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Practicing the Planetary with the Traditional Navigators of Oceania

On June 3, 1769, Captain James Cook recorded the transit of Venus from Tahiti during the first of his three expeditions to the Pacific Ocean. In 1761, poor weather conditions had thwarted a first attempt by the English Royal Society to mark Venus' path, an endeavor that involved astronomical observations from over 100 locations and constituted the largest international scientific undertaking the world had seen to date. 1769 would be the last opportunity for scientists living at the time to observe Venus soar across the sky between the earth and sun, as the Morning and Evening Star makes coupled transits only once every 101-121 years.

In 1716, astronomer Edmond Halley had identified Venus as the key to solving one of 18th century science's most prominent puzzles: the size of the solar system. Halley reasoned that, using the principles of parallax, one could calculate the distance between Earth and Venus and then trigonometrically solve for the distance between Earth and Sun. But attempts to measure Venus' transit were thwarted by the same problem that their success would help to solve: the accurate measurement of longitude.

The stakes of the problem were high: without the precise measure of longitude, European seafarers were frequently shipwrecked or lost. By the 18th century, latitude could be straightforwardly calculated in reference to fixed celestial objects. One simply had to measure the angle of the sun or the North Star in relation to the surface of the Earth. Longitude, on the other hand, did not afford such natural references. An elaborate and tedious method involving observations of Jupiter's moons was impractical at sea due to the ship's motions. And without knowing longitude, an astronomer could not fathom their precise location on a celestial body, a location necessary to calculate parallax views. In the European spatial imaginary, longitudinal lines held the key to making the vast distances of the globe navigable, and the distances of the cosmos intelligible.

By 4000 BCE, Austronesians, likely on the island that is now Taiwan, had developed the craft of long-distance travel by outrigger sailing canoe. Early Austronesian seafarers developed the single-hull canoe by about 2200 BCE, allowing them to settle in Near Oceania, the corridor of islands extending from Southeast Asia to the eastern edge of the Solomon Islands. By 1000 BCE, the Lapita people of what is now New Caledonia developed double-hull canoes, facilitating transportation of larger exploring parties and more supplies for new settlements, and allowing them to reach Remote Oceania, a region of distant archipelagoes in the Southwestern Pacific. Within a century, Lapita people established settlements throughout present-day Vanuatu, the Loyalty Islands, New Caledonia, and Fiji.

Alongside the development of canoes grew systems of navigation that allowed for the further venturing into open seas. Moving eastward into the Pacific Ocean, distances between islands grow from tens of miles to hundreds of miles to thousands of miles. By 1000 CE, these voyagers

had discovered every habitable island in the Polynesian Triangle, about 14 million square miles of ocean, within which only about 120,000 square miles is land. The severe improbability of finding and successfully inhabiting these wildly remote archipelagos astounded Europeans, who were perplexed, and [greatly aided](#), by Polynesian navigators' topographical knowledge of the oceanscape.

Polynesian voyagers used no navigational devices on board their canoes. They used the sun and other stars, the species of clouds and how light and heat reflect differently when there is land underneath them, different colors of the sky, migration routes of seabirds, and the patterning of the ocean itself. The constant observation of these environmental cues was constantly indexed against intricate mental representations of elemental dynamics.

Two migrations across the great Pacific: one westwardly, European, and predicated on a technical capacity for precise measurement; one eastwardly, Polynesian, with no instruments onboard. Unfolding over vastly different time scales, these movements met one another during the centuries of European imperialism in the Pacific.

Each of these techniques of navigation implies a certain organization of self, boat, world, and knowledge. Each is a meeting of conceptual and material space in the traversing of distance according to its representation in the tools, minds, and cosmologies of navigators. Successful navigation relies on the continual interweaving of conceptual models of space with the localized perspective of experience.

Space is not pre-given but made experiential and knowable in particular ways. The planetary, as both geographical and conceptual space, is a nascent formation that stretches the bounds of existing spatial intuitions. As [ancient world maps](#) show, the space of the world has been imagined and represented in vastly divergent ways, and in service of myriad spiritual, political, or economic purposes. The planetary is contingent on our ability to sense and imagine it.

As a practice that operates through the interactivity of spatial abstractions and the phenomenal world, navigation poses a method to think the emergence of the planetary in its representational and perceptual dimensions. The planetary is often framed as a consequence of the technical consolidation of knowledge, and comes to stand for a tightly integrated network of biological, computational, geological, and social systems that render the planet a single knowable object. Traditional navigation demonstrates that while the planetary is a product of networked knowledge, it is *also* a state of immersion in a multiplicity of subtle and dynamic processes – a subjectivity that recognizes the situatedness of human life within the nonhuman world.

