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# From Interstellar Imperialism to Celestial Wayfinding: Prime Directives and Colonial Time-Knots in SETI

*William Lempert*

Mankind's journey into space, like every great voyage of discovery, will become part of our unending journey of liberation. In the limitless reaches of space, we will find liberation from tyranny, from scarcity, from ignorance and from war. We will find the means to protect this Earth and to nurture every human life, and to explore the universe. This is our mission, this is our destiny.

—Ronald Reagan

In 1768, James Cook and his crew left England on the HMS *Endeavour* (*Endeavour*). This voyage was ostensibly a scientific expedition to measure the transit of Venus in Tahiti, which was part of a global project to calculate the distance between the Earth and the Sun. Soon after doing so they landed in Aotearoa (New Zealand) and Australia, initiating centuries of violent dispossession through settler colonization. In May of 2018, I participated in an Indigenous studies working group—along with Kim TallBear, David Shorter, and Sonya Atalay—through the Making Contact 2018 workshop hosted by the Search for Extraterrestrial Intelligence (SETI) at the Berkeley SETI Research Center. We were asked to develop a working paper drawing on Indigenous studies, which could inform actions taken by SETI should they succeed in receiving a signal from intelligent extraterrestrial (ET) lifeforms. Our recommendations emphasized what SETI could do immediately to clarify their intentions, methods,

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and ethics. This experience inspired generative discussions within our working group in subsequent months regarding the role of settler science in outer space exploration, culminating in a panel at the Native American and Indigenous Studies Association annual conference in Aotearoa and this special issue.

Here I trace parallels between Cook's infamous eighteenth-century *Endeavour* voyage and current SETI projects.<sup>1</sup> Although separated by vast time and space, they share key qualities including their appeal to celestial science in the service of all humanity and a discrepancy between their ethical protocols and the likely long-term outcomes of their projects. Drawing on Dipesh Chakrabarty's nonlinear conception of the "time-knot," I argue that these two ages of discovery (historical and space) are not simply analogous but are part of a continuous lineage of imperial conquest. I link *Endeavour* and SETI to demonstrate how tracing the details of colonial time-knots can provide critical insights into contemporary space science.

In this paper I: (1) articulate the time-knot interconnecting *Endeavour* and SETI in their respective ages of colonial discovery; (2) contrast their intentions and imagined outcomes, drawing on *Star Trek's* "prime directive" and our Indigenous studies working paper for the Making Contact 2018 workshop; and (3) explore how the past, present, and future converge in Hawai'i, gesturing toward decolonial engagements with outer spaces through "celestial wayfinding." Throughout, I highlight the work of Indigenous scholars who not only critically challenge past and present colonial endeavors, but also provide alternative ways of imagining relationships with outer spaces and beings. I aim to contribute to and further encourage discourses on reimagining cosmic futures at the intersection of Native studies, anthropology, and SETI.<sup>2</sup> By decentering dominant frameworks of outer space exploration, such generative understandings can help to mitigate the current trend toward unabated interstellar imperialism.

In light of anthropology's emphasis on transcending cultural differences across time and space, it is particularly well suited to engaging SETI. Indeed, a relatively small but ardent number of anthropologists have engaged SETI since the 1960s. These early projects presented ways of understanding the search for ETs by drawing parallels between human evolution and the social impacts following colonial contact. As Stephen Dick (NASA chief historian) argues, such engagements "offered pointers to the problems and the promise of analogical thinking." Such analogies, however, implicitly reified the linear progression of time and social evolution. By the 1970s, anthropologists expanded their engagements and considered outer space as a cultural mirror. In 1975, the American Anthropological Association supported the book *Cultures Beyond the Earth: The Role of Anthropology in Outer Space*, in which Alvin Toffler posited that "what we think, imagine or dream about cultures beyond the earth not only reflects our own hidden fears and wishes, but alters them . . . forc[ing] us to disinter deeply buried premises about ourselves."<sup>3</sup> In the afterward, anthropologist Sol Tax suggested that "[e]ven if we have no contact with nonhuman cultures in the immediate future, the models that we meanwhile make require that we sharpen the questions that we ask about human beings." Anthropological engagements with SETI continued through the 1980s, highlighted by an edited volume analogizing histories of human migration.<sup>4</sup> This included Polynesian wayfinding, through which cutting-edge

human ingenuity has continued to be used to travel vast distances in relatively small and vulnerable ships.

While this outer space-oriented work steadily continued through the turn of the century, as late as 2006 anthropology had not yet “systematically studied the implications for extra-terrestrial contact.”<sup>5</sup> Addressing this omission, over the last fifteen years such scholarship has attained a critical mass, including sustained ethnographic work on UFO culture, deep sea scientists, planetary scientists, Newspacers, the American extreme, and SETI itself. These ethnographic projects are broadly characterized by a thoughtful balance between understanding these communities on their own terms, and their broader potential implications on and beyond Earth.<sup>6</sup>

As in previous colonial eras, there remains the ever-present danger of anthropologists insidiously becoming drawn into the role of frontier diplomat. As our working group demonstrates, Indigenous scholarship provides myriad invaluable insights informed by historical and structural critiques of ongoing colonialism. This scholarship provides theoretical and moral frameworks for considering outer space. Native studies can inspire not only different answers to current questions, but also novel questions that unsettle the foundational assumptions around what configures spaces as outer and beings as alien.

## COLONIAL TIME-KNOTS

What underlies our capacity to historicize is our capacity not to.

—Dipesh Chakrabarty, *Provincializing Europe*

History does not simply rhyme, it reverberates. While history often is imagined as a linear series of events moving from the past toward the future, there are numerous ways of imagining its temporality. Historian Dipesh Chakrabarty distills this sentiment in his articulation of the time-knot—translated from the Bengali phrase “*shomoy-granthi*”—in which *shomoy* (time) is situated within *granthi* (joints) that branch out and articulate in various directions, parallel, backward, and otherwise.<sup>7</sup> Indeed, he argues that the contemporaneity of the past and present as a shared and common now is what allows historical time to unfold. In other words, history allows groups of people to understand the present, which is similar to how memory enables individuals to act and create meaning in their daily life. As in individuals’ lives, acknowledging and understanding the influence of past historical cycles—rather than repressing them—is essential for breaking out of destructive patterns.

The time-knot shares a nonlinearity with what Damon Salesa (Māori/Samoan) describes as “Indigenous space-time,” in which the “past is not a time but a place” that can be visited.<sup>8</sup> Laura Harjo (Mvskoke) further articulates how Indigenous temporalities are embedded within multidimensional and non-Cartesian geographies that integrate “terrestrial, virtual, spiritual/metaphysical, and celestial realms,” or what she renders as “kin-space-time” constellations.<sup>9</sup> Drawing on the language of science fiction, Grace Dillon (Anishinaabe) establishes Native slipstream as a way of describing how time exists simultaneously as “pasts, presents, and futures that flow together like currents in a navigable stream” through which narratives often traverse in multiple directions.<sup>10</sup> Each

of these articulations of Indigenous space-time assert “temporal sovereignty” as they imagine ways to move “beyond settler time.”<sup>11</sup> Maile Arvin (Kanaka Maoli) emphasizes how engaging Indigenous space-time requires the difficult “work of setting aside our understandings of time and space as we have come to know them through settler colonialism, imperialism, and other structures that promote white supremacy.”<sup>12</sup>

It is not that Indigenous space-time is cyclical while Western space-time is simply linear; temporal circularity broadly applies to all humans in light of our shared biological, generational, and social cycles. The crucial distinction is between the unacknowledged circularity of Euro-American time and the acknowledged circularity of Indigenous temporal frameworks, broadly speaking. Indeed, the hubristic delusion of linearity (i.e., progress) is a key component in the rendering of colonization as morally coherent. To traverse entangled colonial junctures, I draw on Chakrabarty’s time-knot—which provides an analytical noun connecting specific moments in time—and integrate Indigenous articulations of space-time and critiques of settler time. There are of course limitations to comparing *Endeavour* and SETI, as there are in all comparative analyses. I aim to illustrate here, however, that their parallels run deeper than they might first appear. Thus, engaging these reverberations is generative, not only in analyzing the cyclical and relentless vortex of conquest, but also in imagining alternative pathways forward.

### *Celestial Science in the “Age of Discovery”*

The *Endeavour’s* first circumnavigating voyage took place from 1768 to 1771. Led by Lieutenant James Cook, it is remembered now as one of the most infamous voyages of settler-colonial conquest during which the British Empire initiated the process of claiming Aotearoa and Australia. Becoming increasingly belligerent over time, Cook subsequently led two major voyages that set into motion centuries of sustained dispossession for a multitude of societies throughout Oceania. And yet, this was not how it began. In this section, I articulate the enthusiasm for celestial science that animated Cook’s first voyage, not to in any way justify it, but rather the opposite; I aim to demonstrate how idealistic aspirations often lead to disastrous consequences when embedded within an imperial ideology and infrastructure. I then consider the outcomes for current space projects that also are driven by humanistic calls for understanding cosmic science across various frontiers.

Early in the spring of 1768, the Royal Society, a preeminent association of scientists in Britain, met to discuss an expedition to the South Pacific. While they represented various disciplinary interests, all were focused on an extremely time-sensitive project, measuring the transit of Venus to determine the solar distance between the Earth and the Sun. These Venusian transits occur approximately twice a century in close succession, and the previous attempt to measure it just seven years earlier in 1761 had been a failure, partly due to the Seven Years War (1756–1763).<sup>13</sup> The upcoming 1769 transit represented the last opportunity to establish the solar distance until 1872.

