(EN)-COUNTERING KNOWLEDGE TRADITIONS

THE STORY OF COOK AND TUPAIA

Knowledge and society do not merely interact or determine one another. They are constitutive of one another. Society consists in the relations between people and the natural world that produce what we take to be knowledge and vice versa. Seen in this light modern science is not, in essence, distinct from other so-called traditional knowledge systems. All knowledge traditions are in effect socially organized and sustained spaces in which trusted and authoritative knowledge is produced and transmitted. This not only permits an equitable basis for their analysis and comparison, but also provides the possibility of bringing into focus hidden cultural features and assumptions by examining encounters between knowledge traditions. This approach can help to avoid the trap of privileging one tradition's mode of classification and ordering over another. It also helps avoid the trap set by the prevailing overemphasis within western intellectual circles on knowledge as representation.

As Stephen Greenblatt observes, 'European contact with the New World natives is continually mediated by representations: indeed contact itself, at least where it does not consist entirely of acts of wounding and killing is very often contact between representatives bearing representations.'[2] Edward Said makes the related point that,

> ...the act of representing (and hence of reducing) others almost always involves some violence of some sort to the subject, as well as a contrast between the violence of the act of representing something and the calm exterior of the representation itself. The action or process of representing implies control, it implies accumulation, it implies confinement, it implies a certain kind of estrangement or disorientation on the part of the one representing.. Because, above all, they involve consumption, representations are put to use in the domestic economy of an imperial society.[3]

In order to give some flesh to the idea that claims about what is to count as knowledge or truth are both representations and performances, with largely invisible or concealed moral and spatial components that make contact between cultures problematic, I have been exploring encounters between knowledge traditions.[4] Here, I want to look at a particular instance when two knowledge

traditions encountered one another, when Captain James Cook met Tupaia, a Polynesian priest and navigator. Exploration of such an encounter is, of course, rendered problematic by the familiar reflexive difficulties created by the fact that socio-historical analysts work within distinct knowledge traditions. The difficulties are compounded by my being located within what is currently the dominant tradition. My strategy, for reducing reflexive tension, is to adopt the role of the fool or the trickster and to tell a tale which portrays the encounter as a cartographic *méconnaissance*.

Méconnaissance is a term used by Bourdieu and Lacan. It is often translated as mis-recognition, but the English word does not carry the same connotation as the French which also implies a certain duplicity.[5] Bourdieu calls it 'a self-seeking silence,' by which he means 'a silence about the ways in which the arbitrary and social are made to appear natural.'[6] Such silences are especially acute in this period when the Europeans were not just engaged in the Enlightenment project of archiving knowledge but were also searching for examples of 'man in a state of nature' in order to judge whether civilization, i.e. the social, was natural. However, I think such silences are inevitable in encounters between knowledge traditions and are especially marked in the roles of the analyst and the go-between. It has often been noted that most of the great passages of discovery and exploration by westerners have been accomplished with the help of an indigenous translator or go-between.[7] Their role is in many ways that of the trickster because encounters with the other are intensely difficult, involving epistemological and moral denials and the go-between's role is frequently erased.[8] Hence the analyst has also to be a trickster in order to reveal the silences, denials and erasures.'[9] The trickster is the spirit of disorder, the enemy of boundaries; and the function of the trickster myth, according to Kerényi, 'is to add disorder to order and so make a whole, to render possible within the fixed bounds of what is permitted, an experience of what is not permitted.'[10]

The oppositions of order/disorder, permitted/forbidden reflect the Janus-faced character of the translator, the go-between, the analyst, the critic–indeed anyone who moves between traditions and cultures, between self and other, or between accounts of events. There is a sense in which all historians, critics or any kind of analyst must deceive in order to tell the truth. This contradiction is the source of the tension which the reflexivists want to dissolve by a constant revelation of the constructed character of one's own framework. However, it is the tension upon which all knowledge claims are built: for there to be truth, there has to be 'untruth,' that is, a concealment of the prior assumptions and social constructions that provide the conditions for the possibility of truth; *méconnaissance* is inevitable.

My performance, or story telling, will also hopefully gain some narrative strength by being counter-poised with the orthodox story of a great divide and the creation of the other.[11] It is a tale of (en)countering and countering. The orthodox story is that of 'discovery' and exploration, which makes the 'other' a foil against which to see the 'objectivity', 'rationality' and 'universality' of western scientific representations. This tale has underpinned the history of science and served it well in a historical struggle for authority which has occluded its own performative nature through denying the social labor in its own construction, and the active role of the 'others' it enrols. The *méconnaissance* involved is not just a mis-recognition and (self) deception as a matter of the personal biographies of Cook and Tupaia, but also as a matter of the kind of historiographical and epistemological assumptions that underpin the received story.

In 1769 James Cook, an English naval captain from Yorkshire, arrived at Tahiti where he met Tupaia, a Polynesian high priest and navigator from the island of Raiatea. Tupaia joined Cook aboard the *Endeavour* and sailed with him and Joseph Banks on their voyage of exploration of the Pacific, New Zealand and Eastern Australia. For a brief time these two cartographers from different knowledge traditions worked together.[12] What I want to do is to bring into juxtaposition two representations/ performances that emerged from that encounter to reveal the *méconnaisance*. They are Cook's drawing of the Transit of Venus and Tupaia's chart of the Pacific. Both illuminate the problems of bodies meeting: celestial bodies and the other bodies of knowledge.

The orthodox story is that of 'discovery' and exploration, which makes the 'other' a foil against which to see the 'objectivity', 'rationality' and 'universality' of western scientific representations. This ... has underpinned the history of science and served it well in a historical struggle for authority which has occluded its own performative nature through denying the social labour in its own construction

However, before examining these representations, I want to perform the orthodox account. Cook was both a genius and a scientific navigator/cartographer, perhaps the greatest in history according to anglophone historians.[13] During three great voyages, he systematically explored the Pacific, accurately charting for the first time the position of many new islands, Aotearoa / New Zealand, the East coast of Australia, and the outliers of the North West passage. In doing so, he completed in broad outline the great imperial vision of science mapping the entire world. As a by-product of these achievements over three

voyages of circumnavigation he threw up an intriguing question to which he never developed a firm answer. Gathering linguistic and cultural evidence in conjunction with Joseph Banks, and the father and son naturalists, Johann Reinhold and George Forster, Cook came to perceive the people on the islands of what would become Polynesia of the Pacific, as one nation.[14] His big question was, 'How shall we account for this nation spreading itself so far over this Vast ocean?'[15]

In August 1769 Cook on his first voyage seemed to have little doubt that the question was one that could be answered in terms of native navigational practices:

> In these Proes or Pahees as the[y] call them from all the accounts we can learn, these people sail in those seas from Island to Island for several hundred Leagues, the Sun serving them for a compass by day and the Moon and Stars by night. When this comes to be prov'd we Shall be no longer at a loss to know how the Islands lying in those Seas came to be people'd, for if the inhabitants of Uleitea have been at Islands laying 2 or 300 Leagues to the westward of them it cannot be doubted but that the inhabitants of those western Islands may have been at others as far to westward of them and so we may trace them from Island to Island quite to the East Indias.[16]