The conquest of the globe by European explorers was made possible through cartographic projection on distant physical locations, a maneuver of abstraction predicated on the scaling of particular notions of space and time to the complete expanse of the earth. European circumnavigation of the globe across oceans created the material infrastructure for commerce, colonialism, and imperialism, but not before it created the world as consistent object and

legible cartographic space. The planetary, as a nascent conceptualization of the earth as a set of entangled processes, can only function as a paradigmatic conceptual shift if potentials for knowing and sensing the world are rescued from within the historical path dependencies of homogenization that enabled the very materialization of planetary interconnection.

While distributed intelligent systems, vast computational power, satellites, and sensors articulate the planetary condition in formerly unseeable dimensions, our imagination of the planetary is at risk of remaining mired in the representational and technical infrastructures of control that figure the planet as separate from human life. The imagination of planetary space is also an imagination of planetary selves; the way planetary space is represented and felt matters if human and nonhuman worlds are to coalesce. As technicity scales to the level of the planetary, it must be matched by new modes of perception and sensitivity on the part of human planet dwellers.

In a century so often touted as “Pacific,” when the negotiation of power on either side of this ocean is of crucial importance to emerging planetary dynamics, there is a contemporary remembering of Oceania’s traditional methods of wayfinding – finding one’s way by orienting perception in relation to the ocean environment. Beginning with a series of indigenous revival movements amongst Pacific Islanders in the 1970s, groups of voyagers in the Pacific have reconstituted both the traditional double-hulled canoe and traditional systems of non-instrument navigation, enabling them to sail the Pacific and the world.

Wayfinding and its operable conceptions of space emerge from millennia of interaction with elemental dynamics and invite notions of the planetary that broaden the ways in which the planet becomes felt. Wayfinding cultivates a recognition of the planet as an inter-relationality of processes, human and nonhuman, challenging representational practices and cartographic logics that encode the planet as object.

Looking beyond the Pacific as an arena of geopolitical competition between its bordering nations, traditional navigational technics roots planetary thinking in the relationships between self, world, and knowledge that evolved within the waters of the Pacific Ocean itself. Traditional ocean navigation, as a technics eclipsed by the success of the European cartographic practices that would produce the planet as an object, contains representational, perceptual, and relational resources to re-embed humans and our technical activities in the movements of the world.

Ways of navigating

For European cartographers and navigators during the first centuries of expansion, every plausible method for establishing longitude relied on the accuracy of time. Longitude itself is derived from the measure of time: the 360 degrees of the earth’s rotation around the sun are divided into 24 lines, meaning that lines of longitude are one hour, or 15 degrees, apart. Longitude was easily calculated if one knew the time at the point of origin and the time at the current location, but the unreliability of existing clocks to hold accurate time, as well as their

pendulum mechanism, constituted an enormous barrier to seafarers' ability to orient and navigate in open waters. This meant that the European desire to appropriate space pivoted on the technical capacity to assure the accurate measurement of time.

[The problem of longitude](#) would be solved by John Harrison, a carpenter and clockmaker who spent over 30 years crafting successively more accurate timepieces. In 1773, he received the monetary reward (£23,065, or over £3 million today) promised by the British Parliament in the 1714 Longitude Act, which demonstrated the national imperative to master longitude technically, and matched earlier rewards offered by Spain and the Netherlands. Captain Cook would use versions of Harrison's model, which the clockmaker deemed the marine, on his second (1772-75) and third (1776-79) voyages to the Pacific, enabling him to traverse progressively larger swaths of the ocean and globe.

With the mechanical harnessing of time, the planet and its oceans became a practically unified space, chartable through the matrix of latitude and longitude. For European navigators, the globe was made legible through a cartography of the grid, and accessing the people and places of the globe was functionally a matter of orienting within these virtual lines. Like the mathematical lines of Euclidean geometry, which have only length but not width, lines of latitude and longitude move through space but they are not themselves spatial. The grid is above the earth, but not of it.

With the success of European systems of navigation, a certain conception of the globe as gridded space subsumed a navigational tradition that demanded sensitivity to the ocean as a world in itself. For the navigators of Oceania, there was no system of coordinates overlaid on this ocean world. Rather, they coordinated visual, haptic, sonic, and olfactory cues with internalized knowledge of the stars, sea, and islands – navigator and knowledge mediated not through measuring devices but through embodied memory and reciprocity with the nonhuman world.