This goal captured the imagination of scientists, as well as the public. Once the Sun’s distance was established, many new aspects of the solar system would become

open to analysis. Leading up to the transit, the Royal Society established a plan for dozens of observation stations in Europe and North America. To achieve a confident result, however, they needed measurements from the South Pacific, which were prohibitively expensive to obtain. They appealed directly to King George III for funding, arguing that the voyage would bring not only scientific results, but also national prestige. After gaining expedited approval, the British Admiralty and Royal Society quickly began to select the crew, which included the naturalist Joseph Banks and the astronomer Charles Green.<sup>14</sup>

Prior to Cook becoming the notorious colonizer and tyrant, even to his own men, he was an up-and-coming member of the Royal British Navy. While most high-ranking positions on voyages were from the noble classes—which included Banks and Green—Cook came from relatively modest means and rose through the ranks after volunteering with the British Merchant Navy and Royal Navy. During the Seven Years War, he gained acclaim for his coastal cartography. Indeed, the maps he made of Britain and elsewhere were so accurate that they were used for hundreds of years, well into the twentieth century. In light of these skills, he was selected to command the *Endeavour*, as well as serve as an astronomer with Green.

Departing in 1768, Cook and his crew arrived home, seemingly as scientific heroes, in 1771. Although funded by the Crown, “to all intents and purposes this was a scientific voyage: at issue was the most pressing problem in world astronomy.”<sup>15</sup> From this perspective, upon its return the *Endeavour* was considered a great success. Despite the difficulties posed by calculation controversies due to the “black drop effect,” their estimate of the solar distance was within 1% of current figures. They also returned with a plethora of cartographic data and over 1,400 plant species new to British botanists.<sup>16</sup> Fashioning itself as the vanguard of the Enlightenment, the Royal Society understood that this was a pivotal moment for their organization. To this day, they highlight Cook’s journey as one of their greatest achievements on their website, as described here:

We published Isaac Newton’s *Principia Mathematica*, and Benjamin Franklin’s kite experiment demonstrating the electrical nature of lightning. We backed James Cook’s journey to Tahiti, reaching Australia and New Zealand, to track the Transit of Venus. We published the first report in English of inoculation against disease, approved Charles Babbage’s Difference Engine, documented the eruption of Krakatoa and published Chadwick’s detection of the neutron that would lead to the unleashing of the atom.

While the Royal Society and the general public celebrated the voyage in terms of scientific advancement, for the Crown this was a smokescreen for its deeper intent: to expand the British Empire in the Pacific.<sup>17</sup> The president of the Royal Society, James Douglas, specifically forbade Cook from attempting to claim any land during the expedition. Before departing, however, Cook was given a sealed letter from the king, which he was to keep secret and open only after completing the transit measurements in Tahiti.<sup>18</sup> The contained documents ordered him to search for the mythologized

southern continent of Terra Australis Incognita, chart its coast, learn about its people, and annex as much land as possible for Britain.

These covert orders demonstrate the extent to which “astronomy and colonisation have been entwined in the Pacific since first contact.”<sup>19</sup> While Cook was rightly skeptical of the existence of the fabled southern mega-continent, these orders nevertheless directly led to claims of possession and mass violence in Aotearoa and Australia. This included a deadly confrontation in 1770 at Botany Bay, where less than a decade later the first penal colony on the continent would be established. For hundreds of societies in Australia alone, Cook’s legacy is mass murder and land dispossession.

While it is tempting to focus the blame for these atrocities on Cook himself, Patrick Wolfe’s assertion that settler colonialism “is a structure, not an event” is instructive here.<sup>20</sup> Unlike Christopher Columbus, during his first voyage Cook seems, by many accounts, to have been driven by scientific aspirations. By the standards of his time, he was unusually focused on the humane treatment of his crew and even eliminated death due to scurvy by improving their diet. Cook also voiced concerns throughout the voyage regarding the negative consequences of contact for the people that they met. He was particularly distressed that their presence in Tahiti would be disruptive and lead to the spread of European diseases.<sup>21</sup> When Banks decided to invite Tupaia—a Tahitian navigator and *aroi* (priest)—to Britain, Cook objected on ethical grounds as he worried that Tupaia would never be able to return home.<sup>22</sup> This context is not meant to sanitize Cook’s colonial legacy, but rather to demonstrate the insidious corrupting power of colonial structures in the context of scientific projects when taken up along imagined frontiers. Indeed, by the time he met his death in Hawai’i, only a decade after measuring the transit, he had become ruthless with his crew and the people he encountered.

In 1778, while Cook was on his final voyage, Banks was elected president of the Royal Society. The organization’s rising prominence, largely due to the perceived successes of Cook’s voyages, fortified its relationship with the royal family. Over the next four decades, Banks amassed considerable influence and transformed the society from a group of mostly amateur scientists to an integrated constituent of state power, linking “science to the cause of Empire” as nations fought over intellectual supremacy.<sup>23</sup> Instead of advocating for the state to support scientific endeavors, the Royal Society began explicitly serving imperial interests regarding the exploitation of colonies, bolstering the East India Company and the settlement of Australia. The influence of empire on science was exacerbated after the French Revolution in 1789, which hastened the decline of Enlightenment thinking. This gave rise to the emphasis on social progress that was foundational for the rise of nineteenth-century scientific racism.<sup>24</sup> By the time of the Venusian transits in the late 1800s, state-driven colonial science was the norm within imperial nations.<sup>25</sup>

In *The Transit of Empire*, Jodi Byrd (Chickasaw) draws on the Venusian transit—as well as its black drop effect—as a metaphor for how indigeneity has been used as a distorting discourse by colonial powers to facilitate the acquisition of lands and resources. She connects this to the profound impact of *Endeavour* on empire building over the last two centuries, noting that “Cook’s expeditions haunt the nation-building

logics of the Age of Enlightenment . . . across Atlantic and Pacific worlds and constrain and figure how race, colonialism, and imperialism became the primary distinguishing features of settler imperialisms born out of and invested in multicultural liberal democracy.” Rather than framing *Endeavour* as one historical example of colonial science, Byrd demonstrates how the voyage was a key catalyst “that moved European conquest toward notions of imperialist planetarity,” founded in discourses of limitless expansion and possession that continue through the present—in other words, plunder disguised as frontier discovery.<sup>26</sup>

### *Settler Science in the “Age of Space”*

Space historians often present the current “Age of Space” as a new major era of discovery, the last of which was in “the eighteenth and nineteenth centuries characterized by further geographic exploration such as the voyages of Captain Cook, underpinned and driven by the scientific revolution.”<sup>27</sup> Imperial symbolism is baked into the very discourse of space projects including terms such as settlement, colony, expedition, frontier, and extraction.<sup>28</sup> It is not by accident that spacecraft are christened with names such as *Pioneer*, *Magellan*, and even *Endeavour*. This is emblematic of the explicit “manifest destiny” (as Donald Trump puts it) that animates the ideology of presidents, scientists, and space enthusiasts alike.<sup>29</sup>



FIGURE 1. July 6, 2020 tweet from then-president Donald J. Trump’s White House Twitter account.





**FIGURE 2.** Replicas of the Santa Maria, Niña, and Pinta, Columbus's three ships, sail by OV-105 on KSC LC Pad 39B on June 18, 1992. Image by NASA.

Through multiple registers, these two ages of discovery are interwoven in a colonial time-knot. For example, on May 7, 1992, replicas of Columbus's three ships sailed in front of space shuttle *Endeavour* just before its maiden voyage.<sup>30</sup> Celebrating five hundred years since Columbus's 1492 voyage, this choreographed photo shoot of the *Niña*, *Pinta*, and *Santa Maria* proudly conflate Cook and Columbus. In describing the *Columbus* research station module on the International Space Station, the NASA website notes that "Columbus wasn't finished yet and in fact Columbus' life and travels in space have just begun."<sup>31</sup>

*Endeavour* was selected by NASA to embody a particularly important exploratory vessel. NASA celebrates this lineage on their website:

*Endeavour* was named after a ship chartered to traverse the South Pacific in 1768 and captained by 18th century British explorer James Cook, an experienced seaman, navigator and amateur astronomer. . . . Cook's main objective, tasked by the British Admiralty and the Royal Society, was to observe the Transit of Venus at Tahiti. . . . Cook's achievements on *Endeavour* were numerous, including the accurate charting of New Zealand and Australia. . . . Cook also established the usefulness of including scientists on voyages of exploration. Space Shuttle *Endeavour* embodies similar experiences.<sup>32</sup>

Furthermore, the following excerpt from the NASA website valorizes Cook's voyage as embodying the spirit of scientific adventurism. It was published shortly before the 2004 transit.

On July 11, 1771, Cook returned to England. The surviving crew of the *Endeavour* had circumnavigated the globe, catalogued thousands of species of plants, insects and animals, encountered new races of people, and hunted for giant continents. It was an epic adventure. . . . In fact, it might be said that the best reason to watch a transit of Venus is James Cook. . . . It can carry you back to a different place and time: Tahiti, 1769, when much of Earth was still a mystery and the eye at the telescope belonged to a great explorer.

This quote even invokes metaphorical time travel as NASA encourages citizens to imagine a romantic version of *Endeavour*, with Cook squinting heroically toward the horizon of human progress.