In April 1777, on his third voyage, Cook called at the island of Aitu in the Cook Islands, where he met a group of five survivors who had been in party of twenty sailing from Tahiti to Ulietea. Caught in a storm, they had been eventually washed ashore on Aitu clinging to their upturned canoe.[17] Cook was moved to comment that 'this circumstance very well accounts for the manner the inhabited islands in this Sea have been at first peopled: especially those which lay remote from any continent and from each other.'[18]

However, in later reflections on the way the Society Islanders acquired their knowledge, Cook concluded that:

> The knowledge they have of other distant islands is, no doubt, traditional; and has been communicated to them by the natives of those islands, driven accidentally upon their coasts, who, besides giving them the names, could easily inform them of the direction in which the places lie from whence they came, and of the number of days they had been upon the sea... We may thus account for that extensive knowledge attributed... to Tupaia in such matters. And, with all due deference to his veracity, I presume that it was, by the same means of information, that he was able to direct the ship to Oheteroa [Rurutu], without ever having been there himself, as he pretended, which on many accounts is very improbable.[19]

Cook's views that the Pacific islands were discovered deliberately on the one hand, and by accident on the other, still inform debates on Polynesian migration and navigational knowledge. They can be reconciled, but generally one or the other has been favoured by authorities on the strength of what they have made of the

evidence of two-way voyaging by the early Pacific inhabitants and how they have construed Pacific and European navigational practice. I have argued elsewhere for the deliberate discovery and two-way voyaging thesis and here would note that the archaeological and linguistic evidence is now very strongly supportive of the view that there was an extended network of inter-island contacts that had begun to decline sometime before the European explorers arrived. Moreover, participatory navigation and replica voyages from Hawaii to Tahiti and New Zealand and back have demonstrated the power of Pacific navigational techniques.[20]

The question of how we should construe the two traditions will emerge through the course of this paper. The salient point for my approach to the encounter between Cook and Tupaia, however, is that despite his profound interest in the question of how the Pacific islands came to be inhabited, Cook appears never to have asked any of his informants how they navigated. What is especially interesting is that he did not ask Tupaia, or at least made no reference to asking him in any of his writings. This was partly because he found that 'most of them hated to be asked what they probably thought idle questions.' [21] But the main reason, I think, is not that he thought all their voyaging accidental. Rather, he thought it was a mixture of accidental and deliberate.[22] Nor did Cook simply dismiss what Tupaia said, though clearly he had ambivalent feelings about his worth as an informant. When he was speculating during his first voyage on the other big question is there a 'Southern Continent', Cook was well aware of a vast expanse of unexplored Pacific in which such a continent might be found and commented,

> ...should it be thought proper to send a ship out upon this service while *Tupaia* lieves [sic] and he to come out in her, in that case she would have a prodigious advantage over every ship that have been upon discoveries in those seas before...[23]

The question of why Cook did not ask Tupaia how he navigated becomes even more acute on noting that he did ask Tupaia to draw a chart of the islands in the Pacific. That famous map is one of the most interesting documents representing an encounter between knowledge traditions; and in order to 'read' it, we need to consider Cook and Tupaia' s separate trajectories before their encounter in Tahiti in 1769.

Cook was instructed by the Admiralty to take the *Endeavour* to the Pacific for two specific purposes: to observe a Transit of Venus and to discover, if possible, the Southern continent. Just as Cook was making preparations to leave in May 1768 Captain Samuel Wallis returned on the *Dolphin* having discovered Tahiti the year before. This was doubly fortuitous because Tahiti lay exactly in the centre of the area that the Astronomer Royal, Dr Nevil Maskelyne, had prescribed as most favourable south of the equator for the

observation of the transit of Venus, because its position had been accurately determined with respect to both latitude and longitude. John Harrison, the *Dolphin*'s purser, had calculated Tahiti's position in Wallis' words by 'Taking the Distance of the Sun from the Moon and Working it according to Dr Masculines [sic] Method which we did not understand.'[24] This was a history-making observation using the method of lunars, or lunar distances, for calculating longitude by observing the distance of the moon from the sun. It was for this purpose that Charles II had in 1675 ordered the building of Greenwich observatory, and appointed John Flamsteed 'astronomical observator' explicitly 'to apply himself to the rectifying of the tables of the motions of the heavens, and the places of the fixed stars, so as to find the so-much-desired longitude of places for the perfecting the art of navigation'. In other words, he was to provide the observational data so that lunar distances could be predicted.[25]

Maskelyne had been sent to the Atlantic island of St Helena in 1761 to observe the transit of Venus, but was prevented by clouds. Yet his trip was far from valueless since it was on this voyage that he developed the method of lunar distances for finding longitude at sea using Hadley's quadrant to observe the angular distance between the Moon and the Sun or a number of fixed stars. Maskelyne published the *British Mariners Guide* in 1763, which gave instruction in the system. In 1765, he became Astronomer Royal and published the first edition of the *Nautical Almanac*, which contained tables and calculations of the moon's position for every day of the year at three-hour intervals for the next ten years. This enabled even the longest expedition to calculate their longitude. Even so, it did require 4 hours for a skilled navigator to perform the calculations with corrections for refraction and parallax.[26]

Thus, it was with a copy of the *Nautical Almanac* and a light and precise sextant (a development of Hadley's quadrant and in effect a portable observatory), that Cook was the first navigator in the western tradition to sail to a Pacific Island as an act of deliberate calculation.[27] His predecessors had only found them accidentally or 'rediscovered' them by sailing along the latitude.[28] This alone should cast serious doubt on the contrast between the supposedly accidental discoveries of Tupaia and his predecessors and the deliberate discoveries of the Europeans. As Alan Villiers observes, '*All* sea-borne discovery belongs to the sailing ship era, and by far the greater part was done before seamen knew how to keep accurate record of where they were or how far they had sailed.'[29]

Cook himself was not initially trained in the modern calculative tradition of navigation. He started by serving an apprenticeship on North Sea colliers which were sailed by the three 'Ls': Lead, Lookout and Local Knowledge.[30] Coastal sailing like this was essentially pilotage

