

# The Physical *Endeavour*: how a wooden ship shaped Cook's first circumnavigation

CLAIRE BRENNAN

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## Introduction

The *Endeavour* voyage of Captain James Cook has an extensive and expanding scholarship, but the *Endeavour* itself is often lost from view. The vessel's role in shaping the voyage was profound. The *Endeavour* was selected for the voyage because of its sturdiness and ability to carry stores, not for manoeuvrability or speed. As a result its limitations became the limitations of the voyage, and reading the voyage accounts carefully reveals the vessel's impact on what could be attempted and what could be achieved. The success of the voyage depended on the nature of the wooden bubble that conveyed Cook, seamen, marines, scientists and artists to the Pacific: Cook's vessel was a delicate life-support device carrying its crew to foreign shores, and back again.

The *Endeavour* was originally a Whitby collier. As a coal carrier it had a shallow draught and a great deal of storage space – characteristics later endorsed by Cook, who wrote, 'Little progress has been hitherto made in discoveries in the Southern Hemisphere. For all ships which attempted it before the *Endeavour*, were unfit for it.'<sup>1</sup> And the ship's shape may have influenced selection of its captain, as Cook was familiar with Whitby colliers while most naval captains were not.<sup>2</sup> The vessel was bought for the voyage and then transformed from the *Earl of Pembroke* into the *Endeavour*. During that process the routine and conditions of naval life were overlaid on the *Endeavour*'s physical shape making it a unique vessel – shallow in draught, heavily laden with stores, and run with the efficiency of a good naval ship.

The *Endeavour*'s final form was shaped by a number of factors that affected how the voyage was conducted. This article will examine relevant aspects of the nature of naval vessels in this period and the conditions in which Cook, his crew, naturalist Joseph Banks and Banks' entourage worked. It will then explore the way in which that final form shaped this voyage. In addition to the limitations imposed by its

physical form, the *Endeavour*'s requirements for replenishment and its limited manoeuvrability played a significant role in Cook's choice of route and destination: the vessel's needs in part determined the location and duration of landings and its abilities set limits on where Cook and Banks could go. The *Endeavour*'s wooden frailties meant the voyage was almost left incomplete.

### **The *Endeavour* as an 18th-century British naval vessel**

The internal organisation of the *Endeavour* was determined by naval practice, and space within the ship was allocated unequally according to naval and social hierarchies. The quarterdeck was for officers, and for officers there were cabins. Cabins conferred privileges of privacy, comfort, and the ability to transport private stores including food, although the *Endeavour*'s officers' and warrant officers' quarters were still cramped, with low ceilings.<sup>3</sup> Joseph Banks was similarly privileged, although the comparative luxury of his cabin was shared with two dogs, scientific equipment, and personal stores, while his artists shared the status, conditions, food and discomforts of ordinary sailors. As captain, Cook had a cabin at the back of the ship and controlled access to the large, light and airy Great Cabin; ordinary members of the crew had only a hammock and a shared space in which to hang it.<sup>4</sup> Overall, the ship was closely packed with men who mostly had no space that was actually their own. Yet, when Samuel Johnson observed, 'No man will be a sailor who has contrivance enough to get himself into a jail; for being in a ship is being in a jail, with the chance of being drowned. A man in jail has more room, better food and commonly better company',<sup>5</sup> he was representing the view of a privileged landsman.

Historian N. A. M. Rodger has convincingly argued that ordinary seamen considered their living conditions to be one of the attractions of service in the navy despite the monotonous food, frequent danger, risk of disease, and irregular pay.<sup>6</sup> The *Endeavour* was particularly cramped because of the need to carry stores for an extended voyage and men lived packed together, but the conditions were acceptable to them and they still found space to eat, sleep, work, socialise, and keep secrets.<sup>7</sup> The men on Cook's ship were all volunteers, and were familiar with shipboard conditions when they signed on.<sup>8</sup>

One of the key elements of naval life on the *Endeavour* was the food that sustained its crew on the voyage around the world. The normal rations of the navy included large quantities of beer, biscuit, and meat, and 'pinchgut money' was paid if the quantity of rations had to be reduced. Ship's biscuit was a staple of the naval diet. It was hard and prone to infestation by weevils.<sup>9</sup> It might also contain substances such as sawdust, used to bulk out the flour from which it was made. The dubious quality of the *Endeavour*'s biscuit is clear in Cook's account. In Tahiti the

bread was taken ashore to 'dry and clean' and, as Cook wrote, 'We have been employ'd for some days past in over-hauling all the Sea provisions, and stowing such as we found in a state of decay to hand in order to be first expended.'<sup>10</sup> The state of the biscuit was also made evident by Banks' appraisal of the comparative attractions of Tahitian supplies: 'Our bread is at present so full of vermin that notwithstanding all possible care I have sometimes had 20 at a time in my mouth, every one of which tasted as hot as mustard.'<sup>11</sup> The quality of the provisions continued to deteriorate throughout the voyage and the bread was aired, when possible.

The biscuit was not the only foodstuff to deteriorate; by the end of the voyage the crew were consuming meat that had been in barrels for at least three years. Even early in the voyage meat had been towed behind the ship for up to a day before being eaten, a process intended to freshen it.<sup>12</sup> When, late in the voyage, the crew's rations were increased (improving morale) Banks noted, 'Two thirds allowance had I believe made the chief difference with them, for our provisions were now so much wasted by keeping that that allowance was little more than was necessary to keep life and soul together.'<sup>13</sup> The food on the *Endeavour* was palatable for its time, and enough could be carried to support Cook's crew in what was acceptable discomfort to the officers and scientific personnel, and relative plenty to the men, for most of whom regularly eating meat was a luxury.

On Cook's ship, as throughout the British Navy at this time, the main source of calories was alcohol.<sup>14</sup> The water on board a naval ship had often been stored for months, and alcohol made such water palatable. It also made life on board more bearable. On a daily basis the *Endeavour*'s men consumed eight pints of beer or half a pint of rum. Additional alcohol was served on special occasions such as Christmas and drunkenness was common among the crew. Cook's clerk was drunk enough to sleep through having parts of his ears cut off, John Reading (the boatswain's mate) drank himself to death during the voyage,<sup>15</sup> and at Batavia Cook noted the good health of 'the Sail maker an old Man about 70 or 80 Years of age [who had been] generally more or less drunk every day'.<sup>16</sup> Throughout the voyage Cook made an effort to brew beer when the *Endeavour* was near land (he thought it helped prevent scurvy) and the *Endeavour* was a typical ship of her time with respect to alcohol.