It is important to note the limits of connecting SETI with *Endeavour* and settler colonialism more broadly. “SETI” is a collective term that encapsulates the variety of scientific searches for intelligent ET life over the last century. After NASA defunded SETI projects in the early 1990s, they largely shifted to the private sector. In 2015, the funding of the Breakthrough Initiatives by Russian billionaire Yuri Milner, with the guidance of Stephen Hawking, was particularly significant. A primary component of the initiatives to reinvigorate SETI is Breakthrough Listen, with its goal of searching more than a million stars for intelligent radio or laser signals by 2025.<sup>33</sup> In the Age of Space, SETI represents only one of a vast array of projects, including literal colonial enterprises such as asteroid mining and Martian settlement.<sup>34</sup> Colonial time-knots are at their most explicit in solar-system projects—such as when Elon Musk extolled his plans for routine rocket travel to Mars by likening it to the nineteenth-century transcontinental railroad, omitting that this directly fostered mass genocide and dispossession.<sup>35</sup> As with historical colonization, such solar-system space projects may result in radical consequences that are within the scale of human lifetimes.

Conversely, even the most confident estimates for near-term SETI contact involve vast scales of time and space that render near-term physical interaction highly improbable. However, even SETI acknowledges that the long-term impacts of return messaging could be catastrophic. Indeed, SETI is careful to contrast itself with Messaging Extraterrestrial Intelligence (METI), or “active SETI,” which aims to establish ET contact by sending messages into space. I engage SETI not because it represents the clearest manifestation of imperial desire, but rather the opposite; it is one of the space projects most concerned with ethics. As with *Endeavour*’s original mission, SETI is notable in its devotion to advancing celestial science for the enlightenment of the broader public.

In spite of their meaningful differences, *Endeavour* and SETI share key tenets of colonial projects, including systematic mapmaking and the classification of radical others. SETI scientists seek to create high-fidelity maps that mark the presence (and thus far the absence) of intelligent life, not unlike the logs of Cook and other explorers that meticulously documented islands in the Pacific.<sup>36</sup> This charting exists within a variety of space projects focused on mapping and categorizing the surface of the Moon and other celestial bodies.<sup>37</sup> Furthermore, both *Endeavour* and SETI are informed by fantasies of radical alterity founded upon colonial legacies of dispossession. As Susan Lepselter argues, “the fallout of the still open wound of Native American colonization and genocide drives” the formulation of the alien by drawing upon Indigenous contact tropes of violence, transcendence, and saviorism.<sup>38</sup> They also share an emphasis on intellectual and spacial frontiers. As Valerie Olson argues, dominant outer space imaginaries are animated by an emphasis on limits and extremes, “where essential truths and proofs emerge.” Thus, space itself represents “not a spacial limit but a political horizon.”<sup>39</sup> Indeed, ever since *Endeavour*—and Banks’s subsequent leadership in the Royal Society—empires have remained founded upon the parallel frontiers of science and territory. This is not to say that science is inherently harmful, but rather that it has and remains deeply intertwined with imperial power.

As part of their Breakthrough Listen funding initiative, the Berkeley SETI Research Center has hosted a variety of events designed to integrate interdisciplinary perspectives. One of these, Making Contact 2018, was a workshop that took place in May of 2018 both virtually and in Berkeley. The specific purpose was to develop working papers from a variety of humanities and social science perspectives that, should an ET message be received, would inform how to proceed. Our working group papers were to engage three questions: (1) How should Breakthrough Listen and other SETI researchers prepare for potentially making contact with ET? (2) How should we respond to a signal? and (3) What are we missing? The Indigenous studies working group included Kim TallBear, David Shorter, Sonya Atalay, and myself. We spent weeks considering these three questions carefully, working collaboratively on a group document through video meetings and emails until we arrived at a collective statement.

We then presented a summarized version of the statement at the Berkeley workshop. I happened to be one of the few people from the working groups physically present since I was in the area at the time. For a moment, imagine what it must have felt like to sit in the meetings of the Royal Society before Cook departed, with self-assured excitement filling the room as they imagined measuring the solar distance. This sort of exuberance also filled the rooms of SETI, from the workshop itself to their various research facilities. The collective feeling of attempting to solve profound cosmic questions was palpable, and eminently seductive.

## PRIME DIRECTIVES

The Prime Directive is not just a set of rules; it is a philosophy . . . and a very correct one. History has proven again and again that whenever mankind interferes with a less developed civilization, no matter how well intentioned that interference may be, the results are invariably disastrous.

—Captain Jean-Luc Picard, “Symbiosis”

Throughout *Star Trek’s* many TV and cinematic iterations, one of the common threads has been the precept of the prime directive, which states that “no Starfleet personnel may interfere with the normal and healthy development of alien life and culture. Such interference includes introducing superior knowledge, strength, or technology to a world whose society is incapable of handling such advantages wisely.”<sup>40</sup> The prime directive of noninterference is presented as an ethical first principle that can never be violated, and which protects potentially vulnerable beings from mistreatment. Across the franchise, however, this prime directive was regularly violated when deemed necessary, by even the most ethically inclined commanders. Indeed, Captain Picard—who, like Cook, was uncommonly focused on the well-being of his crew and those he encountered during voyages—justifies violating it nine times.

I argue that a central purpose of such prime directives throughout history was not to protect the vulnerable, but rather to morally legitimize colonial enterprises. Directives that claimed to protect Indigenous people and land have often conspired to make colonization possible while cloaking it in the guise of virtue. The colonial time-knot connecting *Endeavour* and SETI includes various prime directives that have not

protected Indigenous people in Oceania and would be unlikely to protect ETs in the future. In this section, I demonstrate the inadequacy of noninterference prime directives by tracing how the very logic used to claim Australia has endured throughout the past century into outer space treaty making and breaking. I illustrate how the SETI principle of “only listening” represents a prime directive that disregards the series of events that would almost certainly follow a verified ET message.

The British claimed Australia by arguing that it was effectively unoccupied and thus open to be conquered. This claim was not a historical anomaly, but rather part of an expansionist colonial logic with roots in ancient Roman law. The British legal system of common law included the foundational concepts of *terra nullius* “nobody’s land” (property ownership and its lack thereof are determined based on meaningful use) and *res communis* “common areas” (areas that cannot be claimed by anyone because they are considered to be important for many).<sup>41</sup> Not only was the logic of *terra nullius* asserted to annex Australia, but it was also the basis for Britain’s claims to many populated areas around the globe.<sup>42</sup> Since the British were the arbiters of what constituted “meaningful” land use—based on the values of individualism and capitalism—they defined this strategically in relation to their shifting colonial ambitions. Places that European empires desired tended to become classified as *terra nullius*, while areas that were strategically suitable for free movement were defined as *res communis*. Throughout the 1800s, this logic informed the making and breaking of treaties with Indigenous nations in and beyond North America, justifying actions such as the Dawes General Allotment Act of 1887, which attempted to fragment Native American nations by imposing individual land ownership.

These flexible legal principles have continued to define frontiers for the purposes of colonial expansion, including the 1967 Outer Space Treaty (OST), and its precursor the 1959 Antarctic Treaty. Outer space and Antarctica both were initially framed legally as *res communis* because they were deemed to have relatively little settlement or resource value at the time. Antarctica was even “conceived by atmospheric scientists and physicists as a ‘window on Outer Space’ . . . and a ‘psychological test bed for habitation in Outer Space.’”<sup>43</sup> Such extreme places simultaneously provide limits and “conditions which can endlessly be overcome.”<sup>44</sup> A similar “symbolic lure of the unknown South” that drove *Endeavour* to search for Terra Australis Incognita has been expressed through desires to conquer the Earth’s poles, highest elevations, and deepest seas, as well as outer space. As Juan Salazar states, “it would be naïve to assume that Antarctica and Outer Space are therefore exceptional, similar, uncontested spaces of ‘peace and science,’ free from the territorial drives of states and non-state actors.”<sup>45</sup>

As Antarctica has become more strategic, its *res communis* status has been increasingly challenged. In 2004, Australia claimed 2.5 million square kilometers of seabed along Antarctica through the legal argument of *terra nullius*. Should this treaty be further compromised, Australia could claim that “exclusive possession through discovery and effective occupation would be firmly in place.” Indeed, “whether Antarctica is owned or not depends on who you ask: an Australian will say it is; an American will say that it is not. The Treaty says it is both at once.” In *The Political Uncommons*, Kathryn Milun weaves the history of how *nullius* and *communis* conceptualizations

have “extended vertically” from historical colonialism, oceans, and Antarctica to outer space, emphasizing how outer space law is “reterritorializing the Earth.”<sup>46</sup> Thus, the time-knot encapsulating these colonial legal precedents does not only represent the process of outward expansion; such frontier imaginaries also reassert the legitimacy of previous territorial claims.