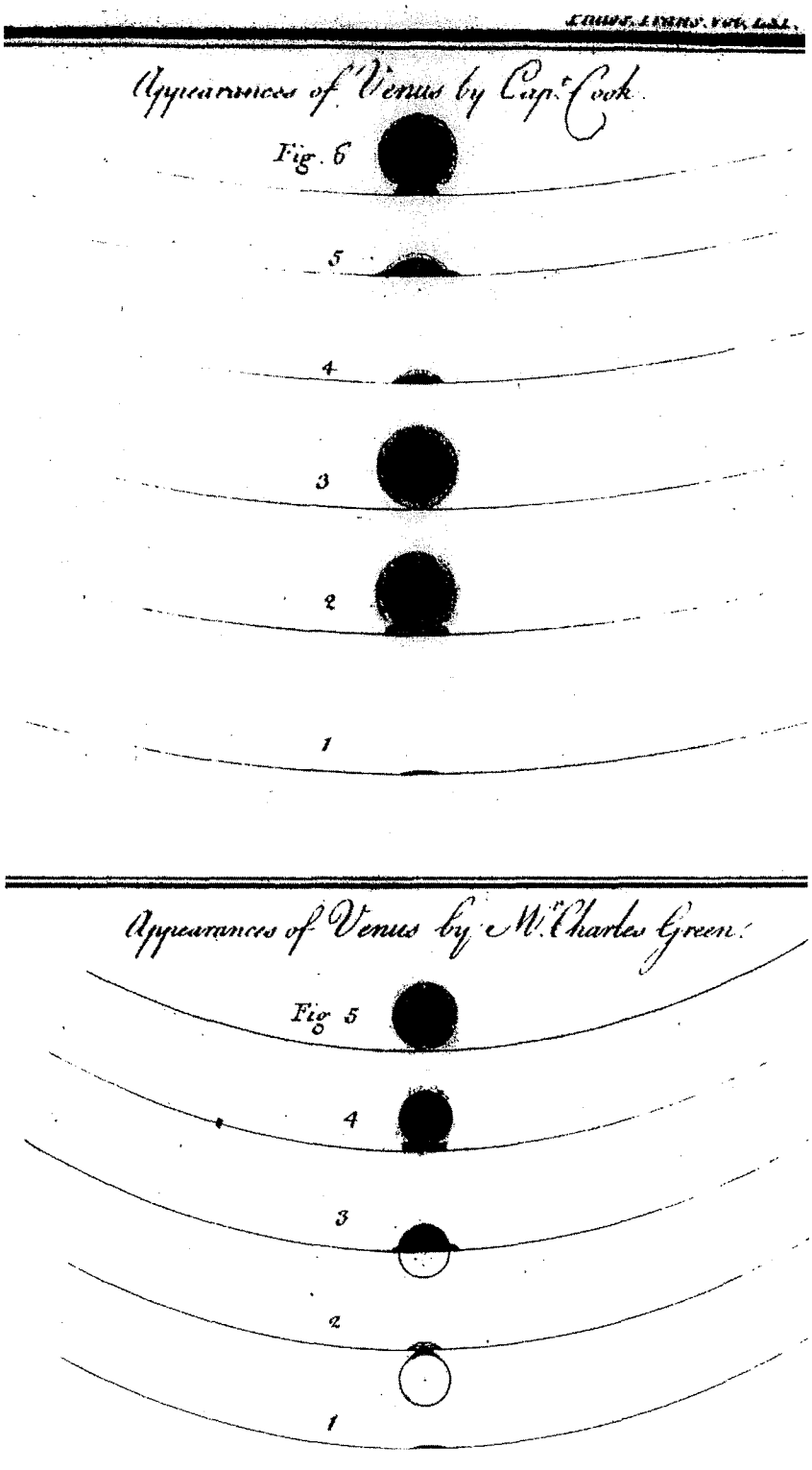
done by eye and personal knowledge. Alan Villiers, not only a biographer of Cook but himself an experienced sailor, contrasts pilotage with navigation, which 'was in part, by careful astronomical observations with precise instruments...and the most careful reckoning.' Even so, he points out that in Cook's day a captain's ability to navigate depended on

> ...good housekeeping, judgements of leeway, accurate estimation of speed under sail - for there were no adequate instruments to measure or record it and, the wind being fickle, the sailing ship's forward speed varied infinitely - and the assured ability to appraise performance of his ship in any conditions all came into this.[31]

Cook went on to acquire a unique set of skills when he left the commercial shipping world and joined the navy. Through a series of fortunate appointments and fortuitous meetings he became an accomplished cartographer, marine surveyor, and master navigator using the latest in observational and computational techniques in, for example, charting the St Lawrence for the attack on Quebec.[32] Though Alexander Dalrymple thought he should have got the job, there is little doubt that Cook was the man best suited to lead the first scientific expedition to the Pacific (in the sense of being able in principle to bring back inscriptions or immutable mobiles—that is, precisely determined and standardized calculations and observations that would allow their assemblage at a centre of calculation).[33] But, as we shall see, while this may have been partly true for his geographical discoveries it was not quite true for his astronomical observations.

THE TRANSIT OF VENUS

In the mid 18th century navigation and astronomy were linked through two interconnected and basic questions: how to measure solar parallax and how to measure longitude. Cook was intimately involved with attempted solutions to both questions. One of the principal reasons the Admiralty sent Cook and the *Endeavour* to the Pacific was to observe the transit, or passage, of the planet Venus across the face of the sun. This was considered to be the scientific event of the century by learned societies throughout Europe.[34] So much so that on the occasion of the transit in 1761, at least 120 observers around the world attempted unsuccessfully to record the event.[35] The reason that this astronomical event brought about 'the first international co-operative scientific expedition in modern history' was that Edmund Halley had shown in 1716 that measuring the timing of the transit could provide the means of calculating solar parallax.[36] Measuring solar parallax could then give the distance of the earth from the sun (the distance of the sun remains the astronomical unit providing the scale for all distances within the solar system and the base line from which the distances of the stars are measured).[37] Until this measurement was established, the Newtonian astronomical



Drawings of the Transit of Venus by Cook and Charles Green.
Reproduced by permission of the National Library of Australia.

system remained incomplete. It was the precondition for fixing 'the frame of the world' and giving it dimensions.[38]

Cook was sent to observe the transit of Venus in the ideally located Tahiti. He arrived on 13 April 1769 and immediately set about, one might say in true Latourian fashion, to extend the laboratory by building a fort to 'protect the observers and the instruments from the natives.'[39] Within the fort he put up a tent which held a clock with a grid iron pendulum carefully set in a wood frame fixed in the ground. The pendulum was adjusted to the same length as that at Greenwich. Facing that was the observatory with another journeyman clock, an astronomical quadrant of one foot radius mounted on a barrel full of wet sand buried in the ground, and three reflecting telescopes. Despite mounting armed guard the quadrant was stolen the night it was brought ashore.

Eventually the quadrant was retrieved and repaired and the transit observed on 3 June 1769 by Cook, Daniel Solander the Swedish scientist and Charles Green the astronomer. As Cook recalled,

> This day proved as favourable to our purpose as we could wish. Not a cloud was to be seen the whole day, and the Air was perfectly clear, so that we had every advantage we could desire in observing the whole passage of the planet Venus over the suns disk. We very distinctly saw an atmosphere or Dusky shade around the body of the planet which very much disturbed the times of the contact particularly the two internal ones. Dr Solander observed as Mr Green and myself and we differed from one another in observing the times of the contact much more than could be expected.[40]

Despite the apparently ideal observational conditions the timing proved problematic because Venus seemed to form a 'black blob' as it neared the edge of the sun's disc. Nonetheless Cook dutifully reported the results to the Royal Society, as did 151 other observers at 77 stations in around 600 papers to societies around the world.[41] Cook's nose was put considerably out of joint when Maskelyne was critical of his results, attributing them to want of care and address in the observer. In mitigation, Cook argued that Maskelyne knew the quadrant had been stolen and damaged and that,