However, the diet on Cook's vessel varied from that of a normal naval vessel because of the length of time the ship was away from British naval bases. In addition to variations imposed by distance, Cook introduced dietary innovations designed to stop scurvy – such as the consumption of sauerkraut and malt, and whatever was available in the way of plant material. In Tahiti fruit was readily available; in New Zealand Cook had his men gather wild celery and scurvy grass. His men also consumed more than the usual quantity of meat, helped by the availability of food for trade in the Pacific. Fish, shellfish, and crayfish were eaten when they could be caught or traded for.<sup>17</sup> The crew also found themselves eating less familiar animals,

often in association with Banks' interests in natural history as his biological specimens, once recorded, were generally consumed. After shooting and eating shags, Banks reflected on how undiscriminating the tastes of all on board had become:

Hunger is certainly most excellent sauce, but since our fowls and ducks have been gone we find ourselves able to eat any kind of Birds (for indeed we throw away none) without even that kind of seasoning. Fresh provision to a seaman must always be most acceptable if he can get over the small prejudices which once affected several in this ship, most or all of whom are now by virtue of good example completely curd.<sup>18</sup>

Earlier in the voyage Banks recorded the partially successful collection of a cuttlefish. The animal had died recently and had been mangled by seabirds, leaving Banks unable to identify its species: 'Only this I know that of him was made one of the best soups I ever eat.'<sup>19</sup>

Cook purchased animals for the ship when they were available, with the intention of having fresh meat available at sea. The scale of such purchases was large: at Savu (an island within the zone of influence of the Dutch East India Company) the ship purchased and loaded eight buffalo, 30 dozen fowls, six sheep, three hogs, as well as vegetables, eggs, and syrup.<sup>20</sup> Animals were present throughout the voyage, but they are rarely mentioned in Cook's journal, appearing only when newly purchased or when something untoward occurred. In Cook's journal the poultry were mentioned when they were drowned by heavy seas, the sheep when grass was cut for them, the pigs when they were scorched to death at the Endeavour River. The goat that stayed in milk for the whole voyage never appears in Cook's journal, although she was later rewarded with a silver collar and a comfortable (though short) retirement.<sup>21</sup>

Banks' journal mentions the animals more often, perhaps because of his interest in natural history, perhaps because shipboard life was more of a novelty to him. Thus Banks' journal noted that cats and dogs were included on the list of crew involved in the ship's ceremony when crossing the equator (Banks paid a ransom for both himself and his dogs to avoid being ducked in the sea).<sup>22</sup> Banks notes misfortunes associated with the ship's livestock: the ship's cat killing a bird he was keeping on board,<sup>23</sup> the pigs and fowl bought at Tahiti beginning to run out of food and die from hunger and cold.<sup>24</sup> He offers an insight into the sheer number of animals on board when he lists his private collection of animals on 23 September 1769: 17 sheep, 4 or 5 fowls, 4 or 5 Tahitian hogs, 4 or 5 Muscovy ducks, an English boar and sow with litter.<sup>25</sup> Animals added to the claustrophobia and stink of life on board the *Endeavour*, but they were a common feature of life at sea in the 18th century, and sheep manure was essential to the process of fothing which saved the *Endeavour* when holed by the Great Barrier Reef.<sup>26</sup>

Cook's ship reflected the social order of the Georgian navy. It was a tightly regulated world that obeyed a set of well-known rules. Violence was a normal part of naval life in the period, necessary to preserve order in the cramped conditions and to preserve the integrity of the ship. Cook's journal records the punishments he handed out, which included floggings, in response to actions that endangered the running of the ship. The *Endeavour* set out with 14 marines on board, there to maintain order externally and internally. At Tahiti shots were regularly fired at islanders perceived to be threatening the crew while crew members who tried to desert were forcibly retained.<sup>27</sup> Cook's inability to tolerate desertion was linked to maintaining discipline on board, but it was also necessary to preserve the vessel, as crew members had skills that could not be replaced. Similarly Cook's rapid and overwhelming responses to theft by islanders was in part dictated by his need to preserve his ship – items that were stolen, such as ship's supplies and scientific instruments, could not be replaced while in the Pacific.

### **The perils of wood**

The *Endeavour* was a wooden world and that created dangers of its own. The ship had a single wooden bottom, which was sheathed below the waterline with thin fir planks covered with 'clout-headed filling spikes, hammered in 3/8ths of an inch apart'.<sup>28</sup> Between them the nails and their associated rust provided a metallic cover for the hull. Damage to the sheathing opened the vessel to attack by the teredo worm, a voracious, ship-eating monster. A mussel with a larval stage that consumes wood, the teredo worm is active in warm waters and its attacks were very hard to detect before they became catastrophic.

The very threat of the worm consumed time during the voyage. At Tahiti Cook spent three days 'careening both sides of the Ship and paying them with Pitch and Brimstone' even though he 'found her bottom in good order and that the Worm had not got into it'.<sup>29</sup> Cook spent a further week scraping and paying the ship's sides and found two anchor stocks had been ruined by worm,<sup>30</sup> while Banks recorded that the longboat's bottom was 'eat intirely through by the worm'.<sup>31</sup> The damage caused by the Great Barrier Reef was immediate but also on-going, as damage to the sheathing might lead to Cook's vessel being eaten out from under him.<sup>32</sup> And it was the state of the *Endeavour*'s bottom that caused Cook's delay at Batavia and the resulting deaths of 31 of the crew from dysentery.

Arriving at Batavia on 10 October 1770, Cook judged it unsafe to sail on without attempting repairs.<sup>33</sup> After spending time negotiating those repairs with Dutch East India Company representatives on 9 November, the *Endeavour* was hauled out of the water and inspected and Cook became fully aware of the toll his voyage had taken on the fabric of his ship:

[We] found her bottom to be in a far worse condition than we expected, the False Keel was gone to within 20 feet of the stern post, the Main Keel wounded in ma[n]y places very considerably, a great quantity of Sheathing [off], several planks much damaged especially under the Main channell near the Keel were two planks and a half near 6 feet in length were within 1/8 of a Inch of being cut through and here the worms had made their way quite into the Timbers, so that it was a Matter of Surprise to every one who saw her bottom how we had kept her above water and yet in this condition we had said some hundreds of Leagues in as dangerous a Navigation as is in any part of the world happy in being ignorant of the continual danger we were in.<sup>34</sup>

The repairs themselves were undertaken efficiently despite the extensive work required and Cook was able to leave Batavia on 27 December. The hull had been repaired, the ropes and sails renewed as far as possible, and the ship restocked with food and other supplies.

The *Endeavour* was unusual in undertaking exploration with a single vessel. This severely limited Cook's ability to take risks when mapping coasts and his subsequent Pacific expeditions were undertaken with two ships. The *Endeavour* carried five smaller boats and could, to a certain extent, act as a fleet. These smaller vessels – a yawl, pinnace, longboat and two skiffs – were used to pull the *Endeavour* away from lee shores and into channels, at times they were sent ahead to find routes through reefs and entrances to harbours, and they acted as bridgeheads for land expeditions, although they had insufficient room aboard to act as life craft for all the crew.<sup>35</sup> All the *Endeavour*'s boats were limited by their size and by their wooden construction, but they increased its mobility. As a result they were invaluable to the *Endeavour* but they were an extension of the vessel, not a replacement and not equivalent to a consort.

