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History of Astronomy: Polynesian Navigation

Wayfinding Across the Pacific

Aira Astralis

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Conclusion

This free sample contains the Introduction and Chapter 1. The complete book contains the full contents above.

Introduction

The greatest navigational achievement in the history of the human species has no monuments, no logs, and no instruments. Over some three thousand years, the ancestors of the Polynesians explored and settled the Pacific Ocean: starting from the western archipelagoes, they crossed an ocean covering a third of the planet's surface in canoes built of wood and fiber and sail, using no compass, no sextant, and no written chart, and found islands so small and so scattered that European mariners, arriving two millennia later with guns and chronometers, sailed past them for weeks at a time. Hawaii, Tahiti, Samoa, Tonga, the Marquesas, the Cook Islands, Aotearoa New Zealand, Rapa Nui: the settlement map of Polynesia, a triangle the size of two continents drawn in inhabited dots, is the record of navigators who held their course in memory and their landfalls in an oral science as exacting as any written one.

This book tells the story of that science and its recovery. The old wayfinding, the art the navigators called by names like wayfinding in Hawaii and the navigation of the ancestors in the Marquesas, was nearly lost in the century after the European arrival, its practitioners dying with the mission schools forbidding the teaching and the trading routes replacing the voyages; its modern recovery began in the 1970s, when a small band of Hawaiians and scholars built a replica of the ancestral double canoe, sailed it to Tahiti without instruments under a master navigator from the Caroline Islands, and proved before the world that the settlement of the Pacific had been neither accident nor luck but the deliberate work of a living tradition. The revival that followed, the canoe family of the present Pacific, the young navigators of the Hawaiian and Maori and Tahitian programs, is the second half of the story: a science rescued from extinction by its own descendants.

The subject has two deep interests, and the book keeps both. The first is technical: how do you cross thousands of miles of open ocean with no instruments, and find a dot of land? The answer assembled in these chapters, from the ethnography and the modern voyages, is a complete system: the star compass, the memorized rising and setting points of a hundred stars; the swells, the ocean's own signatures read in the dark; the sun and the horizon and the bird life and the clouds; the dead reckoning that holds the canoe's track in the navigator's mind across weeks of sea; and the discipline, the wakeful nights and the unbroken concentration, that made the system work.

The second interest is human: what does it mean to carry a science in memory, to teach it in song and lineage, and to lose it in a single colonial century, and to bring it back? The navigators of the Pacific are the case study of a whole category of human knowledge, and their story, from the Lapita

seafarers to the circumnavigating canoe of the present, is one of the great recoveries in the history of science.

A note on names and sources, before the voyage begins. The Polynesian words used in these chapters, the star names and the canoe names and the navigators' titles, are the tradition's own, from the Hawaiian and the wider Pacific vocabularies, and they are kept here in their plain spellings, without the accent marks of the academic orthography, in keeping with the book's typographic practice. The account draws on the standard sources of the field: the ethnographic record of the surviving navigations, the voyage literature of the revived era, the settlement science of the archaeologists and the geneticists, and the testimony of the tradition's own practitioners, whose accounts, in the voyaging societies' publications, are the subject's primary documents.

The historical claims, the migration's dates and the voyages' facts, follow the field's established findings; the interpretive ones, the meaning of the art and the cause of its loss, are marked as interpretation; and the reader who wants the full apparatus will find the field's literature a rich one, and the living tradition, on the ocean, richer still.

The chapters that follow travel from the ocean's settlement to the system of the wayfinding, its techniques and its teaching, the European encounter and the long dismissal, the experimental voyages that settled the argument, the modern science of winds and genes that tested the tradition, and the future of the revived art. The ocean that the ancestors crossed is still there, and the canoes are on it again, and the sky they steered by still turns over the Pacific every night: the story is not over, and this book tells it to the point where the reader can look at the stars over the sea and understand what the navigators saw there.

Chapter 1: The Discovery of Polynesian Navigation

The discovery, in the sense of the modern world's learning of the navigators, has three layers, and the first is the European one: the shock of the map. The exploring ships of the eighteenth century, entering the Pacific, found it inhabited everywhere: islands a few miles across, thousands of miles apart, populated by peoples with shared languages and crops and customs, whose ancestors, the question wrote itself immediately, had crossed the greatest ocean in the world in what? Cook, the most attentive of the visitors, asked the Tahitians directly, and his own tutor in the local geography, the navigator-priest Tupaia, drew him a chart of the archipelagoes that stunned the Europeans with its range; the canoes, the visitors saw, were large and fast, and the oral traditions spoke of voyages deliberately made.