> Mr M should have considered, before he took upon himself to censure these observations, that he had put into his hands the very original book in which they were written in pencil, only, the very moment they were taken and I appeal to Mr M himself, if it is not highly probable that some of them might from various causes, be so doubtful to the observer, as either to be wholy [sic] rejected or to be marked as dubious and which might have been done had Mr Green taken the trouble to enter them in the proper book. Mr M should also have considered, that this was, perhaps the only true original paper of the kind ever put into his hands; does Mr M publish to the world all the observations he makes good and bad or did never make a bad observation in his life?[42]

Apart from trying to offload the blame onto the unfortunate Green—a Maskelyne protégé who succumbed to the bottle and the flux after leaving Batavia.[43] Cook's defence is interesting because it displays the essential ambiguity and instability of raw data typified, for example, by the conflicting views of Millikan's oil drop experiments to measure the charge on the electron.[44] In Cook's view, the raw data were somehow both natural and capable of 'speaking for themselves' and yet at the same time some basic massaging should have either have been performed by Green or been self-evident to Maskelyne. Nonetheless, actually performing the observations was fraught with difficulties concerning personal variation of the observer, flaws in telescopes and conditions of vision, much of which Cook and his contemporaries were unaware of.[45] But most serious were the problems of the 'black blob effect' and the difficulty of determining longitude.[46]

In 1762, Joseph-Jérôme de Lalande, astronomer at the Royal Observatory in Paris wrote to Maskelyne about the difficulty for astronomers caused by lack of a precise means of determining longitude. 'You may deduce the difference of the meridians of these two cities, which we may be ashamed to say we are uncertain of to 20 seconds.'[47] In other words, no-one could tell with precision how far apart their observatories were. Calculations based on assembling astronomical observations from different observatories could not be performed. What was needed was a network in which their two observatories were physically linked by the invisible bonds of triangulated national surveys.

Ironically then, Cook could sail to Tahiti and back with relative ease; but he could not transform his observational data into the kind of immutable mobiles that Latour has led us to expect.[48] Nor could he calculate his own position with precision. Somewhat to his chagrin he was 4 degrees out by the time he sighted New Zealand.[49]

TUPAIA: PRIEST, NAVIGATOR, AND GO-BETWEEN

While Joseph Banks was in Tahiti he formed a strong relationship, with Tupaia, a priest and skilled navigator. Tupaia became Banks' constant companion during their three months in Tahiti guiding and advising him on native customs and rituals.

In July 1769, Banks managed to persuade Cook against his better judgement to let Tupaia accompany them on the *Endeavour*. Banks was to give a frank and revealing account of this in his journal:

> This morn Tupia came on board, he had renewd his resolves of going with us to England, a circumstance which gives me much satisfaction. He is certainly a most proper man, well born, cheif [sic] *Tahowa* or preist [sic] of this Island, consequently skilld in the mysteries of their religion; but what makes him more than anything else desirable is his experience in the navigation of these people and knowledge

> of the Islands in these seas; he has told us the names of above 70, the most of which he has himself been at. The Captn refuses to take him on his own account, in my opinion sensibly enough, the government will never in all human probability take any notice of him; I therefore have resolved to take him. Thank heaven I have a sufficiency and I do not know why I may not keep him as a curiosity, as well as some of my neighbours do lions and tygers at a larger expence than he will probably ever put me to; the amusement I shall have in his future conversation and the benefit he will be of to this ship, as well as what he may be if another should be sent into these seas, will I think fully repay me.[50]

Cook gives a slightly different version of events:

> This man had been with us the most part of the time we had been on the Island which gave us an opportunity [sic] to know some thing of him: we found him to be a very intelligent person and to know more of the Geography of the Islands situated in these seas, their produce and the religion laws and customs of the inhabitants then [sic] anyone we had met with and was the likeliest person to answer our purpose; for these reasons and at the request of Mr Banks I received him on board together with a you[n]g boy his servant.[51]

Of Tupaia himself we know relatively little, but enough perhaps to get some idea of his side of the encounter with Cook. He was not from Tahiti but from Raiatea, 40 leagues (340 miles) to the Northwest. He was born around 1725.[52] Cook was born in 1728, thus he and Tupaia were contemporaries in their mid-forties when they met. Tupaia was a high priest of the cult of the war god Oro and a member of a family highly skilled in navigation. He was driven from Raiatea by the invasion from the neighbouring island of Bolabola (Borabora) and arrived in Tahiti around 1760 with the establishment of the Oro cult on the island. When Samuel Wallis 'discovered' Tahiti in 1767, he was the consort of Purea, mother of a high ranking chief. However, within two years, Purea had lost much of her power and Tupaia had likewise fallen from favor. Tupaia' s fate may might had something to do with his keenness to join Cook and his willingness to impart knowledge that might have been in part secret.

Tupaia was a high priest of the cult of the war god Oro and a member of a family highly skilled in navigation

Sometime after coming aboard the *Endeavour* Tupaia drew a map of all the islands he knew. Cook gives the names of the islands that Tupaia identified in his Journal in March 1770, by which time Tupaia had been on board for nine months and they were about to leave New Zealand for the journey home via Batavia. The

actual drawing of the chart is likely to have been done many months before. Also, the original chart has been lost.[53] All we have are the re-drawings of the original by Cook and Johann Forster who, with his son George, accompanied Cook on the second voyage in place of Banks.[54]

What Cook says is that the names he wrote down were,

> ...taken from a Chart of the Islands Drawn by Tupia's own hands, he at one time gave us an Account of near 130 Islands but in his chart he laid down only 74 and this about the Number that some others of the Natives of Otaheite gave us a account of, but the Accounts taken by and from different people differ sencibly [sic] one from another in both in names and Number. The first is owing to want of rightly knowing how to pronounce the names of the Islands after them, but be this as it may it is very certain that there are these Number of Islands and very probably a great many more laying some where in the great South Sea, the greatest part of which have never been seen by Europeans.[55]

There are problems in trying to 'read' this chart as evidence of the knowledge tradition of the Tahitians. A sense of the difficulties can be gained from its first critically and linguistically informed reader, the young Horatio Hale on the United States Exploring Expedition seventy years later. He begins by pointing out that 'when Tupaia's map was drawn more than half the islands it contained were unknown to Europeans.' But Cook and his officers,

> knowing that *toerau* in Tahitian signifies the north (or northwest) wind, and *toa* the south, they concluded naturally that *opatoerau* and *opatoa* were names applied to the corresponding points of the compass, whereas *opatoerau* signifies, in fact, the point towards which the north wind blows je the south and *opatoa,* for the same reason, the north. By not understanding this they have so far as these two points are concerned reversed the chart completely and it is in fact printed upside down. But not content with this, it is in fact, apparent that these gentlemen (Capt Cook, Banks, and Lt Pickersgill whom Förster mentioned as having been shown the chart) overlooked Tupaia while he was drawing and suggested corrections which his idea of their superior knowledge induced him to receive against his own convictions. This is clear from the fact that all the groups and islands with which the English were not familiar are laid down rightly according to the real meaning of *apotoerau and apotoa* but wrong according to the meaning these gentlemen ascribed to the words; while the islands whose position they knew (the Marquesas and Paumotos) are placed exactly as they should be, according to this mistaken meaning but altogether out of the proper bearings when these are rightly understood.[56]

In unravelling the directional problem, Hale believed that Tupaia had himself made mistakes. Hale, like many contemporary European commentators, was skeptical of the value of names and

locations recalled 'merely from tradition'. He was also concerned that the spelling of names varied greatly, quoting Forster's observation that 'some of the names were strangely spelt as there were never two persons in the last and former voyages who spell the same name in the same manner'. In addition, some islands were given twice. Nonetheless, Hale concluded that the chart proved 'beyond doubt the extensive knowledge possessed by the Tahitians of the Polynesian groups.'[57] It was indeed extensive: though it omitted Hawaii, Easter Island and New Zealand, Tupaia's chart covered an area the equivalent of the United States.