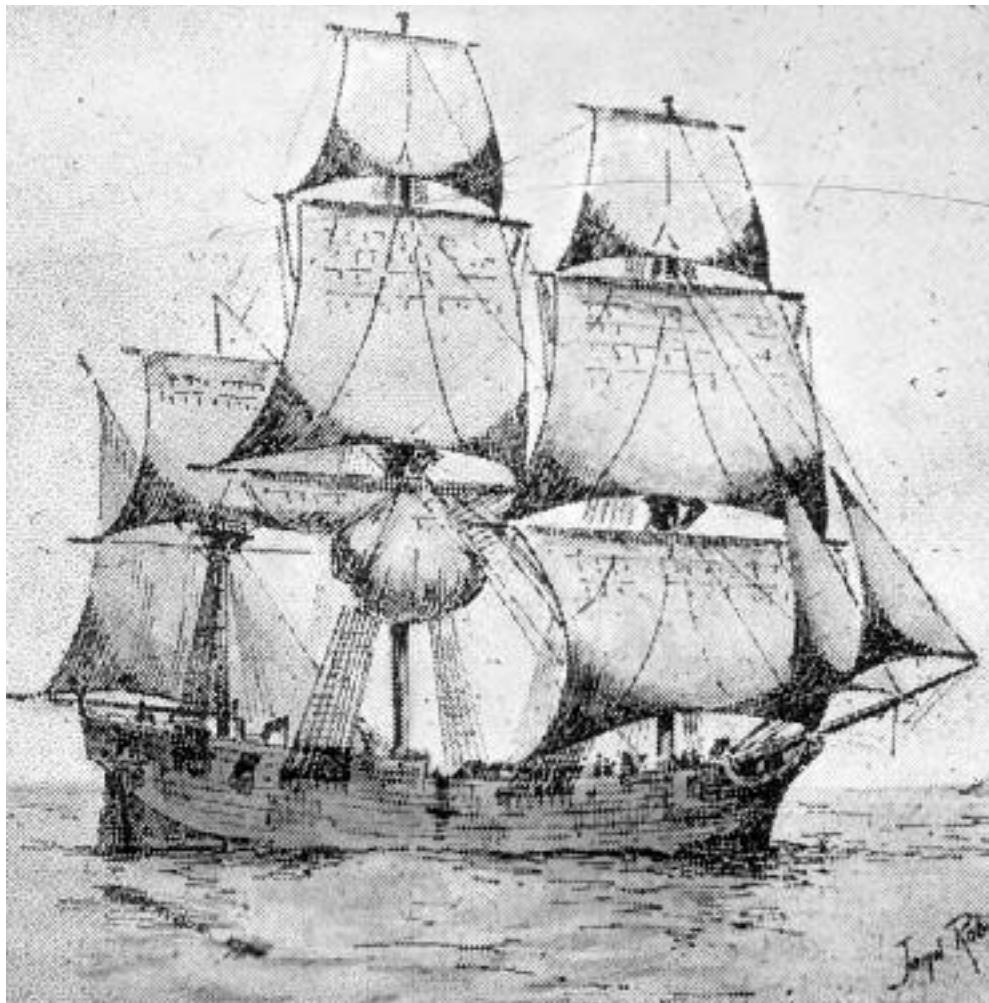
### **The wind commands**

Cook's vessel both facilitated and limited his voyage and made the expedition subject to wind and weather. The *Endeavour* was chosen not for speed or ability to sail close to the wind but for its shallow draught and storage capacity. As a result the vessel was slow and unwieldy.<sup>36</sup> Banks commented of the *Endeavour* that the sailors,

found the ship to be but a heavy sailer, indeed we could not Expect her to be any other from her built, so are oblig'd to set down with this Inconvenience, as a nescessary consequence of her form; which is much more calculated for stowage, than for sailing.<sup>37</sup>

Thus Cook was at sea in a vessel chosen for practical reasons and unable to sail close to the wind, making him very dependent on favourable winds to reach his destinations. This dependence is obvious in Cook's journal in his constant notes on the direction of the wind and on the weather more generally. There are also frequent

notes on the depth of water and the nature of the sea floor. The significance of wind, weather, and water depth to Cook's voyage should be obvious, yet it is possible to look at Cook's maps and forget the physical fact of the *Endeavour*. Even reaching the Pacific was difficult. The *Endeavour* struggled to pass the Straits of Magellan because of opposing winds and tides (it was pushed out of the Straits three times) and was forced to use the Straits of Le Maire to enter the Pacific.<sup>38</sup>



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*(RAHS Glass Slide Collection)*

Historian Greg Bankoff has argued that Spain's Pacific empire was shaped by the Pacific's trade winds and so incorporated Guam and the Philippines, but not Japan or Hawai'i.<sup>39</sup> A single vessel could not be impervious to winds that shaped an empire, and the *Endeavour*'s form limited what members of the expedition could see and where they could go.

The *Endeavour* explored regions of the Pacific new to Europeans but Cook's plans were often frustrated by physical conditions. His mapping of New Zealand and Australia was hindered by wind and the nature of the coasts. Part of his journal entry for 8 October 1769 reads:

At 5 PM seeing the opening of a Bay that appear'd to run pretty far inland, hauled our wind and stood in for it, but as soon as night came on we kept plying on and off until day light when we found ourselves to leeward of the Bay the wind being at north. By noon we fetched in with the SW point, but not being able to weather it we tacked and stood off.<sup>40</sup>

The next day the wind allowed Cook to achieve his objective: 'Gentle breezes and clear weather. PM stood into the Bay and anchored on the NE side before the entrance of a small river in 10 fathom water and a fine sandy bottom,'<sup>41</sup> but the following day he was again frustrated in his designs: 'PM I rowed round the head of the Bay but could find no place to land, on account of the great surff which beat every where upon the shore.'<sup>42</sup> Over the course of three days physical conditions and the limits of his vessel and its boats twice prevented Cook from being able to land even when he had reached a safe anchorage. His naming of the coast of New Zealand memorialised the difficulties of his voyage: at Cape Turnagain unfavourable winds forced him to abandon his original exploration and turn back along the coast,<sup>43</sup> at Cape Foulwind the ship was forced away from shore by unfavourable winds.<sup>44</sup> Off the west coast of the North Island Cook noted his difficulties again:

the great sea which the prevailing westerly winds impell upon the Shore must render this a very dangerous Coast ... once clear of it I am determined not to come so near again if I can possibly avoide it unless we have a very favourable wind indeed.<sup>45</sup>

Banks also recorded the ways in which the wind dictated the *Endeavour*'s progress. His journal contains a number of plaintive entries: 'This morn found ourselves gone backwards',<sup>46</sup> and six days later, 'We this morn saild tho the wind was foul. We turnd to windward all day and at night according to custom found ourselves to leward of the place we had left in the morning.'<sup>47</sup> He noted when the expedition lost a week's worth of progress in one day of bad wind, and when the lack of wind allowed the ship to be carried backwards by a current.<sup>48</sup> After leaving Batavia, 'The wind was so foul and balkd us so often that after having saild the whole day we were glad at night to come back again to our old Birth under Cracatoa.'<sup>49</sup> Banks summed up his experiences by noting, 'The sea is certainly an excellent school for patience.'<sup>50</sup>



*Joseph Banks found his plans for natural history excursions were often overruled by the wind conditions and Endeavour's ability to manoeuvre. (Source: RAHS Glass Slide Collection)*

Banks' plans for natural history were also subject to the wind. While still in the Atlantic conditions denied him a chance to land on the island of Fernando de Noronha.<sup>51</sup> He was similarly deprived of a chance to land at Tierra del Fuego:

After dinner a small breeze sprung up and to our great Joy we discoverd an opening into the land and stood in for it in great hopes of finding a harbour; however after having ran within a mile of the shore were obliged to stand off again as there was no appearance of shelter and the wind was on shore.<sup>52</sup>

Even at sea Banks found his plans for natural history at times overruled by the wind, lamenting, 'A shoal of small fish were today under our stern who attended the ship for some time; she had however too much way through the water for our instruments so we could not take any of them.'<sup>53</sup>

When Cook had finished mapping the coast of New Zealand it was the physical condition of the *Endeavour* that determined the expedition's subsequent course. Banks recorded the discussion among the officers about which route to take. Of three possibilities it was the ship that determined which was taken:

