

THEY CALLED THEMSELVES “people of the tomol” and their canoe the “house of the sea.” For the Chumash people, who inhabited the southern California coast as well as several islands across the Santa Barbara Channel, the sewn-plank canoe, or *tomol*, anchored both their identity and economy. Tomols transported goods and people and were ideal craft for pursuing deep-sea fish or hunting marine mammals. Chumash who owned tomols commanded wealth and prestige—they wore bearskin capes to mark their status—as well as political leadership. Some archaeologists argue that the tomol made possible the complexity of Chumash culture.

Among North American Indians, only the Chumash, and later the neighboring Gabrielino, built sewn-plank canoes. In the Western Hemisphere, this distinctive technology is otherwise known only from the coast of Chile and among Pacific islanders. Compared to wooden dugout canoes or balsas made from bundled tule reeds, tomols are faster, more stable at sea, more durable, and able to carry larger loads for longer distances. It has been called “the greatest invention of the California Indians,” but whether the Chumash were the tomol’s inventors is now being questioned. What if the idea just washed ashore? What if the Chumash encountered the unchallenged masters of oceanic navigation, the Polynesians, and learned the idea from them? The suggestion provokes archaeologists because it implies that the tomol did not stem from Chumash cultural evolution but rather from a chance landing of people who traveled from more than two thousand miles away. Could something as important as the development of the tomol have been an accident of history?

Although the possibility of Polynesian influence on Chumash culture has been floated before, such radical notions were ignored as American archaeologists became reluctant to consider cases of cultural diffusion (the spread of cultural

elements from one group to another) across vast distances. But now a distinguished California archaeologist and a linguist of the Chumash languages have marshaled new evidence for a Polynesia-California connection.

IF SOMEONE HAD TOLD ME 10 years ago that I’d be making this case, I’d have been on the floor laughing,” says Terry Jones of California Polytechnic University at San Luis Obispo. “I wasn’t looking for it.” But in 1998, Jones found himself at an academic meeting as linguist Kathryn Klar presented a possible link between Chumash and a Polynesian language that is otherwise as unrelated to Chumash as English is to Chinese.

Klar, of the University of California at Berkeley, believes that words are basically artifacts and are as valid as handmade objects for documenting a people’s past. “Words are not always consciously crafted the way an artifact is,” she says, “but they embody something very concrete about the history of the speakers.”

The linguist knew from her previous research that the Chumashan language family was unlike any other in native California; in fact, it has no close linguistic relatives anywhere. It may have been spoken by some of the first people to live in California. (The last native Chumash speaker died in 1965, but efforts are underway to revive the language.)

Any language, says Klar, includes words that are native to it, words borrowed from other tongues, and others of unknown origin. When Klar began studying the island variant of Chumash, she found words alien to mainland Chumash dialects. She looked at distant native languages, from Aleut to Uto-Aztecan, whose speakers could have had contact with the Chumash. Each time, Klar came up empty—until she tried Hawaiian, a member of the Polynesian language family.

Klar noticed a Hawaiian word that translates roughly as “useful tree,” *kumulai’au*. This bears a striking resemblance to



Chumash tribal members paddle a modern reconstruction of a sewn-plank canoe, or *tomol*, across California’s Santa Barbara Channel.

the ancient Chumash word for “sewn-plank canoe,” *tomolo’o*, which Klar reconstructed from the terms for “plank canoe” in different branches of the Chumashan language family. The first letters differ, but in Hawaiian “k” words often derive from older words that begin with “t.” Both the Hawaiian and Chumash words contain four corresponding consonants. That’s too many for a coincidence and to a linguist signals the virtual certainty of genetic kinship or borrowing from the native language. Since Hawaiian and Chumash don’t share a traceable ancestry, that leaves borrowing.

In contrast, the Chumash term *axipenesh*, meaning “worked piece of wood” or a dugout canoe, the watercraft that preceded the sewn-plank canoe, shows no sign of being borrowed. Like a typical Chumash word, it breaks down into smaller segments with independent meanings. But “tomol” is irreducible, another potential clue to its foreign origin. Says Klar, “They borrowed the technology along with the words.”