Cook's view of Tupaia's geographical knowledge was often slightly muted, as can be seen in his qualifying remarks about the list of islands:

> Those marked ++ Tupia himself has been at as he tells us and we have no reason to doubt his veracity in this, by which it will appear that his Geographical knowlidge [sic] of those Seas is pretty extensive and yet I must observe that before he came with us he hardly [had] an Idea of any land larger than *Otaheite*.[58]

A similar ambivalence can be discerned in Cook's attitude to Tupaia's value to the voyage generally. Though he occasionally makes remarks like 'Tupaia always accompanies us in every excursion we make and proves of infinite service;'[59] he was less than charitable about Tupaia after his death from an unspecified fever, giving no recognition of his services despite the fact that he had in effect been the expedition leader throughout the voyage from Tahiti around New Zealand and up the Australian coast.[60] Commenting on his expedition's losses in Batavia Cook notes on December 26th 1770,

> But notwithstanding this general sickness we lost but Seven Men in the whole: the Surgeon, three Seamen, Mr Green's servant and Tupia and his servant, both of which fell a sacrifice to this unwholsom [sic] climate before they had reached the Object of their wishes. Tupia['s] death cannot be said to be owing wholy [sic] to the unwholsom air of Batavia, the long want of a Vegetable diat [sic] which he had all his life before been use'd to had brought upon him all the disorders attending a sea life. He was a Shrewd Sensible, Ingenious Man but proud and obstinate which often made his situation on board both disagreeable to himself and those about him, and tended much to promote the deceases [sic] which put a period to his life.[61]

Cook seems to have valued Tupaia's specific local knowledge in piloting the ship as opposed to navigating it and to have found him useful in dealing with the people they encountered. This was especially true in New Zealand where he could speak the language, though much less so in Australia where he could not. Cook also found relating to Tupaia difficult, and his reflections on those Islanders with whom he interacted most closely are ambivalent and patronisingly eurocentric. For example, Cook's efforts to resettle Mai, the Raiatean, in 1777, led him to reflect that 'he like the rest of his nation

was indifferent to things they learnt or saw. Europeans have visited them at times for these ten years past. Yet we find neither new arts nor improvements in the old, nor have have they copied us in any one thing.'[62]

However, Tupaia was equally a teller of tales, a trickster. That he had agendas of own seems apparent in his dealings with Maori. Banks frequently noted Tupaia's claiming that Maori were liars. To him it was 'a specimen of Indian reasoning'. For Anne Salmond, in her work on encounters between Europeans and Maori, it was an example of Tupaia's Polynesian chauvinism.[63] For me it is the kind of balancing act that a 'Go-Between' has to sustain. He or she must remain an authoritative and superior source of knowledge. Hence their informants must be represented as inferior and untrustworthy. Equally, the Go-Between has to sustain good relations with those from whom they derive knowledge. Maori, for example, thought highly of Tupaia. They inquired earnestly after him when Cook returned and were distressed to hear of his death, unlike the indifferent response of his compatriots. They named their children after him, and undoubtedly presumed he was in charge since they referred to the *Endeavour* as Tupaia's boat.[64]

However, to return to the chart and navigation. James Morrison, boatswain's mate on the infamous *Bounty*, commented that

> It may seem strange to European navigators how these people find their way to such a distance without the help or knowledge of letters, figures, or instruments of any kind but their Judgement of the Motion of the Heavenly bodys [sic], at which they are more expert and can give better account of the Stars which rise and set in their Horison [sic] then an European Astronomer would be willing to believe, which is nevertheless a Fact and they can with amazing sagacity fore tell by the Appearance of the Heavens with great precision when a change of the weather will take place and prepare for it accordingly. When they go to sea they steer by the Sun Moon and Stars and shape their course with some degree of exactness.[65]

Such a gulf of strangeness, to some extent, explains why Tupaia's chart is such a mess. Equally, as the French Pacific historian Adam points out,

> Tupaia's chart and what it meant to Cook, illustrates perfectly the incomprehension of the Europeans when faced with the nautical culture of the Polynesians. Tupaia's knowledge could only be interesting and useful when set in the cartographic grid that allowed for an entry on marine charts used on European ships. The bearing of islands or the establishment of their direction by star positions was occasionally mentioned as a curiosity of no great importance. European knowledge alone was scientific. Other knowledge could not have a comparable value (my translation).[66]

While it seems to me that strangeness, scientocentricism and Quinian indeterminancy of translation are all

elements in the mix, Tupaia's chart is best understood by setting it alongside Cook's attempts to observe the transit of Venus. Could not Tupaia have written a letter of complaint to Cook along the lines of Cook's to Maskelyne? Simple substitution of the appropriate terms and names shows the possibilities:

> Mr C should have considered, before he took upon himself to censure these knowledge claims, that he had put into his hands the very original chart on which they were written in pencil, only, the very moment they were taken and I appeal to Mr C himself, if it is not highly probable that some of them might from various causes, be so doubtful to the cartographer, as either to be wholly rejected or to be marked as dubious and which might have been done had Mr. Banks, and Lt Pickersgill taken the trouble to enter them in the proper book. Mr C should also have considered, that this was, perhaps the only true original chart of the kind ever put into his hands; does Mr C publish to the world all the observations he makes good and had or did never make a had observation in his life?

In Cook's drawing of the transit, he shows a seemingly unavoidable blurring when two bodies encounter one another. In Tupaia's chart, two knowledge traditions encounter one another and become blurred in the representation. The black blob effect applies in both cases. And in both cases, the problem is partly one of representation. Neither observational astronomy nor navigation is simply a matter of observation and calculation. They are both essentially performative as well. One of the problems of standardisation that Cook and his fellow observers of the Venusian transit were unaware of was the individual variation of each observer in such things as timing.[67] This is now subsumed under error theory and each astronomer has her or his own personal error rating, rather like a golf handicap, which puts them all on a par. Cook, by virtue of his training in surveying, hydrography and instrumentally based observations using sextants and the famous Harrison watches, seems to have restricted his performative understanding to pilotage. For Tupaia however navigation was very largely performative. Though it too had components such as *etak* and the star compass, these were abstract and cognitive.