One, much the most elegible, to return by Cape Horn keeping all the way in the high Latitudes, by which means we might with certainty determine whether or not a Southern Continent existed; but this was unanimously agreed to be more than the Condition of the ship would allow. Our provisions indeed might be equal to it ... but our Sails and rigging ... were renderd so bad by the blowing weather that we had met with off New Zealand that we were by no means in a condition to weather the hard Gales that must be expected in a winter passage through high latitudes. The second was to steer to the southward of Van Diemens Land and stand away directly for the Cape of Good Hope, but this was likewise immediately rejected: if we were in too bad a condition for the former we were in too good a one for this. 6 months provision was much more than enough to carry us to any Port in the East Indies and the over plus was not to be thrown away in a Sea Where so few navigators had been before us: the third therefore was unanimously agreed to, which was to stand immediately to the Westward, fall in with the Coast of New Holland as soon as possible, and after following that to the northward as far as seemd proper, to attempt to fall in with the Lands seen by Quiros in 1606. In doing this, although we hopd to make discoveries more interesting to trade at least than any we had yet made, we were obligd intirely to give up our first grand object, the Southern Continent.<sup>54</sup>

Cook's famous exploration and mapping of the east coast of Australia was a consequence of the *Endeavour*'s damaged sails and plentiful provisions.

### **Mapping and its limits**

The course of Cook's voyage was limited by having only one vessel at his command. Cook was unable to explore the northern tip of Cape York because he could not risk further damage to his ship and because stores were running low. Reflecting on his nearly completed voyage in unknown waters, Cook drew attention to the difficult balancing act he had been called upon to perform:

Was it not from the pleasure which naturally results to a Man from being the first discoverer, even was it nothing more than sands and Shoals, this service would be insupportable, especially in far distant parts, like this, short of Provisions and almost every other necessary. The world will hardly admit of an excuse for a man leaving a Coast unexplored he has once discover'd, if dangers are his excuse he is than charged with Timorousness and want of Perseverance and at once pronounced the unfittest man in the world to be employ'd as a discoverer if on the other hand he boldly encounters all the dangers and obstacles he meets and is unfortunate enough not to succeed he is than charged with Temerity and want of conduct. The former of these aspersions cannot with Justice be laid to my charge and if I am fortunate enough to surmount all the dangers we may meet the latter will never be brought in question. I must own I have ingaged more among the Islands and shoals upon this Coast than may be thought with prudence I ought to have done with a single Ship and every other thing considered, but if I had not I should not have been able to give any better account of the one half of it than if we had never seen it, that is we should not have been able to say whether it consisted of main land or Islands and as to its produce, we must have been totally ignorant.<sup>55</sup>

Cook had to balance the fragility of his ship against the purpose of his voyage. Gaining knowledge of unmapped coastlines meant risking his vessel, and at times he had to leave regions uncharted.

Using the fragile instrument of the ship Cook set about mapping the regions he travelled through. A central part of that process involved assigning latitudes and longitudes to physical locations – fitting the Pacific into a European way of describing the world. While determining latitude was relatively straightforward (although it involved both observation and calculation) determining longitude was much more difficult and prone to error in this period. On the *Endeavour* voyage Cook mostly kept track of his longitude by dead reckoning, although he also employed the system known as ‘lunars’ championed by the Astronomer Royal of the day, Nevil Maskelyne, and when possible took astronomical observations of the positions of Jupiter’s moon.<sup>56</sup> His journal notes disagreement between the different methods, and between observations taken at the same place on different days.<sup>57</sup> As a result, despite Cook’s meticulous approach to cartography and navigation, during this voyage there was at times significant uncertainty about quite where the ship was; when Matthew Flinders re-mapped the coast of what is now Queensland he found that Cook’s recorded longitudes were not always accurate.<sup>58</sup> Similarly, while Cook’s map of New Zealand is astounding in its accuracy it is not perfect and he placed the country too far to the east.<sup>59</sup>

This uncertainty about longitude was not unusual in Cook’s time. In a region as well known as that of Fernando de Noronha Island off the coast of Brazil some nautical charts showed shoals to the east, others to the west. Cook concluded that despite these records the shoals did not exist at all, as he did not see any.<sup>60</sup> While still in the Atlantic, Cook sighted Pepys Island, although on close inspection Cook and

his crew recognised they had been deceived by an optical illusion.<sup>61</sup>

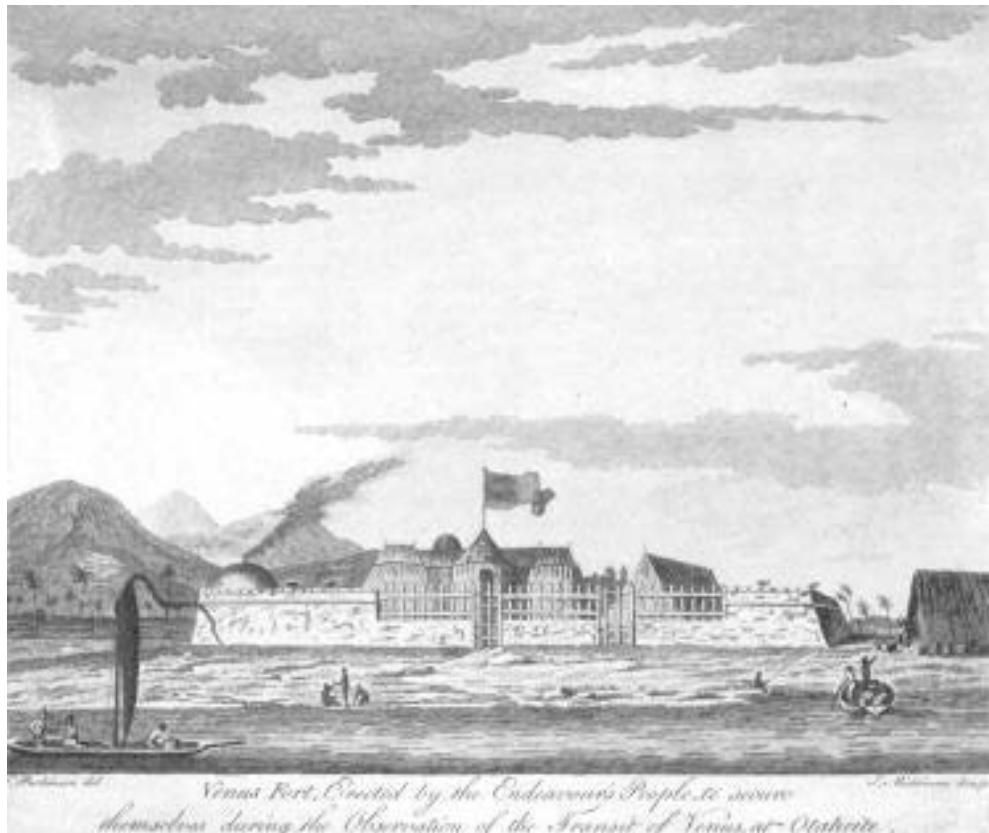
The view from a rolling ship's deck made taking observations difficult, even when the wind was cooperative. Cook used prominent features to survey a coast and used his log to judge the distances between them. However the ship was often forced away from land and the relationship between prominent feature and coastline had to be guessed.<sup>62</sup> Thus on Cook's map of New Zealand the size of the Canterbury plains of the South Island are misjudged as only the mountains behind them were clearly visible from the ship. The other two evident errors – the mapping of Banks' Peninsula as an island and of Stewart Island as a peninsula – are the result of evaluating a difficult coastline from the deck of a ship being forced offshore by the wind. The track of the *Endeavour* – marked on Cook's map – indicates the limits the physical nature of his sailing ship imposed on Cook's cartography.<sup>63</sup>

