possibly more than once) during the evolution of Polynesian Culture. Because the Outliers are situated downwind of essentially all Polynesian Triangle islands, it is quite likely that a Polynesian group colonizing any one of them was derived from either an uncontrolled drift voyage or a returning voyage of unsuccessful seekers of new lands missing their home islands.

New Zealand

The arrival time and identity of the first people to reach New Zealand is still unclear. DNA evidence from the islands' Polynesian Rats seems to indicate two or more human contacts, one possibly as early as the time Ancestral Polynesian Culture was developing in the Fiji-Tonga-Samoa area. Whatever the number and date of any such early New Zealand contacts—and the fate of the potential colonists—various lines of cultural evidence indicate that there was almost certainly successful New Zealand colonization from somewhere within central East Polynesia near or shortly after A.D. 1000. Just as in the case of the Polynesian Outliers, this settlement of New Zealand from the east obviously entailed a predominately downwind journey, and the voyage was possibly similarly unintended. There is, however, one New Zealand land bird, the Long-tailed Cuckoo (*Eudynamis taitensis*), that migrates to at least the Cook and Society Islands. People of either group could conceivably have launched a successful New Zealand discovery voyage in the direction of this bird's annual return flight.

DISCOVERY AND COLONIZATION OF HAWAI'I

Source of Colonists

Current evidence based on similarities in the earliest types of Hawaiian artifacts such as fish-hooks and adzes, in language characteristics, and in Polynesian Rat DNA attributes indicates that the Hawaiian Archipelago was quite possibly first populated by emigrants from the Marquesas 3,400 km (2,100 miles) to the south-southeast. If this evidence is accepted, the settlement occurred about A.D. 400, if not a century or two earlier (Figure 24.3). This putative Marquesan contact with Hawai'i could have involved only a single nonreturn voyage or, at most, a few round-trip ones. After that, for some reason, Marquesas Islanders do not seem to have engaged in any notable amount of long-distance voyaging, and the archipelago apparently remained a more or less isolated East Polynesian area.

The same general types of evidence that indicated an initial Marquesas-Hawaiian contact suggest that a second important cultural interaction with the Hawaiian Islands began around 1100. This involved people from the more centrally located East Polynesian area to the southwest of the Marquesas, and the Society Islands seem the most likely source on the basis of cur-

rent knowledge. This alleged Hawai'i-Society contact, however, led to a number of round-trip journeys between the regions (which could eventually have included participation of other island groups near the Societies, such as the southern Cooks). This episode of voyaging evidently lasted until at least 1300, at which time it ceased for unknown reasons. The fact that the channel leading from Maui southward between Lāna'i and Kaho'olawe, which points toward the Society Islands, bears the name KealaiKahiki or "The path to Tahiti or a foreign land" may possibly further attest to the reciprocal nature and relative frequency of such voyages.

This extended period of cultural interaction with islanders of the general Society region is relatively certainly documented in Hawaiian oral tradition, as well as by archaeological evidence. It apparently did not involve any mass immigration of southern people or importations of radically new aspects of material culture. The early arrivals from the south seemingly comprised primarily religious leaders, including the fabled navigator-priest Pā'ao, and individuals from chiefly families, but these relative few leaders significantly changed major features of prehistoric Hawaiian society. By means not clear, this high-status component was gradually able to replace most former Hawaiian religious beliefs and rituals with its own (which apparently included human sacrifice). Also, most of the ruling dynasties encountered by the first European arrivals in the Hawaiian Islands represented these south-central lines, rather than those of the presumed original Marquesan discoverers.

Menehune

As an intriguing aside, the advent of these Society Islanders may possibly provide a basis for the apparently later-developed legend of the *Menehune*. These were the mythical diminutive Hawaiian folk, bands of whom performed often prodigious feats of manual labor overnight (especially on the relatively isolated island of Kaua'i), for which each worker reputedly received only a morsel of food such as a small shrimp. In the Society Islands and neighboring parts of central East Polynesia, the older term *manahune* was applied to people of relatively lower social status. The south-central Polynesians of chiefly rank, in exerting control over parts of the Hawaiian chain, may well have subjugated certain groups of less-privileged residents—or at least regarded them as socially or culturally inferior. These groups could have been forced into essentially slave labor on various public works projects, and the new rulers might reasonably have referred to these unpaid workers by the still-familiar homeland name *manahune*. Any such extreme labor practices were probably eventually largely abandoned in pre-Contact Hawai'i and, as reference to them slowly became legend, the concept of lower social status of the ancient workers gradually changed to one of smaller physical size, with the original appellation becoming the now-familiar Hawaiian cognate *Menehune*.