The Polynesian navigational system was essentially strategic, that is, it was concerned not with accurate calculation of position but with what to do in particular circumstances

The Polynesian navigational system was essentially strategic, that is, it was concerned not with accurate calculation of position but with what to do in particular circumstances. Together, *etak* and the star compass provided a framework that

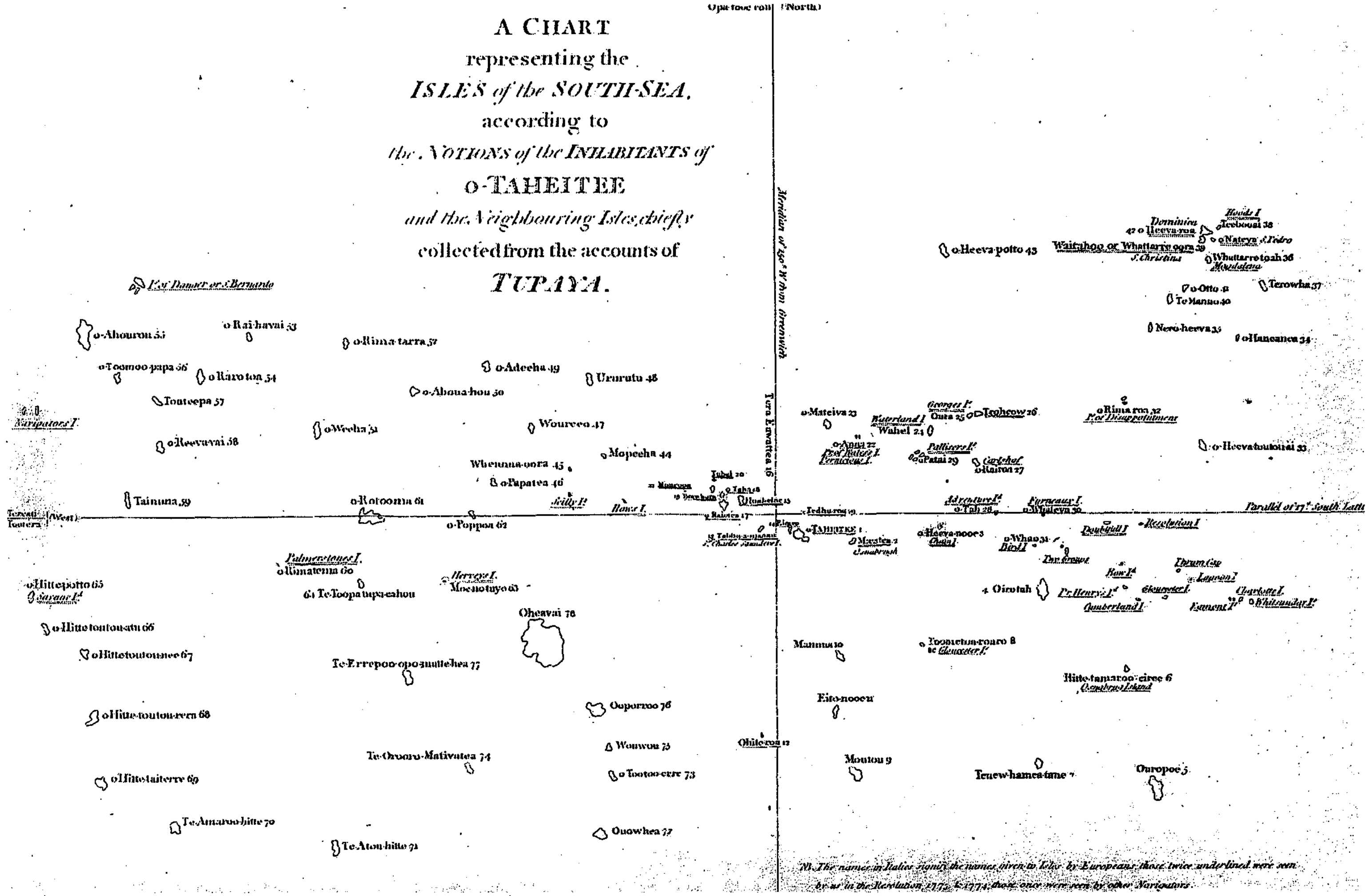


Chart representing the Isles of the South-Sea ... chiefly collected from the accounts of Tupaya [sic]. Engraving by William Fadden, from John Reinhold Forster, Observations made during a Voyage Round the World, *London, 1778. Reproduced by permission of the National Library of Australia.*

enabled a Polynesian navigator to be constantly aware of his position and orientation. A basic necessity for navigating in addition to establishing position was to be able to estimate the distance travelled having compensated for the effects of current, drift, wind and speed. The Polynesian solution, *etak*, was performative rather than calculative. The navigator conceived of his canoe as stationary and imagined a reference island as moving backwards against the backdrop of the rising and setting points of the stars thus dividing the voyage into segments: '*Etak* provides a framework into which the navigator's knowledge of rate, time, geography and astronomy can be integrated to provide a conveniently expressed and comprehended statement of distance traveled.' It is a tool 'for bringing together raw information and converting it into the solution of an essential navigational question, "How far away is our destination?"'[68]

The system is also essentially strategic. One strategy employed is the technique of 'expanding the target'. Low islands can be easily missed so the target is expanded by looking for patterns of ocean swells, flights of birds, cloud formations, and reflections on the undersides of clouds. The islands are also in chains as a result of their formation at the edge of crustal plates, so the navigator can orient himself by intersecting the chain at any point. Another strategy is that outlined by Geoffrey Irwin. According to his model of the way the islands were colonised, it was essential to minimise wastage of resources, time and human life. He argues that this was best achieved by sailing against the wind and up the latitude on the outward journey, since it ensured an easy return journey.[69] Irwin makes a good case for believing that the 'first exploration of the Pacific was navigationally systematic'.[89] But most importantly Irwin enables us to see Pacific island navigation as performative. It is a set of open-ended practices or strategies for handling uncertainty rather than a set of fixed techniques, rules, charts or calculations.

When Cook' s representationalism and Tupaia's performativity met in Tupaia's chart they formed an unreadable black blob. Perhaps the question to ask is not, 'why did Cook never ask Tupaia how he navigated?' since this would, in all likelihood, have produced more misrecognition. A better question is 'why did not Cook or any other investigator, till Thomas Gladwin in the late twentieth century, sail with the islanders to see their navigation in action?'[70] One might speculate that this requires the anthropologically reflexive stance of the trickster to question the interrogator's own capacities.

Just as the trickster or the jester gives voice to the silences and highlights the *méconnaissance* underlying the king's power by performing the part of the king, in this performance I have sought to break some of the boundaries between knowledge traditions by suggesting ways in which Tupaia could have acted like

Cook and by asking what it was that prevented Cook from acting like Tupaia. This type of performance, I would suggest by way of conclusion, is a way of enabling knowledge traditions to work together, by creating a space in which they can be performed together. ~

DAVID TURNBULL

David Turnbull is a Senior Lecturer in the School of Social Inquiry at Deakin University. He is the author of Masons, Tricksters and Cartographers: Comparative Studies in the Sociology of Scientific and Indigenous Knowledge (2000), and is internationally known for his research on the impact of science and technology on culture, comparative knowledge traditions and cartography.