### **Securing the ship**

The naval nature of the *Endeavour* also influenced the events of the voyage. When the ship stopped at Rio de Janeiro on the way to Tahiti, Banks was not allowed ashore to botanise as the Viceroy was suspicious of the intentions of a British naval expedition. Cook summed up the Viceroy's inability to comprehend the scientific nature of the voyage in his journal, noting, 'He could form no other idea of that Phanomenon after I had explained it to him then the North Star passing thro. the South Pole (these were his own words.)'<sup>64</sup> Instead, the Viceroy believed the *Endeavour* was in Rio to break the Portuguese trade monopoly and refused to allow its crew ashore. Banks and his colleague Daniel Solander managed to steal only one day of collecting, by slipping out their cabin window.<sup>65</sup>

Historian Richard Sorrenson's seminal article on the *Endeavour* as a scientific instrument argued the ship offered Cook advantages, as well as imposing limitations. Sorrenson noted that a ship offered its inhabitants a 'superior, self-contained, and protected view of the landscape and civilisations' visited.<sup>66</sup> However that view was costly: ships were 'by far the most expensive instruments of their day' and only the state could afford them.<sup>67</sup> The association with the state ran deeper as the ship was supported by land-based scientific institutions, chief among them the Royal Society and the Royal Greenwich Observatory.<sup>68</sup> Cook's calculations of longitude depended on tables produced by the Observatory, and his expedition was a data-gathering mission for the Royal Society. Thus Cook's ship provided him with advantages and linked him to British institutions, but the need to keep this expensive viewing platform safe limited what he could observe.

In Tahiti, the site of Fort Venus was chosen as it was 'properly situated for observing the Transit of Venus *and at the same time under the command of the Ships Guns*'.<sup>69</sup> The observatory site was required to have a good anchorage nearby that gave the ship a clear shot at the surrounding area. The military nature of the



'Venus Fort, Erected by the Endeavour's People to secure themselves during the Observation of the Transit of Venus at Otaheite'. Sydney Parkinson, del; Samuel Middiman, sculp, 1773.

Fort Venus on Tahiti protected the observatory with weaponry carried by the Endeavour, indicating Cook's awareness of possible threats to the ship and its crew.

(Courtesy National Library of Australia, nla.obj-147206695)

expedition meant that the observatory became a small fort:

The North and South parts consisted of a Bank of earth 4 1/2 feet high on the inside, and a Ditch without, 10 feet broad and 6 feet deep: on the west side facing the Bay a Bank of earth 4 feet high and Pallisades upon that, but no ditch the works being at highwater mark: on the East side upon the Bank of the River was place'd a double row of casks: and as this was the weakest side the 2 four pounders were planted there, and the whole was defended beside these 2 Guns with 6 Swivels and generally about 45 Men with small arms including the officers and gentlemen who resided aShore; I now thought myself perfectly secure from anything these people could attempt.<sup>70</sup>

In New Zealand the need to secure the *Endeavour* could force Cook's hand when interacting with local Maori. At times Cook acted violently despite the lack of a clear threat, unable to risk the security of his vessel:

as I did not know but what I might be obliged to send our Boats a head to sound I thought these gentry [local Maori in canoes] would be as well out of the way I order'd a musquet shott to be fired close to one of them, but this they took no notice of. a four pounder was then fired a little wide of them.<sup>71</sup>

Later he again acted in a similar manner:

as the Ship was upon the careen I thought they might give us some trouble and perhaps hurt some of our people that were in the boats along side; for this reason I fire'd some small Shott at one of the first offenders this made them keep at a proper distance while they stayd which was not long before they all went away.<sup>72</sup>

At other times his mission forced him to confront obvious hostility, as when he landed at Mercury Bay:

We were Accompanied in here by several Canoes, who stay'd about the Ship untill dark and before they went away they were so generous as to tell us that they would come and attack us in the morning, but some of them paid us a Veset in the night, thinking no doubt but what they should find all hands a sleep ... My reasons for puting in here were the hopes of discovering a good Harbour and the disire I had of being in some convenient place to observe the Transit of Mercury.<sup>73</sup>

### **Time ashore in service of ship**

The *Endeavour*'s voyage to the Pacific had been prompted by scientific concerns and the inclusion of Banks and his entourage demonstrated a clear commitment by the navy and the Royal Society to scientific work. However the nature of the vessel shaped the science that was done on the voyage. Sorrenson has pointed out that the interests of the voyage were influenced by:

the imperative of maintaining the operating efficiency of the ship as it moved over the globe: where it was (geography), whether it could anchor safely at particular locations and avoid running aground at others (hydrography), where it would find water and food for its crew and wood to heat or repair the ship (natural history), and whether the natives, if there were any, were 'friendly' (ethnography).<sup>74</sup>

However the vessel could scuttle plans for science. Banks complained only once during the voyage – about not being allowed ashore when he thought good harbours were available to the ship – but that was not the only time wind, weather, and the physical conditions of the shore prevented Banks from collecting specimens.<sup>75</sup>

In general, the worse the sailing the better the science. Cook's difficulties getting through the Straits of Magellan provided Banks with opportunities to observe the natural history of the area. On 14 January 1769, when the *Endeavour* had been pushed out of the Straits for the third time, the ship stood into a bay to escape the

wind and Banks and Solander had four hours ashore botanising. A lack of wind could also help Banks and his science – off Cape Horn Cook noted that, ‘The weather was such as to admit Mr Banks to row round the Ship in a lightermans skiff Shooting birds.’<sup>76</sup>



*Cook stopped only briefly at Botany Bay, but long enough to claim New South Wales for England. (RAHS Photogragh Collection)*

Similarly Cook’s need to replenish the ship’s water supply at times allowed Banks and his fellow scientists to go botanising.<sup>77</sup> However, the *Endeavour* did not stop in the region of Port Jackson because of a lack of fresh water on shore. Unable to find the water he needed Cook pressed on despite the ship’s dirty bottom making him eager to find a safe harbour.<sup>78</sup> In contrast in New Zealand, stopping for a day to water the ship had provided Banks with a chance to botanise,<sup>79</sup> and at Endeavour River Cook’s need to repair his ship allowed Banks to explore the area extensively.

Banks was undoubtedly fortunate in Cook’s interest in his work. Cook took Banks and Solander as well as astronomer Charles Green with him when looking for a spot to set up the observatory on Tahiti.<sup>80</sup> After leaving Endeavour River, Cook allowed Banks to explore whenever the ship demanded or allowed contact with land. On 11 August 1770 Banks was able to visit islands in the Great Barrier Reef because Cook wished to use them as vantage points to plot the *Endeavour*’s future path.