Outer space treaties exemplify the colonial time-knot connecting the Age of Space with previous imperial ages of discovery. As with the Antarctic treaty, the original 1967 OST was based on *res communis* and prohibited any country from making sovereign claims on celestial bodies. The 1979 Moon Treaty pushed the *communis* logic further, declaring that the resources of all “celestial bodies shall be the common heritage of mankind,” which has been widely interpreted to mean that all non-Earth resources should be distributed to every nation. While more than one hundred countries signed the OST, it is not surprising that no major space-faring nations have endorsed the Moon Treaty. Similar to previous treaties throughout history, as the potential profitability of space increases, so too do the threats to these agreements.<sup>47</sup>

Various legal experts on space argue that the lack of capitalist competition for land claims is stifling progress and that the United States should disavow the OST. As is written into the treaty, it would take only a single year to formally withdraw.<sup>48</sup> The consequences of remaining in the OST are regularly likened to the cautionary tale of the Ming Dynasty’s “weakness” and “lack of vision” in failing to conduct violent mass colonization in the fifteenth century. Lawyers who regularly promote precedents of a system of first possession even specifically invoke the incentives of homesteading, rule of capture, and mining that “worked in the nineteenth century to swiftly develop the American West.”<sup>49</sup>

While this should be an obvious point, Rayna Slobodian asserts that “the ‘great period of Earth exploration’ was not great . . . [and] involved war, genocide, rape, murder, pillaging, mass disease transfer, and slavery.”<sup>50</sup> Indeed, colonization not only laid waste to frontiers, but also to imperial homelands. Just as European ecosystems and non-elite citizens were regularly devastated during the colonial age of discovery, we too risk the degradation of Earth itself in the resource-intensive process of cosmic conquest. Responding to critiques of space colonization, Miles O’Brien argues that “there are always reasons not to do it, we can talk about the cost, the risks, the rationale, Columbus or Magellan would never have left the harbour if they dwelled on these worries. Sometimes you just have to weigh anchor and shove off.”<sup>51</sup> Brandon Gruner further declares that “it is nineteenth-century precedent that holds the greatest promise for allocating property rights in space, ‘the final frontier,’ which will “become part of mankind’s extraterrestrial Manifest Destiny.”<sup>52</sup> William Brennan, who also advocates for the United States to withdraw from the OST, rhetorically asks,

Isn’t space then just a new continent, as was our own when the Mayflower landed, to be explored as was our own by several nations. . . . Should any law then be made for a space society in advance of actual settlement? . . . What is the best historical model—the Mayflower Compact, the Articles of Incorporation of the British East India Company, or whatever?<sup>53</sup>

Implying the East India Company corporate/state model, Ezra Reinstein suggests that we seek the “highest possible rate of return” in outer space by withdrawing from the OST and encouraging state and private ownership.<sup>54</sup> While he suggests that we try to avoid “inefficient exploitation” so as not to completely undermine the OST’s principle of peaceful purpose, William Kramer asks us to consider a broader question, “can conquest and conquering ever be peaceful?”<sup>55</sup>

As demonstrated, there is an unbroken lineage of colonial logic regarding territorial claims from *Endeavour* to contemporary outer space policies. As with Britain’s claim of Australia, and Australia’s attempts to claim Antarctica, any country could quickly leave the OST and claim Mars through what I have described as *planeterra nullius*.<sup>56</sup> Such actions are not far-fetched; the US Congress passed the “Commercial Space Launch Competitiveness Act of 2015,” which unilaterally asserted the rights of private firms to own and sell natural resources from space. Following the creation of the Space Force, Donald Trump signed an executive order in 2020, “Encouraging International Support for the Recovery and Use of Space Resources,” which sanctions asteroid mining and aims to increasingly delegitimize the 1979 Moon Treaty. In late 2020, NASA began requiring any nation wanting to participate in their upcoming Artemis lunar and Martian programs to sign the Artemis Accords, a bilateral agreement outside of the United Nations that implicitly affirms commercial space mining rights. Russia has argued that this undermines the OST. Meanwhile, only days after publicizing potential evidence for life on Venus in September of 2020, the head of the Russian space agency declared that they “believe that Venus is a Russian planet.”

As noted, since its inception, SETI has fostered a variety of ongoing discussions around the ethics of contacting ET intelligent life. It contrasts itself with METI, emphasizing that SETI is “only listening” and not broadcasting.<sup>57</sup> Thus, “only listening” has become a noninterference prime directive, similar to that of *Star Trek*. Indeed, in a public statement on the matter, SETI emphasizes several ways in which METI could be disastrous, noting that intelligent ET life is potentially hostile and “millions of years more advanced than us.” In practice, however, inevitably “METI is the next step beyond any successful SETI program, and so the two are intimately linked.”<sup>58</sup> In spite of the fact that SETI proponents find METI to be “unwise, unscientific, potentially catastrophic, and unethical,” it is difficult to imagine a transmission that is successfully received, yet not a single person or organization on Earth ever responds.<sup>59</sup>

Through the time-knot, we might imagine SETI as the transit of Venus trip that Cook initially embarked upon. Similarly to the pushback on METI, an explicitly colonial voyage in Oceania would have faced overwhelming resistance. Other countries would have intervened to prevent it, and it would have been difficult to present the voyage virtuously to the public. As with Cook’s prime directive of *terra nullius* that ostensibly protected the theft of occupied land, SETI’s prime directive of “just listening” vastly increases the likelihood of the identical future actions that it claims would be catastrophic.

In her argument against the rush to colonize Mars, Slobodian describes the failure of the prime directive in a *Star Trek* episode in which

the Enterprise crew is warned that traveling through a certain region of space may be problematic for other space faring people, as well as people living on a nearby planet, but they decide to start exploring anyway. Eventually, the crew learned that their actions were harmful to others because they did not spend the time to think about the consequences of their actions. Captain Jean-Luc Picard reflects at the end of the episode, “I spent the better part of my life exploring space. I have charted new worlds, I’ve met dozens of new species. And I believe that these were all valuable ends in themselves. And now it seems that, all this while, I was helping to damage the thing that I hold most dear.” Maybe we can take a lesson from this imaginative tale.<sup>60</sup>

Yet prime directives in practice do not operate in accordance with the literal meaning of “prime,” as in “of first importance.” The more accurate prime directive in *Star Trek* is “to boldly go where no man has gone before,” or in other words, to explore the frontier and report back through captain’s logs similar to Cook’s.<sup>61</sup> The true prime directive of *Endeavour* was conquest, though this was only clear in hindsight. Thus, we should ask ourselves what the prime directive of SETI will appear to be from the perspective of the deep future looking backward in time to our present.

### *Intentions vs Outcomes*

It is commonplace to believe that if one is doing “scientific” work, then it will benefit all humans. It is not the norm to suggest that practices must be responsive to the possibility of causing social harms.

—Jenny Reardon and Kim TallBear<sup>62</sup>

Both *Endeavour* and SETI share the support of scientists not explicitly driven by colonial expansion. Like many in the Royal Society, SETI scientists are ardent that they have no ill intentions, but rather, seek to expand our species’ knowledge of the cosmos for the enrichment of all humanity. Whether or not these intentions are sincere (and it is my personal impression that they are) is not necessarily consequential. Neither Cook’s motivations nor those of the Royal Society prevented violent and mass dispossession. Why is it that their goals did not matter and how is this relevant to the intentions of scientists working on outer space projects such as SETI?

The initial impetus for *Endeavour* was not predictive of its outcome precisely because the project existed within the ideological, legal, and infrastructural context of an expanding empire competing for global supremacy, from the funding of the voyage to the logic of *terra nullius*. Should SETI scientists successfully locate and publicize signals from intelligent life, it is unlikely that they would have a meaningful say in how events would then unfold, similarly to the Royal Society members’ lack of influence on colonial conquest in the Pacific. Not only would METI likely proceed in some form, but also a variety of governmental agencies would immediately take control over the program and the terms of contact. As with Banks’s Royal Society in the decades following the transit, SETI would likely be absorbed into the state power apparatus

under the auspices of intelligence agencies through the justification of national and planetary security.

Rather than engaging in rarified discussions of intelligence and ethics, much like the Royal Society in the 1800s SETI would become enmeshed within the forces of nationalism, geopolitics, and financial speculation. Politicians would seize upon such information and weaponize jingoistic and xenophobic discourses on immigration, national defense, and border protection. This political instinct has been demonstrated to span the mainstream political spectrum, with US President John F. Kennedy having declared the need to “conquer space” before the Soviets. Such political rhetoric has long motivated American empire, including the original inspiration for manifest destiny—John O’Sullivan’s 1839 manifesto “The Great Nation of Futurity”—which proclaimed that

The expansive future is our arena, and for our history. We are entering on its untrodden space, with the truths of God in our minds, beneficent objects in our hearts, and with a clear conscience unsullied by the past. We are the nation of human progress, and who will, what can, set limits to our onward march? Providence is with us, and no earthly power can. . . . The far-reaching, the boundless future will be the era of American greatness. In its magnificent domain of space and time, the nation of many nations is destined to manifest to mankind the excellence of divine principles . . . its roof the firmament of the star-studded heavens.<sup>63</sup>

Manifest destiny valorizes ever-shifting frontiers, and this nationalist discourse likely would be used to frame intelligent ET messages. Sooner or later, political forces would compel contact, whether it was a wise decision or not. As in the period following *Endeavour*, the successful confirmation of ET intelligence would be more likely to reduce enlightenment than to promote it. Slobodian notes that in spite of the Hollywood truism that outer space threats would unify Earthlings, there is little if any evidence of this.<sup>64</sup> Indeed, it is uncertain just how socially and psychologically prepared humans are to respond productively to such a revelation, in both short and long-term time horizons.<sup>65</sup>