NOTES

1 This article is a more contextualized version of arguments pursued in 'Cook and Tupaia, a Tale of Cartographic Méconnaissance?' in Margarette Lincoln (ed.), *Science and Exploration in the Pacific: European Voyages to the Southern Oceans in the Eighteenth Century* (London: Boydell Press and National Maritime Museum, 1998), pp. 117-132.

2 Stephen Greenblatt, *Marvellous Possessions: The Wonder of the New World* (Chicago: University of Chicago Press, 1991), p. 119.

3 Edward Said cited in Juliana Engberg (ed.) *Colonial Post Colonial* (Bullen, Vic: Museum of Modern Art at Heide, 1996), p. 9.

4 See David Turnbull, 'Constructing Knowledge Spaces and Locating Sites of Resistance in the Second Cartographic Revolution', in Rolland G. Paulston (ed.), *Social Cartography: Mapping Ways of Seeing Social and Educational Change* (New York: Garland Publishing, 1996); also David Turnbull, 'Cartography and Science: Mapping the Construction of Knowledge Spaces', *Imago Mundi* 48 (1996), pp. 5-24.

5 *Méconnaissance* also means non-appreciation, misreading, ungratefulness, ingratitude. *Méconnaître* means not to recognise, to disown, to disregard, to slight, to ignore, to misjudge.

6 Richard Harker, Cheleen Mahar, and Chris Wilkes (eds.), *An Introduction to the Work of Pierre Bourdieu: the practice of theory* (Basingstoke, Hampshire: Macmillan, 1990), pp. 150-1; Jonathan Scott Lee, *Jacques Lacan* (Boston: Twayne Publishers, 1990), pp. 23-5.

7 David Murray, *Forked Tongues: Speech, Writing and Representation in North American Indian Texts* (Indiana University Press: Bloomington, 1991), p. 1; Harold Gatty, *Nature is Your Guide: How to Find your Way on Land and Sea by Observing Nature.* (London: Collins, 1958), p. 43: 'Nearly every explorer found resident navigators, chart makers and explorers before him who helped them in their discoveries.'

8 Urs Bitterli, *Cultures in Conflict: Encounters Between European and Non-European Cultures, 1492-1800* (Cambridge: Polity Press, 1989), p. 4.

9 This erasure is analagous to that of the technician in laboratory work see Steven Shapin, 'The Invisible Technician', *American Scientist*, 77 (1989), 554-63.

10 Karl Kerényi, 'The Trickster in Relation to Greek Mythology, in Paul Radin (ed.), *The Trickster: a Study in American Indian Mythology* (New York: Schocken Books, 1972), p.185; see also Donna Haraway, *Symians, Cyborgs and Women: The*

Reinvention of Nature (New York: Routledge, 1991).

11 On performance see Greg Dening, *Performances* (Carlton, Vic: Melbourne University Press, 1996); on performativity see Andrew Pickering, *The Mangle of Practice: Time, Agency, and Science* (Chicago: University of Chicago Press, 1995). On the 'great divide and the other', see Bruno Latour, 'Visualisation and Cognition: Thinking With Eyes and Hands', *Knowledge and Society*, 6 (1986), 1-40.

12 Richard Pearson Gillespie, Science and Indigenous Knowledge Systems: Research Essay for the Carlton Gardens Project, Museum of Victoria, 1996, p. 10; David Turnbull, 'Local Knowledge and Comparative Scientific Traditions', *Knowledge and Policy*, 6, (1993), 29-54; and 'Comparing Knowledge Systems: Pacific Navigation and Western Science', in John Morrison, Paul Geraghty and Linda Crowl (eds.), *Science of Pacific Island Peoples: Vol.1: Ocean and Coastal Studies* (Suva: Institute of Pacific Studies, 1994), pp. 129-144.

13Geoffrey Malcolm Badger, 'Cook the Scientist', in Geoffrey Malcolm Badger (ed.), *Captain Cook: Navigator and Scientist* (Canberra: Australian National University Press, 1970), pp. 30-49.

14 Ben Finney, et. al., *Voyage of Rediscovery: a Cultural Odyssey through Polynesia* (Berkeley: University of California Press, 1994), p. 7.

15 John Cawte Beaglehole (ed.), *The Voyage of the Resolution and Discovery 1776-1780* (Cambridge: Hakluyt Society, 1967), p. cxviii.

16 John Cawte Beaglehole (ed.), *The Voyage of the Endeavour 1768-1771* (Cambridge: Hakluyt Society, 1955), p. 154. Beaglehole notes that in his journal, Cook first wrote that he had 'not the least doubt' that the Tahitians were experienced in undertaking lengthy sea -voyages, but then chose to be more circumspect on this point.

17 Frederick William Beechey, *Narrative of a Voyage to the Pacific and Beering's Strait, 1825-28* (2 vols; London: Richard Bentley, 1831), vol. 1, pp. 235-6, reported a similar incident. Tuwarri a native of Anaa, or Chain Island, 300 nautical miles east of Tahiti was picked up by Beechey on an island some 420 nautical miles to the south east - a total drift of 600 nm, as Beechey had already sailed 100 nm towards Maitea to the south west of Chain. Interestingly, Tuwarri drew a chart of the archipelago and, like Tupaia, assigned each a name 'though he could never recognise them.'

18 Beaglehole (ed.), *Voyage of the Resolution and Discovery 1776-1780*, p. 87.

19 Cook, as cited by Douglas Oliver, *Ancient Tahitian Society* (3 vols; Honolulu: University Press of Hawaii, 1974), vol. 1, p. 212.

20 David Turnbull, *Mapping The World in the Mind: An Investigation of the Unwritten Knowledge of the Micronesian Navigators* (Geelong: Deakin University Press, 1991). For comprehensive appraisals of the evidence, see Geoffrey Irwin, *The Prehistoric Exploration and Colonisation of the Pacific* (Cambridge: Cambridge University Press, 1992), and Ben Finney, et. al., *Voyage of Rediscovery*.

21 Cook and King, as cited by Gordon L. Lewthwaite, 'Tupaia's Map: The Horizons of a Polynesian Geographer, *Yearbook of the Association of Pacific Coast Geographers*, 28 (1966), 41.

22 Brian Durrans, 'Ancient Pacific Voyaging: Cook's Views and the Development of

Interpretation', in T. C. Mitchell (ed.), *Captain Cook and the South Pacific* (London: British Museum, 1979), pp. 137-66.

23 *Voyage of the Endeavour*, p. 291.

24 John Cawte Beaglehole, *The Life of Captain James Cook* (London: A. and C. Black, 1974), p. 133.

25 Derek Howse, *Greenwich Time and the Discovery of the Longitude* (Oxford: Oxford University Press, 1980), p. 28.

26 Beaglehole, 'Cook the Navigator', in John Vincent Stanley Megaw (ed.) *Employ'd as a Discoverer: Papers presented at the Cook Bi-Centenary Symposium, Sutherland Shire, 1-3 May 1970* (Sydney: A. Sutherland Council, 1971), p. 123. Maskelyne's nautical almanac was based on the Greenwich meridian and became commonly used from 1767 - hence the meridian was eventually adopted as international standard; see Derek Howse, *Greenwich Time*, p.66.