## Endeavour River

On 11 June 1770 the *Endeavour* hit the Great Barrier Reef and stuck fast. Cook and his crew lightened the vessel by throwing overboard 40 or 50 tonnes of water, guns, ballast, ‘decay’d stores’ and anything else that could be spared. After great effort the vessel came free of the reef and on 13 June 1770 the leak was fothered and Cook noted how surprising and delightful an event this was. He wrote:

but a few minutes before our utmost wishes were to get hold of some place upon the Main or an Island to run the Ship ashore where out of her Materials we might build a vessel to carry us to the East Indias.<sup>81</sup>



An original Endeavour 4-pounder cannon thrown overboard to lighten the ship’s load when it struck the Great Barrier Reef on 11 June 1770. (RAHS Photograph Collection)

But the success of fothering meant that Cook and his crew could instead hope to repair the *Endeavour* and continue the voyage. The desperate situation of the vessel caught upon the reef was well captured by Banks:

We well knew that our boats were not capable of carrying us all ashore, so that some, probably the most of us, must be drownd: a better fate maybe than those would have who should get ashore without arms to defend themselves from the Indians or provide themselves with food, on a countrey where we had not the least reason to hope for subsistance had they even every convenience to take it as netts &c, so barren had we always found it; and had they even met with good usage from the natives and food to support them, debarred from a hope of ever again seeing their native countrey or conversing with any but the most uncivilizd savages perhaps in the world.<sup>82</sup>

On 22 June 1770 the ship was hauled up and the hull inspected for the first time, although some of it remained underwater and hidden. Banks described the visible damage to the ship in detail:

In the morn I saw her leak which was very large: in the middle was a hole large enough to have sunk a ship with twice our pumps but ... it was in great measure pluggd up by a stone which was as big as a mans fist: round the Edges of this stone had all the water come in which had so near overcome us, and here we found the wool and oakum or fothering which had releivd us in so unexpected a manner.<sup>83</sup>

Cook recorded his surprise at how neatly the coral had cut through the ship:

The rocks had made their way thro' four Planks ... and wound'd three more. the manner these planks were damaged or cut out as I may say is hardly credable – scarce a splinter was to be seen, but the whole was cut away as if it had been done by the hands of Man with a blunt edge tool – fortunately for us the timbers in this place were very close other wise it would have been impossible to have saved the ship and even as it was it appear'd very extraordinary that she did not make no more water than what she did – A large piece of Coral rock was sticking in one hole and several pieces of the fothering, small stones, sand &Ca had made its way in and lodged between the timbers which had stoped the water from forcing its way in in great quantities.

Part of the sheathing was gone from under the larboard bow part of the false keel was gone and the remainder in such a shatter'd condition that we should be much better off, was it gone also – her fore foot and some part of her Main keel was also damaged but not materialy what damage she may have received abaft we could not see but beleive not much as the Ship makes but little water while the Tide keeps below the leak forward.<sup>84</sup>

Only luck allowed the ship to be saved. The fragility of Cook's wooden world had been fearosomely exposed.

The ship's enforced layover allowed Banks and his scientists extended time ashore. Writing as a historian, Raphael Cilento summed up the significance of the

time at the Endeavour River to the science of the voyage. He concluded that:

[the scientists'] descriptions of 'New Holland' are, in fact, largely descriptions of Queensland. (Of Cook's eleven landings in Australia only one at Botany Bay was in the southern half of the Continent; the other ten were all in what are now Queensland or Queensland waters.)<sup>85</sup>

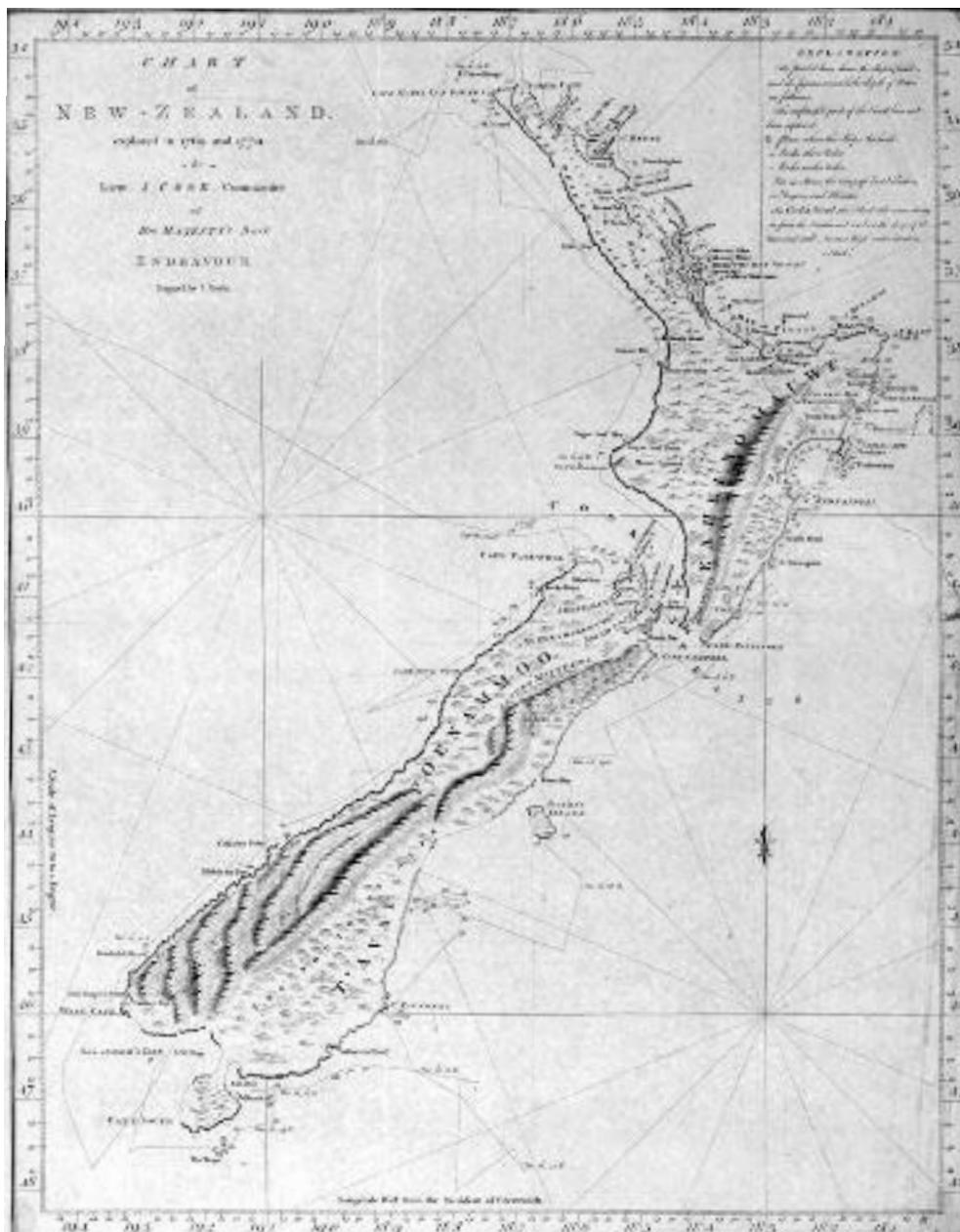
The need to repair the *Endeavour* shaped the expedition's perceptions of Australia. The ship had paused only briefly at Botany Bay, and the enforced stop at the Endeavour River was a more significant interaction with the continent.<sup>86</sup> It was in the north the Europeans first sighted an animal 'less than a grey hound ... of a Mouse Colour very slender made and swift of foot'<sup>87</sup> and the enforced stop allowed Banks and Gore to go on an overnight expedition up the Endeavour River, largely to obtain a specimen of this animal. Gore successfully shot one, and after it was described by the expedition's scientists it was additionally described by Cook as 'excellent food'.<sup>88</sup> As a result of the *Endeavour*'s interaction with the reef and subsequently with the Guugu Yimithirr people, the name 'kangaroo' became attached to a wide range of marsupials, although previously the word was used only around the Endeavour River.<sup>89</sup>