Building a Chumash tomol required considerable skill and patience. The construction of a sewn-plank canoe, roughly 20 feet long with space for a handful of paddlers, could demand up to six months of labor. Each was exquisitely engineered,

with no internal frame other than a single cross beam. Much of what we know about the construction process comes from copious notes made by linguist John Harrington in the early twentieth century. In 1913, some 60 years after tomols stopped cruising the Santa Barbara coast, Harrington observed elderly Chumash canoe builder Fernando Librado as he supervised the building of a traditional tomol (it is still on display at the Santa Barbara Museum of Natural History).

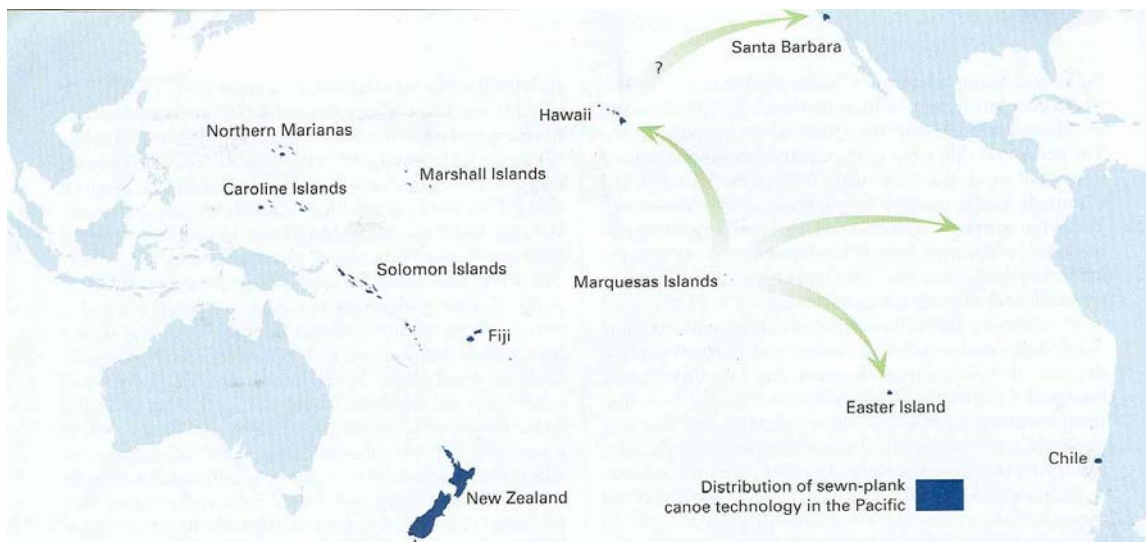
First a tomol builder carefully selected driftwood logs of redwood, pine, or fir; many logs might yield only a few seaworthy planks, which were split from the logs using whale-bone wedges and stone tools. Those intended for sideboards could be made pliable by soaking for hours in a clay-lined pit of water that had been brought to a boil with fire-heated rocks. Overlapping bevels helped the planks fit snugly, and a tar-and-pine-pitch adhesive called asphaltum secured the edges. Boards were “sewn” together by drilling holes through the planks and lashing with waxed milkweed twine. A final coat of tar plugged holes and gaps. Then the boat was sanded with sharkskin and sealed with red ochre. Final decorations included paint and shell inlay.

The Polynesian Connection

Did ancient Hawaiians teach California Indians how to make ocean-going canoes?

by BLAKE EDGAR

Santa Barbara News-Press



IN THE EARLY 1940S, archaeologists entertained the possibility of Polynesian contact leading to plank canoes in the Americas. But they dismissed the idea before long, and American archaeologists have increasingly looked askance at claims of cultural diffusion to explain the spread of people or their handiwork. Klar points out, however, that linguists readily accept diffusion of words as a part of language evolution, and Jones says that Pacific archaeologists tend to accept diffusion. Indeed, they can cite at least one precedent of cultural diffusion by Polynesians: the sweet potato.