But the instruments of the canoes were none, and the European mind, trained to the compass and the table, could not at first accept the answer the map demanded: an ocean crossed and settled by men with no instruments at all.

The second layer is the dismissal, the colonial century's answer to the shock. The scholars of the nineteenth and early twentieth centuries, working from the mission-era reports and the extinction of the practice in the colonized archipelagoes, solved the problem by explaining it away: the islands, ran the reigning theory, were settled by drift voyages, canoes blown off course by storms, their crews lucky castaways on lands they never meant to find. The theory, argued most influentially by the mid-century historian Andrew Sharp, held that the Polynesian arts were coastal, that the deep-ocean landfalls were accidents of wind and current, and that the traditions of deliberate voyaging were myth. The dismissal's root was the same as the first visitors' difficulty: a science without instruments, without writing, and without survivors was hard for the written world to believe, and the ocean's settlement was attributed to chance for want of any way to test the alternative.

The third layer is the recovery, the twentieth century's reversal, and it came from two directions at once. The scholarship turned first: the anthropologists of the 1960s and 1970s, working the oral traditions, the canoe archaeology, and the oceanography, rebuilt the case for the intentional voyage; the computer simulations of the era, casting thousands of drift voyages on the modeled Pacific, showed what the navigators' own testimony had said all along: the drift canoes died at sea, and the settlement of the archipelagoes could only have been the work of navigators who knew where they were going.

And the ocean itself turned the argument: in 1976, the replica double canoe

Hokule'a, built by the Polynesian Voyaging Society in Hawaii and navigated without instruments by Mau Piailug, a master of the Caroline Islands tradition, sailed from Hawaii to Tahiti, twenty-five hundred miles, and made landfall within a day of the plan. The voyage, watched by the world, ended the argument that a century of scholarship had been having: the Pacific was settled by navigators, and their science was real.

There is a pre-European layer to the discovery as well, the tradition's own knowledge of itself, and it deserves its paragraph. The Pacific's peoples never lost the memory of the voyages: the settlement narratives, the chants of the ancestors' arrivals, the genealogies that count the generations from the founding canoes, and the local geographies named for the navigators' acts, all carried the migration's history in the oral archive, long after the voyaging itself had ceased in the colonized archipelagoes. The traditions' testimony, discounted by the dismissal era as myth, has proven repeatedly to be a historical source of real weight: the homelands named, the winds and the seasons of the voyages described, the discoverers' names remembered, and the science of the later chapters, which tested the traditions against the ocean and the archaeology, found the memory more reliable than the theory that explained it away.

The discovery of the navigation, in the fullest sense, was therefore a rediscovery: the world's scholars and the Pacific's own rememberers converging, from the archive and the ocean, on the same truth.

One last layer of the discovery is the personal one, the individual meetings that carried the art across the silence, and the record keeps three names above the rest. Tupaia, the Tahitian navigator-priest who sailed with Cook and drew the Pacific's map for the European world, is the first: the tradition's representative at the encounter, whose knowledge astonished the visitors and whose death abroad cost the art its most famous witness. Mau Piailug, the Caroline master who navigated the Hokule'a and taught the Hawaiians, is the second: the last of his own lineage's full teachers, who chose to plant the art in a foreign archipelago rather than let it die at home. Nainoa Thompson, the Hawaiian student who became the revival's navigator and teacher, is the third: the first of the new lineage, whose voyages and school have carried the art to the generation now sailing. The discovery's human chain, from the first European's question to the young navigator's watch, runs through these three, and the subject's history is theirs.

The discovery's closing irony, which the reader should hold from the start, is that the modern world discovered the navigators just as the navigators were disappearing. The last master of the full Caroline tradition, Mau Piailug, was

teaching the Hawaiians because there was no longer anyone at home who would learn; the Hawaiian tradition had been extinct, its last practitioners dead a century before the revival; and the recovery, the schools and the voyages and the young navigators of the present Pacific, is a rescue in the true sense, the pulling of a living science back from the edge of silence. The discovery of Polynesian navigation, in the end, is the story of how the world came to believe a lost science, and of what that belief then made possible: the canoe on the ocean again, and the art in the hands of a new generation.

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ABOUT THE AUTHOR

Aira Astralis is a science writer specializing in astronomy and space exploration. Her work spans the full breadth of humanity's relationship with the cosmos -- from the earliest naked-eye observations to the engineering marvels of modern space missions.

Her books are built on a foundation of primary sources: peer-reviewed research, mission archives, and direct engagement with the scientific community. She writes for readers who want to understand not just what we know about the universe, but how we came to know it.

She believes that the most important frontier is not out there but in the gap between what scientists discover and what the public understands. Her books exist to close that gap.