Furthermore, frontier ideologies are embedded within the foundation of contemporary capitalism, in which markets must endlessly expand, lest they risk collapsing. The importance of the frontier is mirrored in comments by space colonization advocates, who argue that our society will “stagnate and die” unless we continue to colonize.<sup>66</sup> Whether due to climate change or another cataclysmic event, this ideology imagines a slowly closing door or “great filter” that humanity is racing through before extinction overtakes us. Although best known for his environmentally oriented “pale blue dot” prose about Earth, even Carl Sagan insisted that “we’re the kind of species that needs a frontier . . . and the colonization of other worlds is a must if the human species is to survive for the long term.”<sup>67</sup> Associations between aliens and colonial violence are now so deeply entrenched that it would be difficult to foster peace even if this were the intention of ETs. As Stephen Hawking projects, “if aliens visit us, the outcome would be much as when Columbus landed in America, which didn’t turn out well for the Native Americans . . . advanced aliens would perhaps become nomads, looking to



conquer and colonise whatever planets they can reach.”<sup>68</sup> In light of the many challenges and conflicting pressures that would escalate following an ET message, even the highly militarized diplomacy in the film *Arrival* seems overly optimistic.<sup>69</sup>

As noted, SETI is among the most ethically focused of the large-scale outer space projects, as was reiterated throughout the Making Contact 2018 workshop. The organizers, Claire Webb and Michael Oman-Reagan, were particularly attuned to including alternative perspectives and moral frameworks. Nowhere was this more exemplified than in the territorial acknowledgment page on the workshop’s accompanying website, which included the following assertion:

We encourage every participant and viewer to consider their responsibilities to the people and land, both here and elsewhere. And to take action to stand in solidarity with Native, Indigenous, and First Nations people, and their sovereignty, politics, land claims, landscapes, cultural heritage, and lives. And to actively disrupt institutions, practices, and all structures of oppression that reproduce ongoing colonial relations of violence and power.

This page included an acknowledgement of Ohlone Land and linked to several articles on Ohlone sovereignty and political movements. It even declared the need to decolonize systemically. The decision to include this page was reinforced in their selection of Indigenous studies as one of the working group disciplines.

While our group’s working paper engaged a variety of topics, key issues included the (1) lack of specific ethical considerations regarding research protocols; (2) assumptions around the hierarchical categorization of life and intelligence; (3) biases embedded in the collection of data for a very narrow set of technologies; and (4) dearth of evidence that contact by Western societies has historically gone well for both sides. Beyond presenting these constructive critiques, we also proposed concrete suggestions: that SETI immediately craft a clear mission statement, charter, and principles of research ethics. We suggested that these should include specific justifications and definitions for loaded terms including “intelligence” and “technology,” as well as assurances that the first priority above all others—or prime directive—would be to do no harm. We also suggested that they directly state *why* contact is important and what it aims to achieve. We asked, in light of the history of dispossession through Western contact, to state the justification for SETI. Along these lines, we noted that any ET life should have a clearly defined right to *refuse* contact, echoing Audra Simpson’s articulation of refusal.<sup>70</sup>

Very much to their credit, the Making Contact 2018 workshop included Indigenous studies and made space to consider it collectively. However, it is often suggested in such settings, implicitly and explicitly, that these concerns fixate only on negative possibilities. This is not so much about disagreement, but rather something more fundamental: incommensurable understandings around the history, purpose, and outcomes of frontier scientific projects. Similarly, had we presented such cautionary comments to the Royal Society in the meetings leading up to *Endeavour’s* first voyage, such appeals would also have likely been dismissed as undue pessimism, with prime directives in place and scientific breakthroughs seemingly just beyond the horizon. The

promise of the colonial time-knot is to breathe life into historical analogs in order to vividly illustrate the underestimated future impacts of contemporary frontier imperialism. This mode of analysis can clarify when good intentions, hubris, and a lack of historical context distort the implications of celestial science. The time-knot allows us to speculate on the probable outcomes of current actions by slipping into parallel and resonant pasts, so that we might help to bend the universe increasingly toward justice, or at least away from injustice.

## TOWARD CELESTIAL WAYFINDING

In this final section, I articulate a time-knot in Hawai'i that integrates the past, present, and future by connecting (1) the death of Cook, (2) the ongoing protests against the Mauna Kea Thirty Meter Telescope, and (3) the revitalization of Polynesian wayfinding. As we noted in our working paper for the Making Contact 2018 workshop, it is crucial not merely to highlight potential problems in space science, but also to provide productive suggestions. I present *celestial wayfinding* as an alternative framework for SETI and other space science projects, which does not eschew possibilities of human exploration, but rather suggests a different approach and set of assumptions.

By the time of Cook's death, he had become a tyrant. During his second voyage (1772–1775), Cook continued to decry the potential impact of contact with the Indigenous people he met and the perpetration of violence by his crew. However, he was no longer naive to the colonial ambitions of the king as he halfheartedly searched to claim the fabled southern continent that he correctly believed did not exist. Cook turned his focus toward his passion, cartographic mapping, using a state-of-the-art clock to plot islands and longitudinal lines throughout the South Pacific. This made it more straightforward for colonial ships thenceforth to locate these islands. His third voyage again presented an ulterior motive to the public (the return of a Tahitian man named Mai to his home) as a pretense for chasing another colonial mirage: the Northwest Passage. This would have allowed the British to trade with China more profitably and without Portuguese interference.

As Cook's fame and position rose, so too did his ego and ailments, including worsening stomach issues. The once careful commander neglected to inspect his provisions and ship before departing on this final voyage. His increasingly erratic behavior was expressed not only in a newfound violence toward his crew, but also in his haphazard sailing path. Cook's attempt to discover the Northwest Passage was disastrous. After becoming the first European to visit Hawai'i—known to him as the Sandwich Islands—he went on to introduce smallpox into Pacific Northwest coastal communities (to his ineffectual dismay) and then became perilously lost in fog and sea ice in the Arctic Ocean. Barely escaping, the *Endeavour* arrived back in Hawai'i in January of 1779, only one year after their previous visit. Again they received a gracious welcome. Soon after departing their foremast broke in a storm and they returned to Hawai'i for a third time. Tensions quickly escalated when Cook overreacted to a small dispute, leading him to violate a sacred *morai* (burial ground) and to hold a chief hostage. Shortly thereafter, Cook's men opened fire, and he was killed on the

shores of Kealakekua Bay. The particularities of Cook's death have been comprehensively debated. Suggestions that this was the result of his being perceived as the god Lono seem to be vastly overstated, if not patently false.<sup>71</sup> Rather, Cook's actions were consistent with that of a belligerent despot, and what seems clear is that he was deeply disrespectful and had overstayed his welcome, after extracting excessive provisions during his previous two visits.

Fewer than forty miles from Cook's death at Kealakekua Bay is the proposed site of the Thirty Meter Telescope (TMT) on a sacred area of Mauna Kea. Since its initial proposal in 2010, Native Hawaiians have protested this construction as part of a decades-long movement to prevent observatory building on sacred sites.<sup>72</sup> In July of 2019, TMT construction was halted by Hawaiian blockades, and the project was delayed. Resonances between the TMT and *Endeavour* are manifold. As with the observatory on Tahiti that Cook used to measure the transit of Venus, the TMT is an observatory whose purpose is to advance astronomical precision via a strategic Polynesian island (see also Rebecca Charbonneau's article on page 71 of this special issue). Cook's legacy in Hawai'i is more than symbolic. The estimated number of Native Hawaiians plummeted from one million to below 150,000 in the decades following his initial arrival; less than a century later the kingdom was overthrown and then subsequently annexed by the United States. The TMT's proximity to Cook's place of death is poignant, as both involve the violation of sacred sites in the service of settler science.

This connection provides a stark reminder of how little has changed in over two centuries, including enduring Native resistance and sovereign assertion. As Maile Arvin argues, "in refusing settler colonial knowledge production . . . Indigenous activists and artists do not just gaze back at the West but look elsewhere, to their own desires for themselves and their people . . . [and] consciously remap Indigenous worlds onto a different time scale than settler time," traversing time-knots spanning and interconnecting generations.<sup>73</sup> The Hōkūle'a is a powerful example of what Arvin describes as "regenerative refusal," spanning Indigenous space-time in Hawai'i. A replica of a double-hulled traditional voyaging canoe, the Hōkūle'a was launched in 1975 by the Polynesian Voyaging Society (PVS) to demonstrate that Hawai'i and other Pacific islands were discovered through highly skilled navigation and not by accident.<sup>74</sup> Since its successful trip to Tahiti in 1976 through traditional navigational techniques, the Hōkūle'a has sparked decades of cultural revitalization centered around Polynesian wayfinding.

Between 2014 and 2017 the PVS embarked on a global voyage circumnavigating the Earth, named Mālama Honua, meaning "to care for our Island Earth." Traveling to many of the same places as *Endeavour*, the Mālama Honua—and Polynesian wayfinding more broadly—contrasts sharply with Cook's voyages more than two centuries earlier. Explicitly anti-imperial, the Hōkūle'a draws on the sophisticated techniques that enabled Polynesians to regularly navigate between islands separated by thousands of miles. Its voyages exemplify how human exploration into vast unknown regions may be carried out in ways that do not replicate colonial pasts, through "a uniquely oceanic, expansionary world view."<sup>75</sup>

While Polynesian societies did occasionally face ecological challenges, even possible examples such as Easter Island are exceptions that prove the rule of relative sustainability. The success of their voyages and settlements was made possible by the worldviews and social systems carried by these voyagers. The PVS highlights the idea of “He Wa’a, He Honua,” or “The Earth Is Our Canoe,” which frames our planet as a vessel holding each of us as we collectively move through space. Resonating with environmental calls in the 1960s to care for “Spaceship Earth,” such a conceptualization confronts the narrow capitalist imaginary of Earth (and beyond) as consisting of resources and matter. As William Kramer points out in his plea for reconsidering bioethical standards in colonizing Mars, “the Hawai’ian kapu and ‘aumakua systems, in part, serve to protect certain species of wild animals, plants, and even inanimate objects such as rocks from human harm.”<sup>76</sup> It is the inanimate view of the universe, which is exceedingly rare among human societies, that has enabled the colonial conquest of place and space through binary distinctions such as human/non-human and nature/culture. Inanimate views often do not even hold up to the firsthand experiences of Westerners in outer space, with many astronauts describing powerful unanticipated spiritual experiences when confronted with its sheer magnitude.<sup>77</sup> As demonstrated by sophisticated Polynesian wayfinding techniques and sustainable settlement practices, viewing the universe as spiritually animated is not antithetical to the successful navigation of outer spaces; indeed, it is essential to their long-term success.