Even after repairing his ship and leaving the river, Cook's continuing troubles with the reef and his ship provided Banks with scientific opportunities as Cook visited islands in the reef while trying to locate channels for his ship. In addition, the need for repairs to the pinnace caused another delay and led to a detailed survey of a region of the Cape York Peninsula.<sup>90</sup>

### **Sailing close to disaster**

Cook's encounter with the reef was not the only time that the ship nearly sank the expedition: Cook had previous and subsequent narrow escapes. Leaving Tahiti, Banks recorded a close scrape with a reef.<sup>91</sup> The coast of New Zealand also nearly claimed the ship, on more than one occasion. In December 1769 Banks recorded that a day of difficult winds ended with the ship in danger of being dashed on the shore. The pinnace was used to tow the ship away from danger but the *Endeavour* still hit rocks twice and Banks noted that 'the almost certainty of being eat as soon as you come ashore adds not a little to the terrors of shipwreck'.<sup>92</sup> Sailing around the southern tip of New Zealand in February 1770 the ship had 'a very fortunate escape' from ledges of rock which Cook then named The Traps.<sup>93</sup> Banks elaborated on the danger the ship narrowly escaped:

At first dawn of day a ledge of rocks were discovered right to leeward and very near us, so we had much reason to be thankful that the wind in the night had been very gentle otherwise we must in all human probability have run right among them, at least we could have had no chance of escaping them but by hearing them as there was no moon.<sup>94</sup>



*'Chart of New Zealand explored in 1769 and 1770 by Lieut J. Cook Commander of His Majesty's bark Endeavour. John Bayly and James Cook, 1772.'* Cook's map shows the path of the ship; at times conditions forced him away from the shore and made mapping extremely difficult. To the south of Stewart Island, near the bottom of the map, 'The Traps' are marked, where Endeavour was nearly wrecked. (Courtesy National Library of Australia, nla.obj-230689929)

Other coastlines also nearly claimed the ship. Even after the repairs at Endeavour River the *Endeavour*'s passage through the Great Barrier Reef was fraught with difficulty and the ship was nearly lost. After leaving the river Cook attempted to find his way out to open ocean as he feared being funnelled towards the shore. The ship's dwindling stores, combined with a likely seasonal shift in wind direction, threatened its ability to reach known ports in the East Indies.<sup>95</sup> On 14 August Cook considered the *Endeavour* free of the reef,<sup>96</sup> but two days later the ship was very nearly wrecked and Cook was forced to re-enter the reef.<sup>97</sup> Towards the end of the voyage unexpected land nearly wrecked the ship near Natal. Banks reported:

Another hour would have infallibly have carried us upon it. But fortunate as we might think ourselves to be yet unshipwreckd we were still in extreme danger, the wind blew right upon the shore and with it a heavy sea ran which broke mountains high on the rocks with which it was every where lind, so that tho some in the ship thought it possible the major part did not hope to be able to get off. Our anchors and cables were accordingly prepard but the sea ran too high to allow us a hope of the Cables holding should we be drove to the Necessity of making use of them, and should we be drove ashore the Breakers gave us as little hope of saving even our lives: at last however after 4 hours spent in the vicissitudes of hope and fear we found that we got gradually off and before night were out of Danger.<sup>98</sup>

Banks might have had a landsman's sense of danger at sea, but sailing in uncharted and poorly charted waters was fraught with risk and the ship only survived the voyage through a combination of good luck and good management.

## Conclusion

The *Endeavour* was an essential component of Cook's first voyage to the Pacific. As well as a scientific instrument the *Endeavour* was a wooden ship. The vessel placed physical constraints on the voyage and limited its duration and course. Its fragility forced Cook to withdraw from some opportunities for observation, but the voyage would not have been successful had he dared more and lost all. As it was, the limits of the ship and his other instruments shaped his observations, and limited the ability of Banks and his entourage to botanise and ethnologise. Cook's route was adapted to the ability of the ship; science was conducted according to the ship's need for safe harbour, supplies, and repair. And the ship was nearly lost on more than one occasion. The *Endeavour* proved its resilience by making it around the world, but it was a fragile vessel and on more than one occasion nearly succumbed to hostile seas, sinking its entire scientific mission with it.

While Cook's eventual fate is well known, that of the *Endeavour* is not. After its trip around the world the *Endeavour* was used as a store ship, travelled to the Falklands, and later returned to the coal trade. Its eventual fate is open to speculation, but the ship most likely lies in Newport harbour, Rhode Island, where

it may have been one of 13 vessels scuttled by the British during the American War of Independence.<sup>99</sup>

While the *Endeavour* did not return to the Pacific itself, the ship influenced the ships chosen to follow it. When Banks used his social standing and fame to press for a different type of ship on Cook's second voyage, and then for alterations to the *Resolution* that rendered it unseaworthy (but more hospitable to science) the limits of a wooden world asserted themselves.<sup>100</sup> The Admiralty backed Cook rather than Banks when it came to the value of seaworthiness versus scientific competency, and the additions were removed. The tension between the ship as a scientific instrument and the ship as a means of travel had been made clear. Cook's voyages deserve their reputation for scientific endeavour and his ships facilitated European discovery of the Pacific, but those ships also limited what could be achieved.

James Cook University

#### Notes

1 James Cook, *The Voyages of Captain James Cook*, W. Smith, London, 1842, p 338.

2 Glyndwr Williams, 'The *Endeavour* Voyage: a coincidence of motives', in Margarette Lincoln (ed), *Science and Exploration in the Pacific: European voyages to the Southern Oceans in the eighteenth century*, Boydell Press in association with the National Maritime Museum, Woodbridge, Suffolk, UK, 1998, p 17. In contrast, John Gascoigne credits Cook's captaincy to his talent for astronomy, proven by his published observation of the 1766 solar eclipse: John Gascoigne, *Captain Cook: voyager between worlds*, Hambledon Continuum, New York, 2007, p 26.

3 All the officers' and warrant officers' quarters had a height of 4ft: Karl Heinz Marquardt, *Captain Cook's 'Endeavour'*, Conway Maritime, London, 1995, p 18.

4 Marquardt, *Captain Cook's 'Endeavour'*, p 18.

5 James Boswell, *The Journal of a Tour to the Hebrides, with Samuel Johnson, LL.D*, Henry Baldwin, for Charles Dilly, London, 1791, p 126. Boswell and Johnson's tour was undertaken in 1773.

6 N. A. M. Rodger, *The Wooden World: an anatomy of the Georgian Navy*, Norton New York, 1996, p 60.

7 In his analysis of the mutiny on the *Bounty*, Greg Dening noted Captain William Bligh's amazement that it had been possible to keep the impending mutiny secret from him and his officers in the crowded space of an 18th-century naval ship: Greg Dening, *Mr Bligh's Bad Language: passion, power and theatre on the Bounty*, Cambridge University Press, Cambridge, 1994, p 20. On the *Endeavour*, despite the cramped space and lack of privacy, secrecy was similarly possible. On 22 May 1770 Richard Orton, Cook's clerk was so soundly drunk in his cabin that someone was able to first cut off his clothes and then return and cut off parts of his ears. Suspicion fell first on midshipman James Magra, then on another midshipman, Patrick Saunders (who deserted at Batavia), but guilt was never definitively assigned. The incident highlights that the cramped conditions of the ship were managed by the men: privacy could be preserved, and violent discord was usually avoided.