Hōkūle'a Success

For many years anthropologists had questioned whether it was possible for ancient Polynesians to have regularly made intentional voyages between populated island groups such as, for example, Hawai'i and those to the far south. The primary problem envisioned was that to gain enough "easting" to reach the desired islands, the voyaging canoe would have to sail at an angle of less than 90 degrees to the trade winds of either or both Northern and Southern Hemispheres, and this was not thought possible for Polynesian craft. Also, it was debated whether or not ancient navigators without the aid of modern instruments would have been able to consistently find their way between such widely separated island groups.

Both questions were first convincingly answered in the affirmative in 1976. The *Hōkūle'a* (named for the zenith star of ancient Hawai'i), a newly constructed double-hulled voyaging canoe of traditional Late Polynesian design, was successfully navigated without modern instruments from the Hawaiian to the Society Islands. Development of this craft as well as the undertaking of such a voyage was largely a result of the inspiration and dedicated work of anthropologist **Ben R. Finney**. Just as postulated by Finney, it was found that *Hōkūle'a* could satisfactorily sail as close as 75 degrees to the wind. Because no Polynesian islander was familiar with traditional navigation at that time, *Hōkūle'a* was guided by **Mau Pīailug**, a veteran Micronesian navigator using the ancient methods of his homeland, with the remaining crew being primarily Native Hawaiians. The canoe was then safely sailed back to Hawai'i, although this time using modern instruments because Pīailug was not available for the return. *Hōkūle'a* averaged about 185 km (115 miles) daily; the voyages thus each took between 3 and 4 weeks (Figure 24.4).