Within the European cartographic tradition, orientation is achieved by using metrics to transform planetary space into a uniform realm, then synchronizing locality with these virtual coordinates. For the wayfinders, orientation is only possible through the cultivation of sensitivities to the ocean and atmosphere in their subtle, elemental movements.

European exploration and colonization of the Pacific began in the 16th century, largely impelled by the search for spice-rich islands and a mythical undiscovered continent in the South Pacific. But it was not until Captain Cook's voyages that the Pacific was systematically charted, locations fixed on a map spreading coherently from New Zealand to the South Pacific to the Hawaiian archipelago to the Bering Strait. Yet by the time of European contact, nearly every habitable island in the tropical and subtropical Pacific was home to a human population. Moreover, archaeological evidence attests to regular voyaging contacts among island communities.

To combat the then-widely accepted belief that Polynesia had been settled over long periods through accidental voyaging – so-called “[drift theory](#)” – an anthropologist, an artist, and a sailor together formed the [Polynesian Voyaging Society](#), or PVS, in Hawai‘i in 1973. An experimental technics, PVS was also an experimental epistemics, an ambitious remembering of a nearly extinct knowledge. When PVS built and launched Hōkūle‘a, the first voyaging canoe built in the Hawaiian Islands in over 600 years and named for the star Arcturus, there were only six recognized master navigators in the Pacific.

In 1976 Hōkūle‘a successfully used traditional non-instrument navigation to sail the over 2,600-mile journey from the Hawaiian Islands to Tahiti. The Satawalese master navigator Pius “Mau” Pailug, who led the journey, did not know how to read a map. The path is preserved in the Tahitian language as the “road to homeland,” but holds significant sailing and navigational challenges, including crossing the doldrums, the belt around the equator where the two biggest consistent wind systems on the planet collide. Upon its arrival in Tahiti, Hōkūle‘a was welcomed by over half the Tahitian population, and its return to Hawai‘i was the most-watched media event in Hawai‘i to date. It was as if the canoe, and with it the deep skill of non-instrument navigation, had travelled from the mythic space of a distant past into the tangible present.

Detailed ethnographic investigations have revealed a common system of wayfinding across Oceania, with regional variations. The center of traditional non-instrument navigation is the [star compass](#), a mental model that conceptually divides the 360 degrees of the horizon into thirty-two houses, enabling the navigator to track the place in the ocean from which the stars arise and the place to which they return. The star compass is a highly technical system that the navigator uses to find the location of the ship based on the regular movements of the stars as they cross the sky.

The navigator must memorize the speed and direction of the canoe over the entire journey, correlating this motion with star paths, which shift constantly. The rising of a star in the east and its corresponding setting in the west occurs four minutes earlier each day due to the earth’s orbital motion around the sun, and the direction of the nightly progression of star paths varies seasonally.

Built into non-instrument navigation is the necessity of correlating one’s own movements with movements occurring at the celestial scale. Location only becomes intelligible by conceiving relationships between one’s path across the ocean and the rhythms of the sky, information ingeniously condensed in the star compass as a spatial as well as a narrative and mythological tool. In the Hawaiian star compass used by Hōkūle‘a, the names of houses within each quadrant relay meaningful information about what is likely to be found within that slice of the horizon. For example, Lā, meaning “sun,” is found closest to the east-west axis; Noio, or a bird also known as the Hawaiian Tern, signals proximity to land; Nālani means “the heavens,” Nāleo means “the voices from the heavens,” and Haka means empty, pointing to the relatively star-sparse skies around the North and South.

The picture of the world that emerges through traditional star navigation is one comprised of kinesthetic bodies, of which humans are only one small sort. Navigators in the central Carolinian atolls even evaluate their position through the mental construction of a moving reference island, in which the island “moves” along the horizon in terms of shifting star paths.

Directionality and orientation are only possible through an understanding of the embeddedness of human navigators in planetary-scale movements, which are themselves made sensible through education in perception. Navigation makes it clear that modes of perception are intimately entangled with technics, as sensing and orienting condition one another and possibilities for survival on the planet.

Waves

While the star compass provides the central conceptual tool of orientation for navigators, star-based navigation is limited by the brute fact that stars are absent from the sky during both days and overcast nights. The primary alternative to celestial navigation is the tracking of wave patterns.