Polynesian wayfinding provides a profound analog of navigation, exploration, and revitalization for moral and sustainable outer space projects.<sup>78</sup> However, I am not suggesting the appropriation of Polynesian wayfinding into outer space; rather, this is a broader appeal to those involved in current outer space endeavors to non-defensively confront the colonial assumptions embedded within their projects and to actively imagine alternatives. Since “knowledges are world-making practices, they tend to make the worlds they know” and inversely, they silence those they do not.<sup>79</sup> To move beyond reproducing dominant and destructive worldviews, Deondre Smiles (Ojibwe) argues that we

heed the calls of Indigenous thinkers inside and outside formal academic structures, validate Indigenous histories, and push to deconstruct the American settler myth and to provide a new way of looking at the stars, especially at a crucial moment where the settler state turns its gaze towards the same.<sup>80</sup>

Further engagement with Indigenous scholarship could also enhance anthropological projects aiming to un-Earth the Anthropocene, reimagine gravity and atmosphere, and articulate the Earth as an island in the cosmic ocean.<sup>81</sup>

Indigenous people across the globe have developed ongoing relationships with celestial beings since time immemorial and have myriad analytical and theoretical frameworks for understanding them.<sup>82</sup> These ET engagements are demonstrated through what Lou Cornum describes as the “Space NDN” within Native science fiction writing and media.<sup>83</sup> For example, in the final episode of *Anamata Future*

*News*—a Māori TV web series that imagines Aotearoa news from the future—the host describes an interstellar Polynesian wayfinding mission:

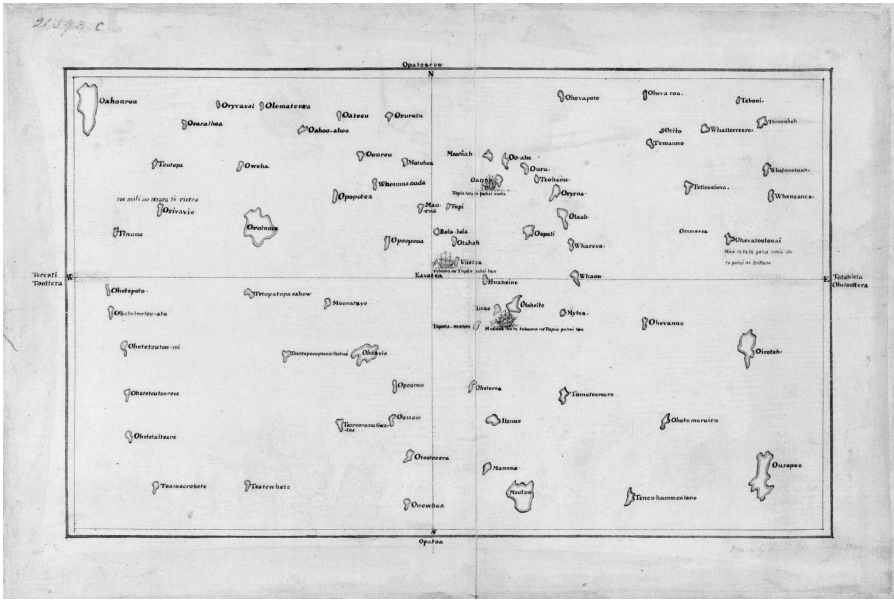
Māori are finally going intergalactic. The starship took off today on a journey that will take its crew beyond the known galaxy. [The] Captain hopes the exploration mission will expand our understanding of the universe. This is a brave new era for our people to ascend like Tāne-nui-a-rangi and Tāwhaki, seeking knowledge and enlightenment, and return with new understanding to share with all people.<sup>84</sup>

Centering Māori approaches to exploration, this story engages supernatural beings and a manta ray-shaped spaceship controlled through traditional gestures, providing a visual example of how celestial wayfinding can center Indigenous communities and knowledges.

In the science fiction machinima short film *The Peacemaker Returns*, Mohawk media-maker Skawennati also visualizes Indigenous celestial exploration.<sup>85</sup> Set in the year 3025, Iotetshèn:en, a young Mohawk woman embarks on an international mission to form an alliance with four alien nations. She succeeds in “extending the rafters” of peace beyond Earth by drawing upon lessons from a time-knot that integrates the ancestral Haudenosaunee federation story with the present politics of 2020. As Laura Harjo (Myskoke) notes, “community knowledge is a way-finding tool back to the things we know and hold valuable.”<sup>86</sup> Wayfinding provides a generative and flexible framework—a shared language for reimagining the honorable navigation of outer spaces.

As Mi’kmaq astronomer Hilding Neilson advocates, centering “Indigenous astronomies” amidst current “astro-colonialism” is crucial for decolonizing outer space; this entails challenging assumptions and ethical protocols within mainstream astronomy.<sup>87</sup> To illustrate one example of how complex this can become, in 2017 astronomers named the first observed interstellar asteroid Oumuamua, a Native Hawaiian-derived word meant to reflect “the way this object is like a scout or messenger sent from the distant past to reach out to us.”<sup>88</sup> While this naming was carried out in consultation with Native Hawaiian linguist Larry Kimura, Oumuamua was discovered at the long-protested Haleakalā Observatory that continues to violate a sacred site in Maui. As Eve Tuck and K. Wayne Yang relevantly assert, “decolonization is not an ‘and.’ It is an elsewhere.” Perhaps it is even an elsewhere.<sup>89</sup> Indeed, our working group recommendations relating to issues of research protocols, hierarchical categorization, technological bias, and imperial logics are as vitally relevant to past and present colonial projects as they are to SETI.

Closing (and perhaps further opening) this time-knot, I return to the days following Cook’s measurements of the transit of Venus. Tupaia had joined the crew at the invitation of Banks, largely due to his navigational knowledge of the region. On board, Tupaia drew a map of the Pacific, which was one of the first Polynesian depictions on European paper.<sup>90</sup> In what came to be known as “Tupaia’s map,” he carefully detailed the position and qualities of more than 80 islands, fusing “an indigenous perception of the world with the moralizing cartography of the Enlightenment.”<sup>91</sup>



**FIGURE 3.** *Tupaia's Map, 1769.* "Copy Chart of the Society Islands," pen and ink copy of original document, *The British Library, Add. MS 21593 C*, <https://www.bl.uk/collection-items/the-society-islands>.

While initially misinterpreted as inaccurate, it since has been reevaluated as a work of cartographic genius that translated Polynesian "geographies of exploration" into Western frameworks.<sup>92</sup> Rather than an ocean interspersed with occasional islands, Tupaia's map conveyed what Epeli Hau'ofa (Tongan/Fijian) describes as "a sea of islands."<sup>93</sup> Imagine, likewise, the implications of maps of our solar system and beyond as a sea of planets and stars. As Nicholas Thomas notes, "in the two centuries subsequent to this foundational moment of intellectual contact, Polynesian and European understandings of place would very rarely be drawn together in this way again."<sup>94</sup> From the moment that Cook opened his colonizing orders from the king, Tupaia was offering another path—a world of links forged by voyages and imbued with reverence. While Cook failed to comprehend this, we are not destined to repeat his mistakes. We have abundant opportunities in the present to reimagine our relationships with outer spaces and beings, if only we have the intelligence to listen.

## NOTES

1. Here I am not specifically referring to the Berkeley SETI Research Center, but more broadly to the variety of contemporary searches for ET intelligence around the globe. This also applies to other contemporary outer space projects.

2. For examples of productive engagements by various relevant disciplines, see this collection by geographers who aim to translate Earth writing to the realm of the extraterrestrial: "The Final Frontier? The Enclosure of a Commons of Outer Space," ed. Rachael Squire, Oli Mould, and Peter Adey, *Space + Society Forums*, <https://www.societyandspace.org/forums/the-final-frontier-the-enclosure-of-a-commons-of-outer-space>.

3. *Cultures beyond the Earth: The Role of Anthropology in Outer Space*, ed. Magorah Maruyama and Arthur Harkins (New York: Vintage Books, 1975), vii.

4. *Interstellar Migration and the Human Experience*, ed. Ben R. Finney and Eric M. Jones (Berkeley: University of California Press, 1986).

5. Steven Dick, "Anthropology and the Search for Extraterrestrial Intelligence: An Historical View," *Anthropology Today* 22, no. 2 (2006): 3–7, <https://doi.org/10.1111/j.1467-8322.2006.00421.x>.