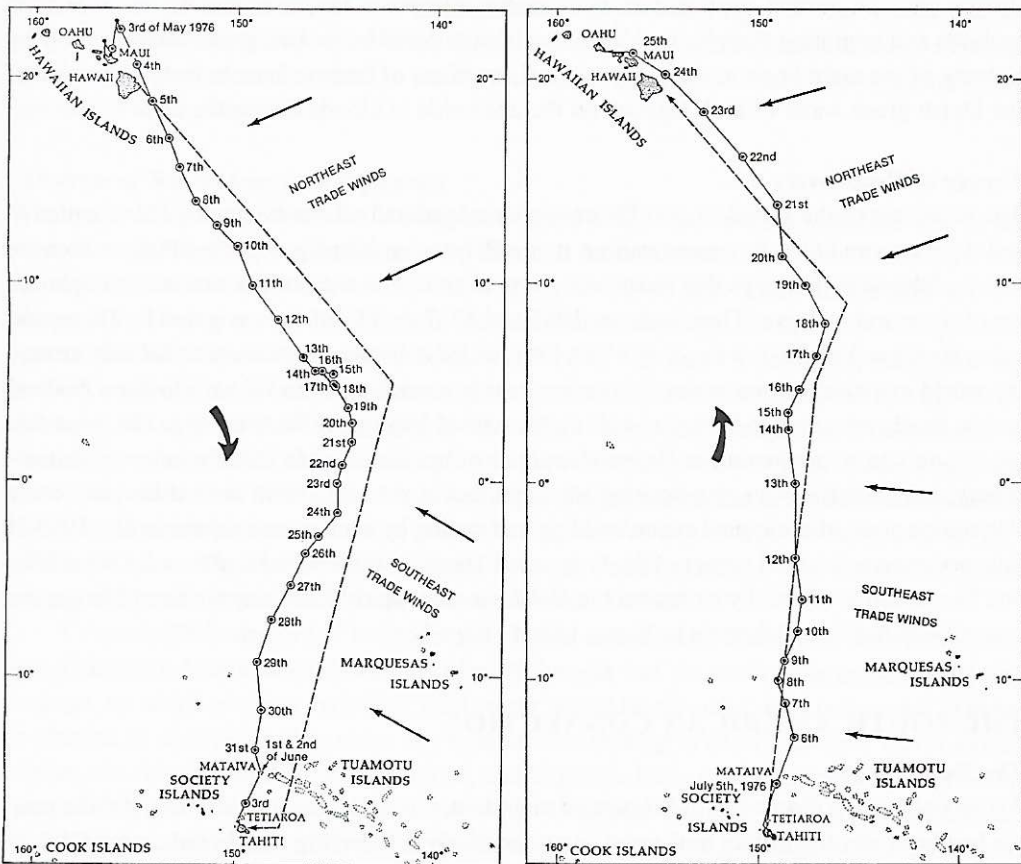


Figure 24.4. First long-distance voyages of the Hawaiian canoe *Hōkūle'a* in 1976. Projected courses (at 75 degrees to the prevailing winds) are shown by dashed lines, and the actual courses sailed and daily noon positions by solid lines and circles. The different trade wind directions north and south of the equator necessitated the change in course for each area. (Adapted from Figs. 14.4 and 14.6 of Finney [1979]; copyright 1977, American Association for the Advancement of Science, used with permission.)

Traditional Navigation

Another round-trip *Hōkūleʻa* voyage between the Hawaiian and Society Islands was accomplished in 1980, but this time with noninstrument navigation used on both legs of the journey. The navigator was **Nainoa Thompson**, a young Native Hawaiian who, although he had not been able to sail on the southward leg of the 1976 voyage navigated by Piailug, did crew on the return journey. Thompson was fascinated with traditional navigation, so during the years following the first trip began studying the subject, both at the Bernice P. Bishop Museum Planetarium in Honolulu and with the periodic help of Piailug. He learned that accurate open-ocean navigation was possible by combined observation of such natural phenomena as the position of specific stars as they rose or set, the angle above the horizon of Polaris or the North Star (known historically in Hawaiian as *Hōkūpaʻa* or “Immovable Star,” but in ancient Polynesian time describing a small circle in the northern sky), as well as the direction of prevailing winds, currents, and ocean swells. In addition, as undoubtedly known to ancient Pacific navigators, he learned that proximity and direction of islands could often be detected by various means. These included subtle disruptions of a normal swell pattern by a nearby interposed landmass and flights of feeding seabirds and migrating shorebirds. Also, some islands could be located great distances away by lighting of the night horizon during occasional eruptions of large volcanoes or by reflection of the bluish green water of atoll lagoons on the underside of clouds during the day.

Voyage of Rediscovery

The successes of the *Hōkūleʻa* and Thompson’s navigational efforts eventually led to a plan to sail the canoe traditionally among various major Polynesian island groups: in effect, to recreate many of the same journeys that must have been taken by the ancient discoverers and colonizers of these archipelagos. Thus, between 1985 and 1987 the *Hōkūleʻa*, navigated by Thompson using traditional methods a majority of the time, sailed a distance equivalent to halfway around the world in visiting seven major Polynesian groups stretching from Hawaiʻi to New Zealand before finally returning to Hawaiʻi on this aptly named **Voyage of Rediscovery**. The great feat led not only to an awakening in Native Hawaiians of justifiable pride in their culture’s contemporary and ancestral voyaging accomplishments, but also to a modern revival in many other Polynesian areas of traditional canoe building and sailing by ancient techniques. In late 1999 of this modern era, the final corner of the Polynesian Triangle was reached traditionally when Nainoa Thompson successfully navigated the *Hōkūleʻa* on a rapid 17-day voyage from Mangareva in south-central East Polynesia to Easter Island (Rapa Nui).

THE SOUTH AMERICAN CONNECTION

The Sweet Potato

At this point in the discussion of Polynesian migration, it is quite reasonable to ask: if these people had been steadily sailing to the east in progressively discovering new islands, why did they not eventually reach South America? No one knows for certain whether or not an ancient Polynesian ever set foot on the west coast of South America; all that can be said is that *somewhere* there was at least one instance of direct contact between prehistoric people of the two areas. Evidence for this comes from a seemingly improbable source: the geographic distribution and native names of the common **Sweet Potato** or *ʻuala* (*Ipomoea batatas*).