Ocean waves are only one visible part of a [continuous oscillation of energy](#) that has shaped the universe since its very beginning. The energy that the wind transmits to the sea produces waves. In the movement of waves across the ocean, this energy is communicated through water across distance. If undisturbed, a wave can travel across an entire ocean basin. When waves encounter an object in the ocean, however, such as an island, they exhibit the same behaviors as other waves – electromagnetic and sound. As ocean waves approach a boundary, these waves change direction, speed, frequency, period, and energy.

It is this knowledge of how waves move across the ocean’s surface that allows Pacific navigators to orient in ocean space. They navigate not through the invisible static grid of cartographic representation, but with the surface of the ocean itself as interpretive key. Navigators knew that islands block, reflect, and refract waves and ocean swells, a conversation between land and sea that results in distinctive patterns of calm waters, criss-crossing wave patterns, or waves moving toward one another.

If geo-graphy is the writing of the earth, the un-inscribability of the ocean’s surface poses a unique challenge to map-making traditions that fix the planet within a network of steady lines. Ocean waves’ movements of reflection and refraction do not exist except through the medium of ocean water itself; this substrate dependence makes these directionalities substantively different from the abstract lines of latitude and longitude that came to structure how we think of the surface of the earth.

Navigating by the waves involves responding to subtle environmental cues, a responsiveness possible only through the cultivation of haptic sensitivities. As Mau Piailug taught Nainoa Thompson, who in 1980 became the first Hawaiian and the first Polynesian to practice long-distance wayfinding since the 14th century, “If you can read the ocean you will never be lost.”

Skilled navigators lie inside the hull of the canoe to kinesthetically sense wave patterns as they influence the boat's movements, discerning direction from the particular rhythms and textures of waves.

Ocean swells are the most regular species of wave on the open ocean. Large waves produced by consistent winds, swells travel thousands of miles across the sea. At any given location in the tropical Pacific, up to four consistent swell patterns are discernible. Wave navigation becomes a type of embodied remote sensing, as the navigator draws on proprioceptive awareness to orient the canoe within the vast Pacific Ocean.

In correlating embodied knowledge with mental representations of space, the scale of the immediately perceptible is synchronized with the scale of the planetary. The sensitivities required for successful wave navigation orient the self in a world understood as continuous interaction between the energy of the universe, the surface of the ocean, and the movements of the canoe.

Cosmological relationships between self and world mediated through the ocean wave endure across the Pacific. The Hawaiian phrase for surfing, *He'e nalu*, is literally translated as "wave sliding." *He'e* can also be translated as v. to melt, flow, or skim as milk; to hang down; to skip, flee, or put to flight; and n. the line that supports the mast. *Nalu* is defined as wave, or as "full of waves;" v. to ponder, meditate, or speculate; and n. amniotic fluid. *He'e nalu* is the action of sliding over ocean swells, and it is also [putting to flight the formation of waves](#). Navigation, which so clearly links knowing and surviving, is possible through this binding of subject and sea, self and elemental movements.

In the seas of the Marshall Islands, navigators developed the technique of wave piloting, in which swell pattern disruptions are modelled in "[stick charts](#)." In fact, so-called stick charts are not cartographic representations, but illustrations of analytic principles that navigators use to find islands. Not used onboard canoes but rather studied and memorized onshore, these heuristic tools visualize how swell patterns are disrupted by low-lying coral atolls. The foundation of wave piloting is *di lep*, or backbone, which is said to run between atolls like a road.

In 2005 oceanographers from the University of Hawai'i [travelled](#) to the Marshall Islands to investigate *di lep*, a phenomenon that could be sensed and named by trained Marshallese navigators but evaded the working conceptual frameworks of oceanography and wave mechanics. The *di lep* was said to connect each atoll and island in the Marshall Islands to all 33 others, yielding 561 distinct paths. This road in the sea, testified to through oral knowledge and stick charts, was invisible within contemporary oceanographic renderings, a signal lost within the noise of the ocean's constant complex movements.

Guided by the few remaining Marshallese individuals with a working understanding of traditional navigation, these university researchers set out to use wave navigation to travel between the atolls of Majuro and Aur. They mapped the journey through GPS locations and

corresponding wind and wave details at each coordinate, and later supplemented these figures with wind data collected by satellite and local bathymetry.

Working for months to correlate this data with the supposed path of *di lep*, the researchers discovered that the path they had travelled was exactly perpendicular to a dominant eastern swell flowing between Majuro and Aur. Where the swell turned its path in response to submerged land masses of surrounding atolls, the *di lep* bent its path to match. When the sailing vessel was oriented at 90 degrees to this swell, the hull would rock symmetrically. The location of the invisible ocean road would reveal itself only through corporeal sensation caused by the translation of the ocean's movements to self and canoe.