6. Debbora Battaglia, *ET Culture: Anthropology in Outerspaces* (Duke University Press, 2005); Susan Lepselter, *The Resonance of Unseen Things: Poetics, Power, Captivity, and UFOs in the American Uncanny* (University of Michigan Press, 2016); Stefan Helmreich, *Alien Ocean: Anthropological Voyages in Microbial Seas* (University of California Press, 2009); Lisa Messeri, *Placing Outer Space: An Earthly Ethnography of Other Worlds* (Duke University Press, 2016); Valerie Olson, *Into the Extreme: US Environmental Systems and Politics beyond Earth* (University of Minnesota Press, 2018); Jason T. Wright and Michael P. Oman-Reagan, "Visions of Human Futures in Space and Seti," *International Journal of Astrobiology* 17, no. 2 (2018): 177–88, <https://doi.org/10.1017/s1473550417000222>.

7. Dipesh Chakrabarty, *Provincializing Europe: Postcolonial Thought and Historical Difference* (Princeton University Press, 2008), <https://doi.org/10.1515/9781400828654>.

8. Damon Salesa, "The Pacific in Indigenous Time," in *Pacific Histories: Ocean, Land, People*, ed. David Armitage and Alison Bashford (Palgrave Macmillan, 2014), 31–52.

9. Laura Harjo, *Spiral to the Stars: Mvskoke Tools of Futurity* (Tucson: University of Arizona Press, 2019), 41.

10. Grace Dillon, *Walking the Clouds: An Anthology of Indigenous Science Fiction* (Tucson: University of Arizona Press, 2012).

11. Mark Rifkin, *Beyond Settler Time: Temporal Sovereignty and Indigenous Self-Determination*. (Raleigh: Duke University Press, 2017).

12. Maile Renee Arvin, *Possessing Polynesians: The Science of Settler Colonial Whiteness in Hawai'i and Oceania* (Raleigh: Duke University Press, 2019).

13. Wayne Orchiston, "James Cook's 1769 Transit of Venus Expedition to Tahiti," *Proceedings of the International Astronomical Union* 2004, no. IAUC196 (2004): 52–66, 52, <https://doi.org/10.1017/s1743921305001262>.

14. Lynne Withey, *Voyages of Discovery: Captain Cook and the Exploration of the Pacific* (Berkeley: University of California Press, 1989), 18–19.

15. *Ibid.*, 54.

16. Andrea Wulf, *Chasing Venus: The Race to Measure the Heavens* (New York: Random House, 2012), 201, 204.

17. Withey, *Voyages of Discovery*, 19.

18. Orchiston, "James Cook's 1769 Transit of Venus Expedition to Tahiti," 58.

19. Chanda Prescod-Weinstein, Lucianne M. Walkowicz, Sarah Tuttle, Brian Nord, and Hilding R. Neilson, "Reframing Astronomical Research through an Anticolonial Lens—for TMT and Beyond," arXiv preprint arXiv:2001.00674 (2020).
20. Patrick Wolfe, "Settler Colonialism and the Elimination of the Native," *Journal of Genocide Research* 8, no. 4 (2006): 387–409, <https://doi.org/10.1080/14623520601056240>.
21. James Cook and Archibald Grenfell Price, *The Explorations of Captain James Cook in the Pacific, as Told by Selections of His Own Journals, 1768–1779* (Courier Corporation, 1971), 32; Withey, *Voyages of Discovery*, 101.
22. *Ibid.*, 124.
23. John Gascoigne and Neil Tranter, *Science in the Service of Empire: Joseph Banks, the British State and the Uses of Science in the Age of Revolution* (Cambridge University Press, 1998), 112.
24. John Gascoigne, *Joseph Banks and the English Enlightenment: Useful Knowledge and Polite Culture* (Cambridge University Press, 1994), 264.
25. Jessica Ratcliff, *The Transit of Venus Enterprise in Victorian Britain* (London: Routledge, 2015).
26. Jodi A. Byrd, *The Transit of Empire: Indigenous Critiques of Colonialism* (Minneapolis: University of Minnesota Press, 2011), 3.
27. Steven J. Dick, *Space, Time, and Aliens: Collected Works on Cosmos and Culture* (Springer Nature Switzerland AG, 2020), 270.
28. Wright and Oman-Reagan, "Visions of Human Futures in Space and SETI," 15.
29. Dick, *Space, Time, and Aliens*, 293; Wright and Oman-Reagan, "Visions of Human Futures in Space and SETI," 7.
30. Dick, *Space, Time, and Aliens*, 275, 281.
31. United States National Aeronautics and Space Administration, Sailing with NASA blog, *The Greatest Explorer*, "Day: October 22, 2009," [https://blogs.nasa.gov/sailing\\_with\\_nasa/2009/10/22](https://blogs.nasa.gov/sailing_with_nasa/2009/10/22).
32. United States National Aeronautics and Space Administration, Kennedy Space Center, NASA Orbiter Fleet, "Space Shuttle Overview: Endeavour (OV-105)," <https://www.nasa.gov/centers/kennedy/shuttleoperations/orbiters/endeavour-info.html>.
33. While there are SETI projects around the world, a crucial locus for this work is at the SETI Research Center at the University of California, Berkeley campus.
34. Wright and Oman-Reagan, "Visions of Human Futures in Space and SETI," 8.
35. Adi Robertson, "SpaceX Wants to Be the Railroad of the Future," *The Verge.com*, September 27, 2016, <https://www.theverge.com/2016/9/27/13080970/spacex-elon-musk-mars-expedition-railroad-of-the-future>.
36. Bronwen Douglas, "Imagined Futures in the Past: Empire, Place, Race, and Nation in the Mapping of Oceania," in *Pacific Futures: Past and Present*, ed. Warwick Anderson, Miranda Johnson, and Barbara Brookes (Honolulu: University of Hawai'i Press, 2018), 131–56.
37. Tamara Alvarez, "The Eighth Continent: An Ethnography of Twentieth-First Century Euro-American Plans to Settle the Moon," PhD diss., The New School, New York, 2020.
38. Lepselter, *The Resonance of Unseen Things*, 52. Lepselter draws multiple critical connections between ET alien imaginaries and settler legacies. For example, she notes the settler projection of alien abduction into space, whereas for Native people and communities around the world, from whom a generation of children was forcibly taken, "the real abduction narrative is the boarding school story" (60).
39. Olson, *Into the Extreme*, 7, 28.
40. Bernard Menke and Rick Stuart, "The Federation: FASA Star Trek Game Handbook" (1986), 5.



41. Here, for clarity and concision, I only contrast *terra nullius* with *res communis*. For a nuanced discussion of these terms, in addition to *res nullius*, see Kathryn Milun, *The Political Uncommons: The Cross-Cultural Logic of the Global Commons* (London: Routledge, 2011), ch. 2, "Terra Nullius, Res Nullius and Res Communis: A Conceptual Confusion of Terms," 65–78.
42. The etymology of these terms and their British usage reaches back to ancient Roman property laws, as explicated by Andrew Fitzmaurice, "The Genealogy of Terra Nullius," *Australian Historical Studies* 38, no. 129 (2007): 1–15, 6, <https://doi.org/10.1080/10314610708601228>.
43. Juan Francisco Salazar, "Antarctica and Outer Space: Relational Trajectories," *The Polar Journal* 7, no. 2 (2017): 259–69, 216, <https://doi.org/10.1080/2154896x.2017.1398521>.
44. David Valentine, Valerie A. Olson, and Debbora Battaglia, "Extreme: Limits and Horizons in the Once and Future Cosmos," *Anthropological Quarterly* 85, no. 4 (2012): 1007–26, 1009, <https://doi.org/10.1353/anq.2012.0066>.
45. Istvan Praet and Juan Francisco Salazar, "Introduction: Familiarizing the Extraterrestrial/Making Our Planet Alien," *Environmental Humanities* 9, no. 2 (2017): 309–24, <https://doi.org/10.1215/22011919-4215315>; Salazar, "Antarctica and Outer Space," 264.
46. Christy Collis, "Territories beyond Possession? Antarctica and Outer Space," *The Polar Journal* 7, no. 2 (2017): 287–302, 294, <https://doi.org/10.1080/2154896x.2017.1373912>.
47. Milun, *The Political Uncommons*.
48. Ty S. Twibell, "Space Law: Legal Restraints on Commercialization and Development of Outer Space," *University of Missouri-Kansas City Law Review* 65, no. 3 (1997): 589, 638; Brandon C. Gruner, "A New Hope for International Space Law: Incorporating Nineteenth-Century First Possession Principles into the 1967 Space Treaty for the Colonization of Outer Space in the Twenty-First Century," *Seton Hall Law Review* 35, no. 1 (2005): 299, 342, <https://scholarship.shu.edu/shlr/vol35/iss1/6/>.
49. *Ibid.*, 314.
50. Rayna Elizabeth Slobodian, "Selling Space Colonization and Immortality: A Psychosocial, Anthropological Critique of the Rush to Colonize Mars," *Acta Astronautica* 113 (2015): 89–104, 94, <https://doi.org/10.1016/j.actaastro.2015.03.027>.
51. *Ibid.*, 93.
52. Gruner, "A New Hope for International Space Law," 354.
53. William J. Brennan Jr., "Space Colonization and the Law," *Harvard Journal of Law & Technology* 3 (1990), 7–12, 9, <https://jolt.law.harvard.edu/assets/articlePDFs/v03/03HarvJLTech001.pdf>.
54. Ezra J. Reinstein, "Owning Outer Space," *Northwestern Journal of International Law & Business* 20, no. 1 (1999): 59, 62, <https://scholarlycommons.law.northwestern.edu/njilb/vol20/iss1/7/>.
55. William R. Kramer, "Colonizing Mars—An Opportunity for Reconsidering Bioethical Standards and Obligations to Future Generations," *Futures* 43, no. 5 (2011): 545–51, 546, <https://doi.org/10.1016/j.futures.2011.02.006>.
56. William Lempert, "Planeterra Nullius: Science Fiction Writing and the Ethnographic Imagination," Society for Cultural Anthropology editors' forum on Theorizing the Contemporary/Speculative Anthropologies series, *Fieldsights*, December 18, 2018, <https://culanth.org/fieldsights/planeterra-nullius-science-fiction-writing-and-the-ethnographic-imagination>.
57. Dick, *Space, Time, and Aliens*, 213.
58. *Ibid.*, 221.
59. John Gertz, "Post-Detection SETI Protocols & METI: The Time Has Come to Regulate Them Both," *arXiv preprint arXiv:1701.08422* (2017). Liu Cixin thoughtfully engages this scenario in his science fiction trilogy *The Three-Body Problem* (New York: Tor Books, 2016).
60. Slobodian, "Selling Space Colonization and Immortality," 102.
61. Cook, *The Explorations of Captain James Cook in the Pacific*.

