

# Supernovas and the Polynesian Canoe

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## INTRODUCTION

The body of archaeological and other evidence tells us that the Polynesian race arose following ocean migrations from Asia via Melanesia through Fiji to Tonga and Samoa, probably reaching the Marquesas Islands near or before the birth of Christ. Subsequent migrations populated the other islands of the Eastern Pacific (Finney 1994). These events, extending over a period of some two thousand years, involved impressive feats of ocean passage, employing a growing body of knowledge of currents, winds, and above all, stellar navigation. The early navigators, capable of sailing against the wind, operated primarily in the near-equatorial latitudes, and are known to have employed a system of stellar reference involving the horizon and the local zenith. The rising and setting directions of stars were used to set and hold courses, and stars passing overhead at night were used as locators for certain islands (Finney 1994, Lewis 1994).

After two millenia of increasingly accomplished ocean migrations, mostly eastward and back home relatively close to the equator, the pattern appears to have changed. The Marquesas, 1800 nautical miles from Samoa, may have been reached before intervening island groups such as the Societies, Cooks and Tuamotus. During the following few centuries, the latter groups were then settled, as were Easter Island and New Zealand. There is some question as to the first settlement of Hawai'i, but again the Marquesas are listed among the candidates as source islands (Finney 1994: 273-279).

Why did the migration possibly skip directly from western Polynesia to the Marquesas? What caused untypical

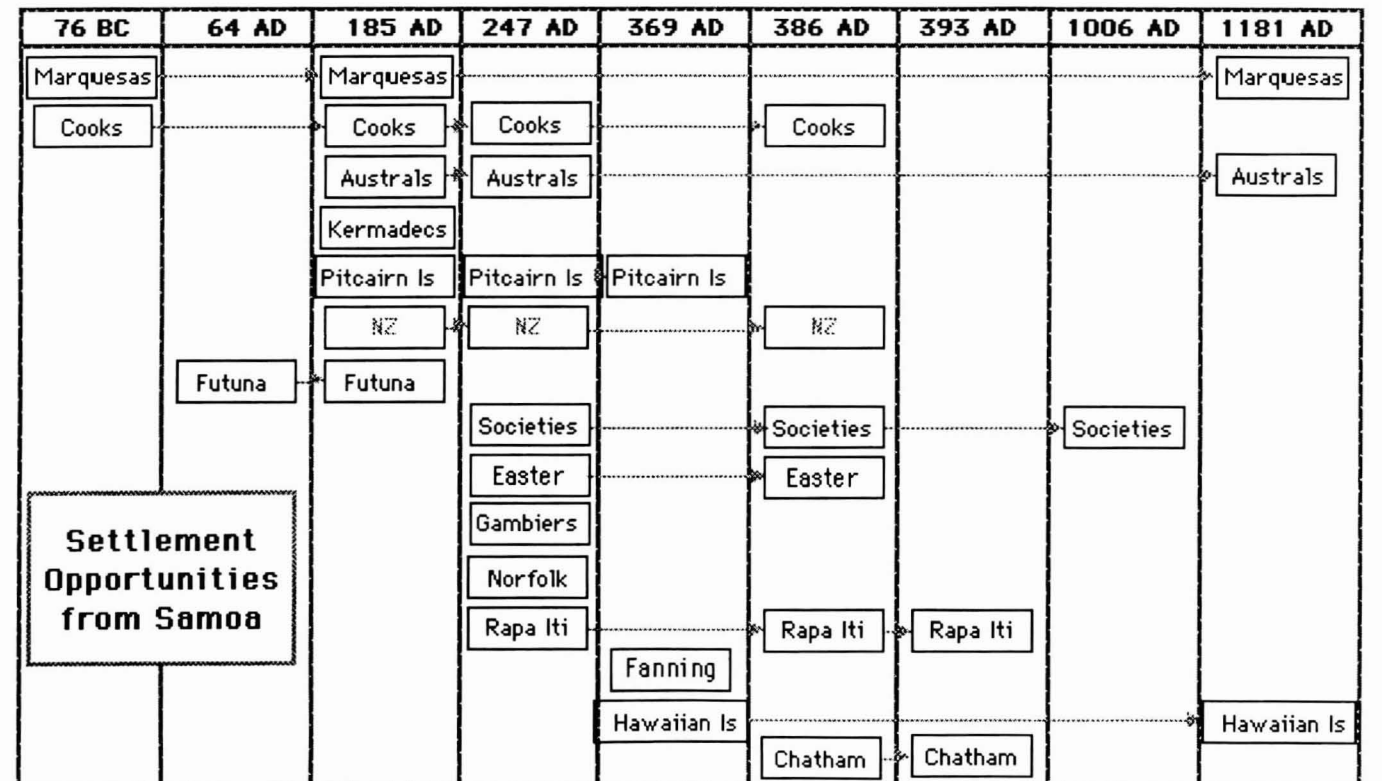
courses to be set both north and south to destinations so much farther (20-40 degrees latitude) from the equator than ever before? Why did the Polynesians embark at all on these long journeys, in some cases to find (by chance?) mere specks on the open ocean? It would require more than 200 randomly chosen sailing voyages from the Marquesas to encounter the distant Easter Island. Of course, the first random shot at it could be a hit!