The Pacific

The influential Tongan and Fijian scholar Epeli Hau'ofa referred to Oceania as a "[sea of islands](#)" interconnected by ocean, countering the non-islander's view of the Pacific Ocean as an uninhabitable, hostile, or empty space, scattered with some vacation archipelagoes. Rather, the "sea of islands" framework imagines the Pacific as an oceanic home interlaced with well-travelled thoroughfares, populated for a dozen millenia by a diverse humanity only recently – in the 18th and 19th centuries – categorized by Western scholars as Micronesian, Polynesian, and Melanesian.

Oceanic wayfinding methods developed and persist within this specific region of the globe. The practices and histories are intertwined with this particular spatiality. Centering the islands, seas, and people of Oceania challenges the definition of the Pacific from a perspective situated outside of its rim. The Oceanic perspective looks outwards from within rather than inward from without, inviting planetary perspectives based on the rethinking of the Pacific as an integral point on a spatial and temporal continuum.

Beginning with a period of growing imperialism in the later 19th century, the Pacific evolved from a site of remote colonial outposts to a thoroughly occupied seascape. In the 20th century, [nuclear politics](#), ocean and land [mining](#), and [commercial tourism](#) further configured the Pacific as a strategic geopolitical arena. With these developments, the Pacific was reified on a global scale as a space defined through the larger powers at its periphery. The construction of the "Pacific Rim" in the 1970s is a product of the particular world concept of the Pacific's continental countries, chiefly the United States and East Asia, and generates the interior Pacific as a realm for the free flow of capital. In the 1980s, with the economic ascent of Japan, pundits predicted the coming of a new 'Pacific Century,' a future for the global economy centered on the so-called Asia-Pacific and typically omitting Oceania.

When thinking about the Pacific, non-islanders often conjure a map of the ocean from the "[God's eye view](#)" of the planet so ubiquitous in visual culture today. Satellite images relay to us a constant positioning of our selves according to GPS coordinates, encouraging us to navigate three-dimensional planetary space through its projection onto two-dimensional maps. The view of Oceania from above, however, obscures its vastness and complexity as experienced and

imagined from within. Hemmed in by incomparably larger nation-states, the Pacific itself becomes a void. Most world maps, being centered on the Atlantic, visualize the Pacific as fragmented; the ocean is divided in two, falling off the ledges of represented space at the left and right sides of the page.

Since the 19th century, and greatly aided by advances in telecommunications in the 20th century, geographers and scientists have composed disparate sources of data into holistic pictures of the Pacific Ocean, rendering the “impossible object” visible. Maps and models of animal migrations, fog patterns, volcanic activity, and weather systems like El Niño are viable only through the synthesis of partial perspectives into a theorized whole. Modelling the Pacific is a centuries-long experiment in the synchronization of dispersed information through models that produce earth and earth systems as single objects of knowledge. And the modelling of the Pacific itself has produced crucial knowledge for planetary systems science.

If the Pacific was a crucial testing ground for the notions of cartographic space that would help to weave together the global age, an immersion in Pacific waters may generate alternative conceptions of space to conceptually structure a planetary age. As Pacific Studies scholar Margaret Jolly says, “all imaginings of the Pacific and its rim are simultaneously visions of space and time.”

At 165 million square kilometers, or 63 million square miles, The Pacific Ocean covers one third of earth’s surface. It is large enough to fit all of earth’s land, with room to spare. To see the entire circumference of the Pacific at once, you need to travel 22,000 miles vertically into space. It holds half the world’s ocean water, and is home to most of the world’s islands. It contains a tiny fraction of the worldwide population, but close to a quarter of the world’s languages. Given the sheer enormity of the Pacific, its peripheralization in world-historical narratives is striking – an absence of a very large presence.

The Pacific Ocean reaches from the Arctic to the Antarctic, from Southeast Asia to Central America. It abuts five continents and straddles the 180th meridian, connecting Eastern and Western hemispheres. (The 180th meridian, which was selected as the international date line due to its avoiding bisecting continents, occasionally poses a chronological problem for island nations, as evidenced by Samoa’s 2011 decision to [switch hemispheres](#) for the second time, skipping a day and signalling closer alliance with Asia.) Characterized by a great diversity of humanity and ecology, the Pacific is a region where worlds meet and intermix. The Pacific exists at hemispherical scale, but it is a hemisphere constituted by the encounter of great variety, the flux of edges and boundaries, the interflowing of things.