Native to South America, where it has been grown for thousands of years, the sweet potato was common in the South Pacific by the time of Captain Cook's voyages in the late eighteenth century. Many assumed that Spanish sailors had introduced islanders to the tuber. Archaeological evidence, however, thickened the plot. In 1989, Patrick Kirch of the University of California at Berkeley, excavated carbonized sweet potatoes that dated to 1,000 years ago from a rockshelter on

the Polynesian island of Mangaia. Despite the attempts of adventurer Thor Heyerdahl to reach Polynesia using prehistoric South American boat technology, no known South American craft could have made an island-hopping journey with sweet potatoes on board. Prehistoric Polynesian voyagers must have reached the coast of South America and returned to the South Pacific to plant sweet potatoes, which then spread from island to island. Intriguingly, the word *kumara* means "sweet potato" in both Peru and Polynesia.

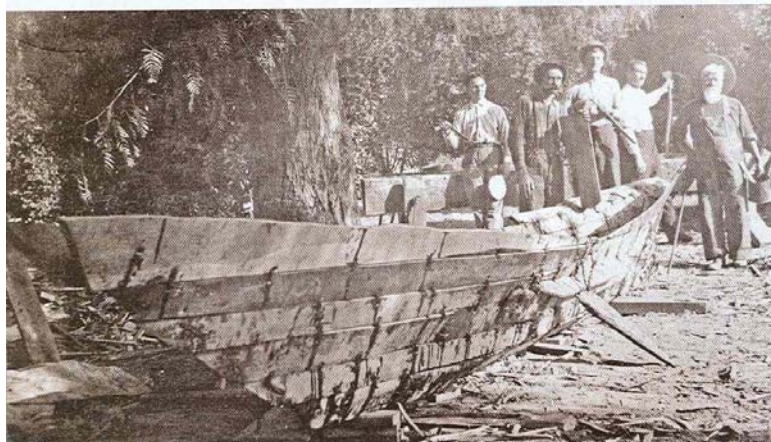
"The sweet-potato remains make it clear that there was contact with South America, and I see no reason why North America could not also have been contacted," says Kirch. "If Polynesians were sailing into the northern Pacific and discovered Hawaii, [there's] no reason they could not have gone as far as the California coast."

Hawaii was probably colonized around A.D. 700 to 800 by voyagers from the Marquesas Islands, which are nearly 2,000 miles away. The California coast lay another 2,100 miles

across open ocean, but much of any sailing journey would be with the wind. "[The Polynesians] had the impetus to voyage," says Jones. "They discovered every speck of land in the Pacific, and they kept going." Polynesian canoes used sails and double hulls, which were never adopted for use in the Chumash tomol. Jones believes that neither was necessary for the relatively short ocean journeys made by the Chumash.

As with many archaeological questions, resolving this one hinges on timing. Jones agrees that for his and Klar's idea to hold up, the Chumash tomol should not show up in the archaeological record prior to the heyday of Polynesian voyaging or the peopling of Hawaii.

Chumash canoe builder Fernando Librado (far right) supervised construction of a tomol in 1913. His efforts remain the main source of information about tomols.



Santa Barbara Museum of Natural History

Archaeologist Lynn Gamble of San Diego State University recently examined much of the hard evidence that could be linked to Chumash sewn-plank canoe technology in an effort to determine when this innovation appeared. Since lightweight wooden canoes tend not to preserve on the Pacific coast, Gamble relied on indirect evidence excavated from sites and burials: five dozen complete or fragmentary planks, asphaltum plugs that could have sealed holes in canoe planks, and stone tools of the right shape to have drilled the holes. Under a microscope, several of the stone drills revealed a wear polish consistent with having been used to ream wood.