Conventional wisdom is that overpopulation and attendant starvation and tribal strife were the motivations; nor can one rule out wanderlust in a people whose confidence in seafaring has been growing for a thousand years or more.

## THE SUPERNOVA POSSIBILITY

Here, however, we examine another hypothesis: that the occurrence of supernova events in our galaxy, infrequent major stellar outbursts visible in the sky for months or in some cases for a year or two, with the impact such apparitions could have on the belief systems of an advanced neolithic people, may have stimulated some of the principal and otherwise enigmatic migrations to occur and to be steered toward the rising or setting points, or in some cases to the zenith (overhead) latitudes, corresponding to the astronomical declinations of the supernovas.

In 1984 at the Hanga Roa Conference, I explored this hypothesis in a somewhat limited way, and reported on the addition of ocean currents at Laramie in 1993. Here I describe the results of a more detailed computer simulation. The simulation was used to "sail" from some forty islands toward the



rising or setting directions of nine visible supernovas occurring between 100 BC and 1200 AD (Clark & Stephenson 1977, Stephenson & Clark 1978).

Promising approaches were identified. These identified voyages were then re-simulated to include the effects of drift caused by average ocean currents, providing "supernova opportunities" for Polynesian migration. The ocean currents used were modern January averages since we cannot yet divine what the actual current patterns were so long ago.

The key theme here is the possibility that Polynesian priests and navigators might respond to the sudden appearance of a new bright star in their well-known heavens.

#### OBSERVATIONS ON THE OPPORTUNITIES

Many of the identified possibilities seem plausible in the light of our current information; a few of them are somewhat more revolutionary in character.

Perhaps it may seem surprising to contemplate that from the Marquesas the Polynesians may have discovered most of the Pacific islands—the Australs, Pitcairn, the Kermadecs and New Zealand, the Societies, the Gambiers, Easter Island and the Cooks (if the 76 AD Suwarrow landfall was ignored) all within a period of 62 years from 185 AD to 247 AD.

On the other hand, it may be reasonable: each voyage would have lasted only a few weeks. In the period of 30 years between 1492 AD and 1522 AD, the following events took place: the discovery of America; the exploration of Newfoundland and the St. Lawrence Basin, Florida, the Gulf of Mexico and the Caribbean, the Isthmus of Panama and the Pacific Ocean; the conquest of Mexico; the discovery of Brazil, Patagonia and the Straits of Magellan; the spanning of the Pacific; the complete circumnavigation of the globe; and the passage from Europe around the Cape of Good Hope by sea to India.

To accomplish the discoveries by the Polynesians in a period of one or at most two generations from the Marquesas would require perhaps only one Columbus and possibly his sons. Such a rapid expansion so long ago might help to explain why there are so few details in the admittedly fragmentary records. The second and third centuries AD may have been the golden age of Polynesian exploration.

At the very least the simulation results point the way toward additional items which must be kept in mind as one continues to investigate sites throughout the Polynesian Triangle. The evidence from traditions is slim but not zero.

Is it possible that there were the equivalents of the Christmas Star in the Polynesian past?

#### REFERENCES

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 Finney, Ben 1994. *Voyage of Rediscovery*, University of California Press: 255-306.  
 Lewis, David 1994. *We, the Navigators*, University of Hawaii Press, Honolulu.  
 Stephenson, F.R. & Clark, D.H. 1978. *Applications of Early Astronomical Records*, Oxford U. Press.