The challenge of thinking the scale and complexity of the Pacific mirrors the challenge of thinking the scale and complexity of the Planet as a whole. More than any other region or ocean, the Pacific suggests a whole world.

Thinking with the Pacific inverts overly simplistic notions of what is a center and what is an edge. Rather than the metropole surrounded by its colonies – and the Pacific hosts some of the

world's last vestiges of formal empire, including the U.S. territories of Guam and American Samoa and French territories of French Polynesia and New Caledonia, which saw [deadly riots](#) over decolonization beginning in May 2024 – an Oceanic perspective places its gathering of islands at the center, surrounded by more economically and politically influential countries. And the perspective grown within these islands often subverts the schemas with which the world is woven together. For example, The Honolulu Museum of Art's Asian art wing is the building's western side, and the European art wing is its eastern side, a pithy architectural gesture that visualizes the geographic situatedness of the Pacific viewpoint, according to which the so-called "East" is to the West, and the so-called "West" lies to the East.

Hawai'i and other Pacific islands are midway points between Asia and North America, a geographical circumstance that has made them liable to continued militarization, but also to their self-conceived identities as zones of interaction and exchange. The multiplicities of histories, cultures, languages, and aesthetics inter-dwelling on these islands question the still-prevalent association between national identity and purity of origins.

An edge, a margin, a periphery comprised of the earth's largest and deepest ocean. When taken together, the Pacific and its islands constitute a collective defined not in relation to a single metropole or continent, but through a heterogeneity federated by a belonging to the Great Ocean. The concept of the nation-state founders when thinking the history and meaning of Oceania. The Pacific world becomes a human-nonhuman ensemble that transcends the philosophical and geospatial motif of national borders.

Islands

The era of the global was born out of the aggregate activity of nation-states as economic and political actors. As Jonathan Blake and Nils Gilman [write](#) in Noema, attempts to confront planet-wide threats such as climate change and the pandemic are hampered by political structures in which decision-making power reduces to deliberative processes between separate nation-states. These nation-states, so often inadequate to problem-solving at both planetary and local levels, are contingent political entities that emerged from a conceptual separation between the human and the planet. Globalization is the result of a particular human (and particular amongst some humans) construction of collectivity acting atop the nonhuman world in a sort of perpetual tragedy of the commons.

Within this coalescing of world as internationalism, global history has been spatialized through the mapping of development onto regions of the world disparately matched on technological or economic measures. Within the single dimension of development, the Pacific islands, and islands in general, are typically placed in the far away/distant past. A continental perspective typifies islands in terms of what they lack. The island, so far from the large centers of population against which it is defined, is characterized by isolation, dependency, and the deficiencies of scale. Islands are conceptually removed from the continent, separated by an ocean seen as void, alien, or other – a [terrestrial bias](#) to planet-wide thinking that belies the fact that the global ocean covers 71% of earth's surface.

Thinking with islands and islanders queries land-based conceptions of the globe, which take the stable ground – constant, unchanging – as the foundation for spatial intuition. Centering fluidity and correspondence rather than the perceived permanence of continents, the ocean typifies constant movement across phase states and imposed boundaries. Far from being only a metaphor, the ocean is of extreme importance for earth systems. Roughly half the earth's oxygen is produced in oceans by [phytoplankton](#). Oceans [absorb](#) nearly one third of carbon dioxide emissions and [capture](#) 90 percent of excess heat generated by these emissions. Earth's oceans are not a hydrosphere sitting atop a more solid geosphere; they are a living and shifting animal, mineral, microbial, vegetal essence surprisingly overlooked by the chromatic encoding of a “green” future in spite of living on a Blue Planet.

The ocean is a medium of biogeochemical exchange extending to the atmosphere and the land; it is also a medium of exchange within the existing human order. 54% of the total area of the world's oceans are designated as international waters, making the ocean an actionable space for conceptualizing planetary interdependence. Although imperilled by geopolitical claims on the [ocean as territory](#) and by activities such as [deep sea mining](#) that continue to operate in clumsy and inequitable ways, the ocean could come to signify a site of coalitional promise as much as an abstracted field of strategy and exploitation. Oceanic space is also a practical analogy for tensions that arise in space exploration between outer space as a field for the playing out of competing national interests and the cosmos as transcending factional demarcation.

If the continental perspective conceives of the space of the world through the operative logics of the amalgamation of nation-states, the island perspective foregrounds the elemental reality of reciprocity amongst forms of life. Following Hau'ofa in recognizing the ocean as a vital medium of connection in contradistinction to an empty space of separation, the planetary might be envisioned as an interactivity of islands.