The earliest radiocarbon date on a probable canoe plank comes from the site of Daisy Cave on San Miguel Island. The single plank dates to 1,300 years ago, which would place its creation close to A.D. 700. At roughly this same time, remains of deep-sea fish such as tuna and swordfish become more widespread in coastal archaeological deposits. Marine resources became crucial in sustaining the Chumash diet, especially after A.D. 650, when the Chumash responded to recurring long-term droughts by relying more on the sea.

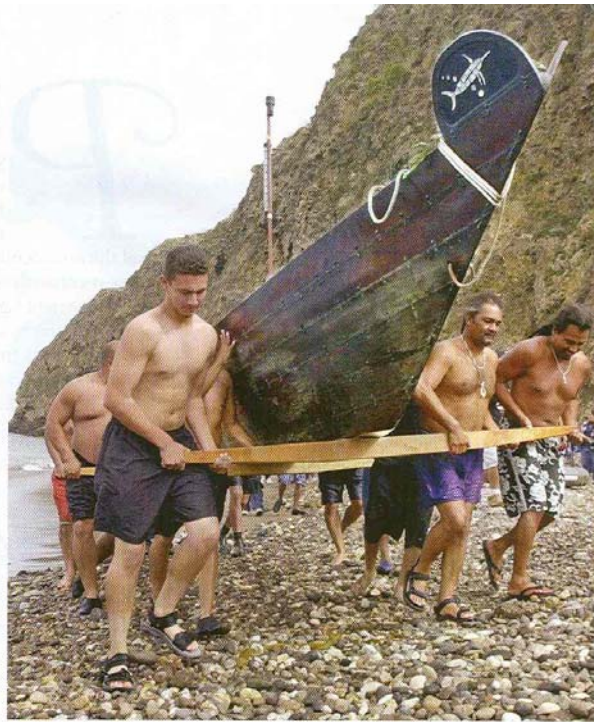
A sturdy craft like the tomol may have been essential for the Chumash to pursue deep-sea prey. "I don't think they were going after swordfish in a tule balsa," says archaeologist John Johnson of the Santa Barbara Museum of Natural History. But Johnson doubts the Polynesian connection theory, citing a radiocarbon date on a headdress made from a swordfish skull excavated in a Chumash burial that indicated that the artifact had been made 2,000 years ago, long before the Polynesians could have reached California. While acknowledging that Chumash fishing intensified in more recent times, Johnson believes that swordfish hunting appears in tandem with the sewn-plank canoe, and that both predate the era of Polynesian expansion critical to the Jones and Klar case.

As part of his and Klar's argument, Jones contends that Chumash fishhook style, which had stayed static for 6,000 years, suddenly changed around A.D. 700. The Chumash switched from simple, straight bi-pointed bones, like a large toothpick, to a more elaborate carved and curved design with

A close inspection of the 1913 tomol, now in the Santa Barbara Museum of Natural History, shows how planks were "sewn" together with waxed twine.



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Members of the Chumash Maritime Association bring a reconstructed tomol ashore after crossing the Santa Barbara Channel in 2001.

two bones lashed together. The two-piece fishhooks resemble a style common in Hawaii and elsewhere in Polynesia, says Jones, and may be another introduced idea. Johnson counters that the compound fishhooks could instead be harpoon barbs, and to his eye they reflect "a continuous range of form" with prior Chumash fishing technology.

Jones and Klar realize that their colleagues may need more convincing; after all, their strongest evidence may rest on a few words. For now, other California archaeologists seem somewhat skeptical. "I suspect that there was a long development of the plank canoe and that it did start with a dugout," says Gamble. "The Chumash could have come up with these ideas themselves. They were seafaring people, though they didn't take long voyages."

Such responses won't surprise Jones, who had to challenge much of his own academic training and preconceptions about prehistory in light of the evidence that he and Klar uncovered. One lesson he's learned is that even a chance event can leave lasting cultural consequences. "We're not arguing that the Polynesians set up shop here," says Jones. "We're arguing for one-time contact—maybe just long enough to fix their boat." ■

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