The Sweet Potato is the only pre-Contact Polynesian plant (or animal) that originated other

than in Southeast Asia or the Southwest Pacific; it is indisputably South American in origin. This species evidently reached most of the East Polynesian islands only after their initial human colonization, but before about A.D. 800. In Hawai'i, at least, association of this cultigen with the putatively late-arriving deity Lono (see chapter 25) tends to strengthen the theory of a relatively delayed prehistoric introduction. Dispersal of the Sweet Potato west through most of the rest of the Pacific was apparently rapid, because it had reached as far west as Samoa, Tonga, eastern Melanesia, and New Zealand by the time of European Contact in the mid-seventeenth and early eighteenth centuries.

This domesticated species does not usually set seed, and vegetative parts other than the tuber are apparently killed by seawater, so it almost surely was not distributed throughout the Pacific by wind, birds, or ocean currents. All of its names in the various Polynesian groups ('uala, 'umara, ku'ara, kumara, and the like) are mutual cognates, and there seems no question that their prehistoric origin was in one of the west-coast South American dialectic names *kuala*, *umala*, *kumar*, *kumara*, and so on. This linguistic fact is critically important because it shows that the Sweet Potato did not arrive in Polynesia simply by drifting from the New World in a provisioned but unmanned raft or other vessel, but that *face-to-face* contact between a Polynesian and a South American had to have occurred at some point during introduction of the species to the insular Pacific.

Absence of South American Influence

The trade winds in the Southern Hemisphere would easily allow even a primitive craft to sail west from the South American coast to an island in the southeastern portion of the Polynesian Triangle. This was demonstrated by the Norwegian ethnologist **Thor Heyerdahl** in 1947 through just such a voyage from Peru to the Tuamotu Archipelago in an attempt to support his theory that Polynesia had originally been colonized in this way. (Incidentally, the reason that ancient nonseafaring South Americans might attempt to sail intentionally far out into the Pacific in search of unknown lands is completely obscure.) It seems odd, though, that if colonization of East Polynesia by South American people had been the manner in which the Sweet Potato was first transported from South America, why did the alleged settlers not bring other common New World cultigens (for example, corn, beans, and squash) or any of their domesticated animals (Turkey, Guinea Pig, and so on)? Perhaps, however, such organisms were introduced but all except the Sweet Potato failed to survive on an oceanic island.

Of course, this absence of transported cultigens and animals could have been because the possible South American colonization of East Polynesia was the result of an unintentional drift voyage, on which no great variety of food stores would be expected. But, in the case of either a planned or an unplanned journey, an explanation is lacking as to why no New World artifact styles, weaving or other cultural traditions, and linguistic traits appear in the prehistory of any part of Polynesia. Nor do the skeletal and other biological characteristics of any pre-Contact East Polynesians indicate a mixture of people from the two areas. Although a colonizing group from South American undoubtedly would have been small in numbers, the members surely would have had some degree of observable effect on the cultural and physical characteristics of the rather limited number of Polynesians already on a relatively small island (or who would arrive there later if the New World group had preceded them).

It seems much more reasonable that the contact between the two cultures was made by Polynesians, who while continuing their traditional eastward voyages of discovery through the

Pacific reached the west coast of South America. The various impacts of their small numbers on the substantially larger native population there would have been easily dissipated and quickly lost without significant trace, even if it extended to intermarriage. And any Polynesian plants and animals the newcomers brought may have been of too little local use to have been preserved among the relative abundance of native South American resources. On the other hand, the arriving Polynesians would have been quick to recognize the value of a productive cultigen like the Sweet Potato that could be grown in a variety of soil types and rainfall conditions such as those found among the Pacific island groups. Subsequently, some or all of these Islanders could have left South America on an easily accomplished downwind return voyage to their original area of departure carrying an abundant supply of Sweet Potato tubers—along with the original native name—both of which would eventually become widely distributed in Polynesia.

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AUDIOVISUAL AIDS

4-Butte-1: A lesson in archaeology; Gatecliff: American Indian rock-shelter; Hawaiian fish-hooks; History of Hawaii: Polynesian migration.