Table 1. Pertinant Supernovas

Year (AD)	Declination (deg. Then)
-76	14
64	5
185	53
247	-11
369	65
386	-24
393	-36
1006	-38
1181	61

Table 2. Migration "Opportunities"

DATE (AD)	START	TARGET	TARGET GROUP
-76	Samoa	Fatu Hiva	Marquesas
-76	Samoa	Nuku Hiva	Marquesas
-76	Samoa	Suwarrow	Cooks
-76	Tonga	Aitutaki	Cooks
-76	Tonga	Bora Bora	Societies
-76	Tonga	Huahine	Societies
-76	Tonga	Raiatea	Societies
64	Samoa	Futuna	Futuna
64	Samoa	Suwarrow	Cooks
64	Tonga	Rarotonga	Cooks
64	Valparaiso	Easter	Easter
64	Valparaiso	Pitcairn	Pitcairn Group
185	Fatu Hiva	Pitcairn	Pitcairn Group
185	Hawai'i	Futuna	Futuna
185	Hawai'i	Nuku Hiva	Marquesas
185	Kauai	Nuku Hiva	Marquesas
185	Nuku Hiva	Pitcairn	Pitcairn Group
185	Nuku Hiva	Raivavae	Australs
185	Nuku Hiva	Tubuai	Australs
185	Raoul	East Cape (NZ)	NZ
185	Samoa	Raoul	Kermadecs
185	Suwarrow	Rarotonga	Cooks
185	Tonga	East Cape(NZ)	NZ
185	Tonga	Raoul	Kermadecs
247	Callao	Henderson	Pitcairn Group
247	Futuna	Aitutaki	Cooks
247	Futuna	Palmerston	Cooks

Table 2. continued

DATE (AD)	START	TARGET	TARGET GROUP
247	Mangareva	Henderson	Pitcairn Group
247	Mangareva	Pitcairn	Pitcairn Group
247	Pitcairn	East Cape(NZ)	NZ
247	Pitcairn	Rapa	Rapa
247	Rarotonga	Norfolk	Norfolk
247	Rarotonga	Tubuai	Australs
247	Samoa	Easter	Easter
247	Samoa	Tahiti	Societies
247	Tahiti	Easter	Easter
247	Tahiti	Rarotonga	Cooks
247	Tonga	Rapa	Rapa
247	Tubuai	Raivavae	Australs
369	Fanning	Hawaii	Hawaiian Is.
369	Nuku Hiva	Hawaii	Hawaiian Is.
369	Samoa	Hawaii	Hawaiian Is.
369	Tahiti	Fanning	Fanning
369	Tonga	Apia	Samoa
369	Tonga	Hawaii	Hawaiian Is.
369	Tonga	Kauai	Hawaiian Is.
386	Callao	Easter	Easter
386	Fatu Hiva	Bora Bora	Societies
386	Fatu Hiva	Easter	Easter
386	Fatu Hiva	Huahine	Societies
386	Fatu Hiva	Mangaia	Cooks
386	Fatu Hiva	Moorea	Societies
386	Fatu Hiva	Raiatea	Societies
386	Fatu Hiva	Rarotonga	Cooks
386	Fatu Hiva	Tahiti	Societies
386	Mangaia	NZ	NZ
386	Mangareva	Pitcairn	Pitcairn Group
386	Rarotonga	NZ	NZ
386	Rarotonga	Rapa	Rapa
386	Tonga	Norfolk	Norfolk
393	Bella Coola	Hawai'i	Hawaiian Is.
393	Raivavae	Rapa	Rapa
393	Tahiti	Chatham	Chatham
1006	Henderson	Pitcairn	Pitcai
1006	Huahine	Chatham	Chatham
1006	Nuku Hiva	Moorea	Societies
1006	Raiatea	Chatham	Chatham

1181	Apia	Hawai'i	Hawaiian Is.
1181	Futuna	Kaua'i	Hawaiian Is.
1181	Nuku Hiva	Hawai'i	Hawaiian Is.
1181	Nuku Hiva	Kaua'i	Hawaiian Is.
1181	Rapa	Bora Bora	Societies
1181	Rapa	Raivavae	Australs
1181	Rapa	Tahiti	Societies
1181	Tonga	Hawai'i	Hawaiian Is.

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