In the era of the global, human collectives transact across borders exogenous to the planet itself; an island- and ocean- informed idea of the planetary is composed through recognition of embeddedness within a single yet heterogenous planetary space. Within this imagination of interdependency at a planetary scale lies a vision of history conceptualized, by Susan Buck-Morss, “in terms of simultaneities in space, instead of sequential developments in time.”

In departing from the global, the planetary has to overcome the biases of location that parcel world centers from peripheral zones, little from big histories. The forcefulness of globalization created a singular definition of world as a homogenous field over which territorial sovereignty is constantly negotiated, a production of sameness that rendered the globe an object to dominate. A sense of planetary interdependence can emerge not through the construction of a new geopolitical fulcrum, whether it be the U.S., China, or any other nation-state, but through islands that construct a world through the totality of their intricate relations.

The Martinican philosopher Edouard Glissant was the thinker of islands and archipelagoes. His “archipelagic thought” saw the coasts of islands as porous edges, and drew out from the perceived isolation of islands a paradoxical worldliness. Within the experience of islands and islanders is the basis for his [Poetics of Relation](#), which emphasizes the possibility of existing simultaneously in a single place and in the world as such. Glissant’s “Whole World” rejects totalizing systems, positing instead a single world manifested through the relations between innumerable particularities.

The “Whole World” might be conceived as the planetary having overcome the homogenization, control, and objectification that knitted together the global. Insisting that the islands of the world consciously meet one another, Glissant’s archipelagic thinking renders encounter as necessary to the preservation of the self – interdependency as survival – rescuing world thinking from the traps of both universalism and localism. He writes, “The place that is particular to us is the place where we are, where we were born; it’s our land; and the place that is common to us is the Whole-World.”

Oceanic navigation is a practice through which this world-as-relation may come about. In moving through spaces of in-betweenness, open to the full sensorium of the world, it becomes clear that while we have connected the things and places of the world through the abstract planes of cartography and geopolitics, the true relation between things is within the elemental movements of the world itself. Wayfinding through the water that connects animates a re-imagining of the relationship of parts to wholes, as the world transforms from aggregation to conversation. Things interact because they were never separate to begin with; there is always a ground, and the ground is a watery ground.

Traditional navigators are educated in a perception attuned to the planet as a set of subtly interconnected processes. The success and survival of traditional navigation indicates that a capacity for visualizing and knowing the planet must be met by a capacity for sensing and feeling it.

To successfully navigate the world in its complexity may require an attunement and sensitivity increasingly [outsourced](#) to algorithmic processes. Carolinian navigators developed an elaborate stored memory of marine life extending from islands along the directions of the star compass. Some navigators read cloud formations for the disruptions caused by high volcanic islands and the reflection of green coral atolls. Solomon Islands navigators traced underwater streaks of light, or *te lapa*, to surmise the locations of islands. Others had names for the different widths and colors of the sun’s path on the water.

For the navigators, orientation is inconceivable without the multidimensional and multisensorial information imminent in the world itself. Attention to this vibrancy turns the vastness of ocean space into an intricately inter-travelled place – as the activity of living in a house transforms it into a home. As the geographer Yi-Fu Tuan [wrote](#) about Polynesian and Micronesian voyagers, they have “conquered space by transforming it into a familiar world of routes and places.” Coming to see the ocean as a network of roads linking faraway places,

navigation operates through “integral experience rather than deliberative calculation.” Wayfinding is an intimacy with the world before the world becomes a map.

Planetary place-making

During the return leg of Hōkūle‘a’s 1992 voyage from Hawai‘i to Rarotonga in the Cook Islands, Nainoa Thompson spoke by satellite phone with Charles Lacy Veach, a NASA astronaut orbiting the Earth on mission STS-52 of the space shuttle Columbia. Columbia’s STS-52 mission deployed Laser Geodynamics Satellite 2, or LAGEOS 2, a research satellite designed to study the geodynamics of the Earth, including determining the planet’s shape and measuring the movements of tectonic plates associated with continental drift. Among the most precise position references available, LAGEOS satellites measure distances by receiving and returning pulsed laser beams from Earth ground stations. LAGEOS communicates narrow beams of light waves across great distances, tracking their interaction with fixed objects to surmise location – wave navigation.