62. Jenny Reardon and Kim TallBear, "Your DNA Is *Our* History: Genomics, Anthropology, and the Construction of Whiteness as Property," *Current Anthropology* 53, supp. 5 (2012): S233–45, S241, <https://doi.org/10.1086/662629>.
63. John L. O'Sullivan, "'The Great Nation of Futurity,'" *The United States Democratic Review* 6, no. 23 (1839): 426–30, <https://babel.hathitrust.org/cgi/pt?id=coo.31924085376634&view=1up&seq=350&q1=the%20great%20nation%20of%20futurity>.
64. Slobodian, "Selling Space Colonization and Immortality," 93.
65. Albert Harrison, John Billingham, Steven J. Dick, Ben Finney, Michael AG Michaud, Donald E. Tarter, Allen Tough, and Douglas A. Vakoch, "The Role of the Social Sciences in SETI," *SETI Committee of the International Academy of Astronautics Section V*, paper 1 (2000): 71–85, 74, <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.629.3070&rep=rep1&type=pdf>.
66. Slobodian, "Selling Space Colonization and Immortality," 96.
67. Carl Sagan. *Pale Blue Dot: A Vision of the Human Future in Space* (New York: Ballantine Books, 1997), 133.
68. Wright and Oman-Reagan, "Visions of Human Futures in Space and SETI," 10.
69. *Arrival*, dir. Denis Villeneuve, Paramount Pictures, 2016; 118 min.
70. Audra Simpson, *Mohawk Interruptus: Political Life across the Borders of Settler States* (Raleigh: Duke University Press, 2014).
71. Robert Borofsky, "Cook, Lono, Obeyesekere, and Sahlins: CA Forum on Theory in Anthropology," *Current Anthropology* 38, no. 2 (1997): 255–82, <https://doi.org/10.1086/204608>; Marshall Sahlins, *How Natives Think: About Captain Cook, for Example* (University of Chicago Press, 1995); Gananath Obeyesekere, *The Apotheosis of Captain Cook: European Mythmaking in the Pacific* (Princeton University Press, 1997).
72. Arvin, *Possessing Polynesians*, 224.
73. *Ibid.*, 228.
74. Ben R. Finney, *Voyage of Rediscovery: A Cultural Odyssey through Polynesia* (Berkeley: University of California Press, 1994).
75. Finney and Jones, *Interstellar Migration and the Human Experience*, 169.
76. Kramer, "Colonizing Mars," 547.
77. Deana Weibel, "The Overview Effect and the Ultraview Effect: How Extreme Experiences in/of Outer Space Influence Religious Beliefs in Astronauts," *Religions* 11, no. 8 (2020): 418, <https://doi.org/10.3390/rel11080418>.
78. John Grayzel, "Polynesian Civilization and the Future Colonization of Space," *Comparative Civilizations Review* 80, no. 80 (2019), article 3, <https://scholarsarchive.byu.edu/ccr/vol80/iss80/3/>; Todd Sheerin and Phillip Cunio, "Polynesian Colonization as a Model for Human Expansion into the Solar System," *AIAA SPACE forum on space and society* (Long Beach, CA, 2016), <https://doi.org/10.2514/6.2016-5400>.
79. *A World of Many Worlds*, ed. Marisol de la Cadena and Mario Blaser (Raleigh: Duke University Press, 2018), 6.
80. Deondre Smiles, "The Settler Logics of (Outer) Space," *Society + Space Magazine*, October 26, 2020, <https://www.societyandspace.org/articles/the-settler-logics-of-outer-space>.
81. Valerie Olson and Lisa Messeri, "Beyond the Anthropocene: Un-Earthing an Epoch," *Environment and Society* 6, no. 1 (2015): 28–47, <https://doi.org/10.3167/ares.2015.060103>;
- David Valentine, "Atmosphere: Context, Detachment, and the View from above Earth," *American Ethnologist* 43, no. 3 (2017): 185–209, <https://doi.org/10.14318/hau7.3.012>.
82. Nancy Red Star, *Star Ancestors: Indian Wisdomkeepers Share the Teachings of the Extraterrestrials* (Rochester, VT: Destiny Books, 2000); Praet and Salazar, "Introduction: Familiarizing the Extraterrestrial/Making Our Planet Alien," 314.

83. Lou Cornum, "The Space NDN's Star Map," *The New Inquiry* (January 26, 2015), <https://thenewinquiry.com/the-space-ndns-star-map/>; Dillon, *Walking the Clouds*; William Lempert, "Decolonizing Encounters of the Third Kind: Alternative Futuring in Native Science Fiction Film," *Visual Anthropology Review* 30, no. 2 (2014): 164–76, <https://doi.org/10.1111/var.12046>; Danika Medak-Saltzman, "Coming to You from the Indigenous Future: Native Women, Speculative Film Shorts, and the Art of the Possible," *Studies in American Indian Literatures* 29, no. 1 (2017): 139–71, <https://doi.org/10.5250/studamerindilite.29.1.0139>.
84. *Anamata Future News*, MāoriTV webseries (2015), [https://www.youtube.com/watch?v=S\\_35LvIKBp4&ab\\_channel=AnamataFutureNews](https://www.youtube.com/watch?v=S_35LvIKBp4&ab_channel=AnamataFutureNews).
85. *The Peacemaker Returns*, dir. Skawennati (2017), Machinima HD video, 18 min. 38s.
86. Harjo, *Spiral to the Stars*, 117.
87. Zoe Tennant, "Indigenous Astronomies and 'Astro-Colonialism,'" Canadian Broadcasting Corporation Radio, Unreserved (January 10, 2021), <https://www.cbc.ca/radio/unreserved/we-come-from-the-stars-indigenous-astronomy-astronauts-and-star-stories-1.5861762/indigenous-astronomies-and-astro-colonialism-1.5865387>; Annette Lee, Nancy Maryboy, David Begay, Wilfred Buck, Yasmin Catricheo, Duane Hamacher, Jarita Holbrook, Ka'iu Kimura, Carola Knockwood, Te Kahuratai Painting, and Milagros Varguez, "Indigenous Astronomy: Best Practices and Protocols for Including Indigenous Astronomy in the Planetarium Setting" (2020), available through *arXiv.org*, arXiv:2008.05266v1; Clive Ruggles, "Indigenous Astronomies and Progress in Modern Astronomy" (2010), available through *arXiv.org*, arXiv:1010.4873; Chanda Prescod-Weinstein, *The Disordered Cosmos: A Journey into Dark Matter, Spacetime, and Dreams Deferred* (New York: Bold Type Books, 2021).
88. "Interstellar Message of 'Oumuamua: Mysterious Traveller from Afar Highlights a Seasonal Greeting," *Nature* 552, no. 292 (December 20, 2017), <https://doi.org/10.1038/d41586-017-08809-x>.
89. Eve Tuck and K. Wayne Yang, "Decolonization Is Not a Metaphor," *Decolonization: Indigeneity, Education and Society* 1, no. 1 (2012): 36.
90. Alice Te Punga Somerville, *Once Were Pacific: Māori Connections to Oceania* (Minneapolis: University of Minnesota Press, 2012), xvi; *Tupaia's Endeavour*, dir. Lala Rolls (Wellington: Island Productions Aotearoa, 2020; feature film).
91. Nicholas Thomas, *Oceania: Visions, Artifacts, Histories* (Raleigh: Duke University Press, 1997), 4.
92. David Chang, *The World and All the Things Upon It: Native Hawaiian Geographies of Exploration* (Minneapolis: University of Minnesota Press, 2016); Lars Eckstein and Anja Schwarz, "The Making of Tupaia's Map: a Story of the Extent and Mastery of Polynesian Navigation, Competing Systems of Wayfinding on James Cook's Endeavour, and the Invention of an Ingenious Cartographic System," *The Journal of Pacific History* 54, no. 1 (2019): 1–95, <https://doi.org/10.1080/00223344.2018.1512369>.
93. Epeli Hau'ofa, "Our Sea of Islands," *The Contemporary Pacific* 6, no. 1 (1994): 148–61.
94. Thomas, *Oceania*, 4.