27 Raleigh Ashlin Skelton, 'Cook's Contribution to Marine Surveying', *Endeavour*, 27 (1968), 32.

28 Beaglehole, 'Cook the Navigator', p. 124. This haphazard state of affairs is noted by Glynn Williams, 'Seamen and Philosophers in the South Seas in the Age of Captain Cook', *Mariner's Mirror*, 65 (1979), 3-22.

29 Alan Villiers, *Captain Cook, The Seamen's Seaman: a Study of a Great Discoverer* (London: Penguin, 1969), p.47.

30 Villiers, *Cook*, p. 18.

31 Villiers, *Cook*, pp. 25-6.

32 Beaglehole, *The Life of Captain James Cook*, p. 40.

33 On this point generally, see Bruno Latour, *Science in Action: how to follow Scientists and Engineers through Society* (Cambridge, Mass: Harvard University Press, 1987); more specifically, Eva Germaine Rimington Taylor, 'Navigation in the Days of Captain Cook', *The Journal of the Institute of Navigation*, 21 (1968), 256-76.

34 Richard Woolley, 'The Significance of the Transit of Venus', in Geoffrey Malcolm Badger (ed.), *Captain Cook: Navigator and Scientist*, p. 119.

35 Harry Woolf, *The Transits of Venus: a Study of Eighteenth-Century Science* (Princeton: Princeton University Press, 1959), p. 148.

36 Woolf, *The Transits*, pp. 4, 15.

37. W. H. Robertson, 'James Cook and the Transit of Venus', *Proceedings of the Royal Society of New South Wales*, 103 (1970), 5-9.

38 Woolf, *the Transits*, pp. viii, 197.

39 Geoffrey Malcolm Badger, 'Cook the Scientist', in Badger (ed.), *Captain Cook: Navigator and Scientist*, pp. 37-8. On Latour's concept of the laboratory, see his *Pasteurization of France* (Cambridge, Mass.: Harvard University Press, 1988).

40 Cook, as cited by W.H. Robertson, 'James Cook and the Transit of Venus', n. 20.

41 Woolf, *The Transits*, p. 189.

42 Cited in Beaglehole, *Endeavour Voyage*, p. cxlv.

43 *Endeavour Voyage*, p. 448: 'he [Green] had long been in a bad state of hilth [sic], which he took no care to repair but on the contrary lived in such a manner as greatly promoted the disorders he had had long upon him, this brought on the Flux which put a period to his life.'

44 See Gerald James Holton, *The Scientific Imagination: Case Studies* (Cambridge: Cambridge University Press, 1978).

45 Woolf, *The Transits*, p. 194.

46 *The Transits*, p. 148.

47 *The Transits,* p. 149.

48 B. Latour, 'Visualisation and Cognition...', pp. 1-40.

49 Skelton, 'Cook's Contribution to Marine Surveying' p. 29.

50 John Cawte Beaglehole (ed.), *The Endeavour Journal of Joseph Banks: 1768-1771* (2 vols.; Sydney: Angus and Robertson, 1962), 1, pp. 312-3. Banks' ambitions were of course thwarted in Tupaia' s case but were eventually fulfilled by Mai, who was brought to London by Tobias Furneaux, captain of the *Adventure* sister ship on Cook' s second voyage. See Eric Hall McCormick, *Omai: Pacific Envoy* (Auckland: Auckland University Press, 1977).

51 *Voyage of the Endeavour*, p. 117.

52 Oliver, *Ancient Tahitian Society*, vol. 3, p. 1202.

53 Some commentators have doubted whether Tupaia ever drew a map. See G.S. Parsonson, review of R.R.D. Milligan's 'The Map drawn by the Chief Tuki-Tahua in 1793', in *Journal of the Polynesian Society*, 74 (1965), 128.

54 Gordon L. Lewthwaite, 'The Puzzle of Tupaia's Map', *New Zealand Geographer*, 26 (1970), p. 1.

55 *Voyage of the Endeavour*, pp. 293-4.

56 Horatio Hale, *United States Exploring Expedition during the Years 1838-42* (Philadelphia: Shenan, 1846), p. 122.

57 Hale, *United States Exploring Expedition*, p. 122.

58 *Voyage of the Endeavour*, p. 291.

59 *Voyage of the Endeavour*, p. 240.

60 William James Lloyd Wharton (ed.), *Captain Cook's Journal during His First Voyage round the World Made in H.M. Bark "Endeavour", 1768-71* (London: Elliot Stock, 1893), p. 363. Wharton writes, 'there is no doubt his presence on board when the ship was in New Zealand was the greatest advantage, affording a means of communicating with the natives, which prevented the usual gross misunderstandings which arise as to the object of the visit of an exploring ship. Without him, even with Cook's humane intention and good management, friendly relations would have been much more difficult to establish.'

61 *Voyage of the Endeavour*, pp. 441-42.

62 *Voyage of the Resolution and Discovery*, p. 241.

63 Ann Salmond, *Two Worlds: First Meetings Between Maori and Europeans, 1642-1772* (Auckland: Viking, 1991), p. 238.

64 Gordon L. Lewthwaite, 'The Puzzle of Tupaia's Map', pp. 1-19.

65 James Morrison, *The Journal of James Morrison, Boatswain's Mate of the Bounty...*(London: Golden Cockerel Press, 1935), p. 201.

66 P. Adam, 'La Culture Polynésienne et la Navigation', *Journal de la Société des Océanistes*, 38 (1982), 140.

67 Woolf, *Transits of Venus*, p. 194.

68 David Lewis, *We, the Navigators: the Ancient Art of Landfinding in the Pacific* (Canberra: Australian National University Press, 1972), 138; Thomas Gladwin, *East is a Big Bird: Navigation and Logic on Puluwat Atoll* (Cambridge, Mass.: Harvard University Press, 1970), p. 186; Edwin Hutchins, 'Understanding Micronesian Navigation', in Dedre Gentner and Albert L. Stevens (eds.), *Mental Models* (Hillsdale, New Jersey: Lawrence Erlbaum, 1983), p. 191-226.

69 Geoffrey Irwin, 'Against, Across and Down the Wind: a Case for the Systematic Exploration of the Remote Pacific Islands',

The Journal of the Polynesian Society, 98 (1989), 175.

70 Thomas Gladwin, *East is a Big Bird*; David Lewis, *We the Navigators*; Stephen D. Thomas, *The Last Navigator* (New York: Ballantine Books, 1988); Richard Feinberg, *Polynesian Seafaring and Navigation: Ocean Travel in Anutan Culture and Society* (Kent: Kent State University Press,1988); Ben R. Finney, *Hokule'a: the Way to Tahiti* (New York: Dood, Mead and Co., 1979); Ben R. Finney, 'Myth, Experiment and the Re-Invention of Polynesian Voyaging', *American Anthropologist*, 92(1991): 383-404; Ben R. Finney, Paul Frost, Richard Rhodes, and Nainoa Thompson, 'Wait for the West Wind', *The Journal of the Polynesian Society*, 98(1989): 261-302; Ben R. Finney, Bernhard J. Kilonsky, Stephen Somsen, and Edward D. Stroup, 'Re-Learning a Vanishing Art', *Journal of the Polynesian Society*, 95(1986): 41-90.