Shortly after Veach returned to Earth, he arrived in Hawai‘i, where he grew up, and joined Hōkūle‘a for the last leg of its 1992 voyage, from Moloka‘i to O‘ahu. After returning to land, Veach shared his experience of seeing the Hawaiian Islands from Columbia’s porthole window. “The sight of the islands took his breath away. He saw the islands and the planet in one vision – that planet earth was just an island like Hawai‘i, in an ocean of space.”

The first photograph of the whole Earth from space was taken in 1966 from the satellite ATS-1. In 1972, the Apollo 17 mission delivered the first fully illuminated color image of the Earth taken by a person. This [photo](#) of the blue planet came to stand for ecological awareness, unity through globalization, and the configuring of planet-wide systems through the language of cybernetics and ecology. 1972 was also the year of the publication of James Lovelock’s [Gaia Hypothesis](#), which postulated that the whole planet evolved and self-regulated as a single organism.

Veach saw the whole planet and his island home at once. He saw the Earth as broad, complete, yet undiminishing of the deep time, the human and nonhuman lifeworlds rooted in singular locations. In the [photograph](#) he took from low earth orbit, the island of Hawai‘i is visible under the gentle curve of Earth’s horizon, which glows sapphire blue against the deep black of space. Floating in the spacecraft window is an adze, a blade similar to an axe, made of volcanic stone from Hawai‘i island’s Mauna Kea, where 35,000 years ago a glacier super-cooled the freshly erupted magma to produce a kind of stone particularly useful for carving canoes.

In Veach’s photo, the Earth is not a monolithic totality, as it is liable to become when figured within universals and coarse systems thinking. Rather, it is entirely coextensive with infinite particularities, or in Glissant’s words, it is a “schema of belonging and relation, at the same time.” And as an islander, Veach knew that even the single whole Earth was not a discrete thing in a void, but a living island in a living ocean, a border porosity attested to by the [lack of consensus](#) on where earth’s atmosphere ends and outer space begins.

Veach's partnership with PVS eventually inspired the 2013-2019 Mālama Honua Worldwide Voyage, Hōkūle'a's six-year trip circumnavigating the globe using traditional wayfinding techniques. Mālama Honua, meaning "to care for the Earth," brought the knowledges of islanders and navigators to the planetary scale by cross-pollinating ideas and experience across 150 ports. In 2023, Hōkūle'a began Moananuiākea, a four-year voyage circumnavigating the Pacific Ocean and named for the Hawaiian word used to designate the Pacific. After rerouting the trip back to Hawai'i following the devastating [Lahaina fires](#) on the island of Maui, Hōkūle'a will go on to visit 36 countries and archipelagoes, nearly 100 indigenous territories, and 345 ports. Hōkūle'a's voyages are designed with the distinct purpose of securing the knowledge that allowed island populations to live for millennia with limited resources, and evolving this knowledge to the scale of the earth to discover methods of habitability on an island planet.

These voyages actualize ocean space as planetary space and planetary space as ocean space, treading paths across the globe that emerge through the elemental dynamics that are our common belonging. The vision of the planet that transpires is one that not only connects geographically distant communities and cultures but ties these human worlds together with and through the sea, the stars, and the atmosphere.

The Samoan poet Albert Wendt wrote, "In the final instance, our countries, cultures, nations, planets are what we imagine them to be." And for the Martinican philosopher Glissant, "the world escapes us as comprehension and concept. It is through the imaginary that one can attempt to grasp it."

Previous renditions of imagining at the scale of the world have reduced its texture through the homogenization of ways of knowing and being, the conceptual siphoning of human and nonhuman realms, and the pretenses of control that underly both. Even nascent imaginings of the planetary are liable to create low-resolution images of the world through the presumed universality of emerging technicities and futures. The challenge is to weave planetary institutions, knowledges, and cultures that are also responsive to the subtleties of a planet that is *already* interconnected, heterogenous, kinetic.

Thinking the planetary through navigation is an exercise in coordinating the abstractions of a geographic totality – space – with the immediately perceptible and meaningful – place. Our senses bind us to the places that we also constitute; they are thresholds where matter outside recasts itself as matter inside, where we are met and transformed by knowing the world. In navigating, it is precisely through this receptivity to the full spectrum of the world that makes it possible to participate in space at a large scale.

At the planetary scale, our capacities for modelling and generating whole systems might be augmented with a felt relation to the places and movements that are the substrate of the planet. Representations of the world may be returned to the world itself. To wayfind is to feel em-placed in the deep structure of the world manifest as an ocean wave, a streak of light, an

electrical impulse. In the end, perhaps this is what the navigators give us: a metaphor and a method to make the whole planet feel like a place, or a place of many places.