8 Williams, 'The *Endeavour* Voyage', p 12. Cook's crew included men (and a goat) who had just returned from the voyage of HMS *Dolphin*, an earlier round-the-world voyage: Gascoigne, *Captain Cook*, p 22.

9 In 2001 the *Endeavour* replica was used in a BBC documentary recreating Cook's voyage along the Australian coast. The conditions on board ship were recreated as realistically as possible, including sleeping arrangements and food (although alcohol rations were not issued). Five members of the crew broke seven teeth between them on the historically accurate ship's biscuit: Alexander Cook, 'Sailing on the Ship: Re-Enactment and the Quest for Popular History', *History Workshop Journal*, no 57, 2004, p 248; Iain McCalman, 'The Little Ship of Horrors: Reenacting Extreme History', *Criticism*, vol 46, no 3, 2004, p 479. The broken teeth were not mentioned in the official account of the voyage: Simon Baker, *The Ship: retracing Cook's Endeavour voyage*, BBC Worldwide, London, 2002.

10 James Cook, *Journal of Remarkable Occurrences aboard his Majesty's Bark Endeavour, 1768-1771*. Transcription of National Library of Australia, published by South Seas using the Web Academic Resource Publisher, <http://southseas.nla.gov.au/journals/cook/contents.html>, 2004, 5 June 1769 and 15 June 1769.

11 Joseph Banks, *The Endeavour Journal of Joseph Banks, 1768-1771*. Transcription of National Library of Australia, published by South Seas using the Web Academic Resource Publisher, <http://southseas.nla.gov.au/journals/banks/contents.html>, 2004, 28 July 1769.

12 Banks, 2004, 10 April 1769.

13 Banks, 2004, 4 September 1770.

14 James Watt, 'Some Consequences of Nutritional Disorders in Eighteenth-Century British Circumnavigations', in James Watt, E. J. Freeman, and William F. Bynum (eds), *Starving Sailors: the influence of nutrition upon naval and maritime history*, National Maritime Museum, London, 1981, p 68.

15 Cook, 2004, 28 August 1769.

16 Cook, 2004, 26 December 1770.

17 D. Wayne Orchiston, 'Cook Voyage "Trading Stations" in Early Protohistoric New Zealand', *Dominion Museum Records in Ethnology*, vol 2, no 12, 1974, pp 149-50.

18 Banks, 2004, 10 November 1769.

19 Banks, 2004, 3 March 1769.

20 Banks, 2004, 19 September 1770; Baker, *The Ship*, pp 197-8.

21 'A famous goat', *Telegraph* (Brisbane), 28 April 1936, p 12.

22 Banks, 2004, 25 October 1768.

23 Banks, 2004, 21 October 1768.

24 Banks, 2004, 21 August 1769, 23 August 1769.

25 Banks, 2004, 23 September 1769.

26 Cook, 2004, 13 June 1770. Fothering was a means of making a temporary plug for the side of a ship. The technique was known to Jonathan Munkhouse and the *Endeavour*'s plug was created using oakum, wool, and sheep manure. This material was transported to the site of the leak on a sail, where it was sucked into position by the seawater entering the gash in the ship's side.

27 Anne Salmond, *The Trial of the Cannibal Dog: Captain Cook in the South Seas*, Allen Lane, London, 2003, pp 80-2.

28 Marquardt, *Captain Cook's 'Endeavour'*, p 12.

29 Cook, 2004, 7, 8, 9 June 1769.

30 Cook, 2004, 9, 11 July 1769.

31 Banks, 2004, 27 May 1769.

32 Cook, 2004, 25 June 1770.

33 Cook, 2004, 11 August 1770.

34 Cook, 2004, 9 November 1770.

- 35 Ray Parkin, *HM Bark Endeavour: her place in Australian history: with an account of her construction, crew and equipment and a narrative of her voyage on the east coast of New Holland in the year 1770*, 2nd edn, Miegunyah Press, Melbourne, 2003, pp 27-34.
- 36 Like the original, the *Endeavour* replica cannot sail closer than 90 degrees to the wind severely limiting her possible routes: McCalman, 'Little Ship of Horrors', p 480.
- 37 Banks, 2004, 27 August 1768.
- 38 Banks, 2004, 13 January 1769.
- 39 Greg Bankoff, 'Winds of Colonisation: the meteorological contours of Spain's Imperium in the Pacific 1521-1898', *Environment and History*, vol 12, no 1, 2006, pp 65-88.
- 40 Cook, 2004, 8 October 1769.
- 41 Cook, 2004, 9 October 1769.
- 42 Cook, 2004, 10 October 1769.
- 43 Cook, 2004, 17 October 1769.
- 44 Banks, 2004, 19 March 1770.
- 45 Cook, 2004, 4 January 1770.
- 46 Banks, 2004, 23 October 1769.
- 47 Banks, 2004, 29 October 1769.
- 48 Banks, 2004, 13 December 1769.
- 49 Banks, 2004, 2 January 1771.
- 50 Banks, 2004, 25 March 1770.
- 51 Banks, 2004, 22 October 1768.
- 52 Banks, 2004, 12 January 1769.
- 53 Banks, 2004, 1 November 1768.
- 54 Banks, 2004, 30 March 1770.
- 55 Cook, 2004, 17 August 1770.
- 56 Wayne Orchiston, 'Astronomical Results of Cook's Voyages', in John Robson (ed), *The Captain Cook Encyclopaedia*, Random House, Auckland, 2004, pp 31-3.
- 57 For example, Cook, 2004, 28 September 1768. These differences are explored further in Bill Keir, 'Captain Cook's Longitude Determinations and the Transit of Mercury – Common Assumptions Questioned', *Journal of the Royal Society of New Zealand*, vol 40, no 2, 2010, pp 27-38.
- 58 Miriam Estensen, *The Life of Matthew Flinders*, Allen & Unwin, Sydney, 2003, pp 226, 44.
- 59 Keir, 'Captain Cook's Longitude Determinations and the Transit of Mercury', p 32; Wayne Orchiston, *Nautical Astronomy in New Zealand: the voyages of James Cook*, Carter Observatory, Wellington, 1998, pp 68-9; Andrew David, 'Introduction', in Andrew David, Rudiger Joppien and Bernard Smith (eds), *The Charts & Coastal Views of Captain Cook's Voyages Vol I*, Hakluyt Society in association with the Australian Academy of the Humanities, London, 1988, p xxxiv.
- 60 Cook, 2004, 28 October 1768.
- 61 Cook, 2004, 4 January 1769. The island was a phantom that continued to float on maps well into the 19th century.
- 62 Richard Sorrenson, 'The Ship as a Scientific Instrument in the Eighteenth Century', *Osiris*, 11, 1996, pp 231-2.
- 63 I. Bayly (engraver), 'Chart of New Zealand, explored in 1769 and 1770 by Lieut: I: Cook, Commander of His Majesty's Bark *Endeavour*', published by South Seas using the Web Academic Resource Publisher, [http://southseas.nla.gov.au/journals/maps/zoom\\_nz.html](http://southseas.nla.gov.au/journals/maps/zoom_nz.html), 2004. Many of Cook's other charts also show the track of the *Endeavour*.
- 64 Cook, 2004, 14 November 1768.

- 65 Banks and Solander spent 26 November 1768 ashore.
- 66 Sorrenson, ‘The Ship as a Scientific Instrument’, p 222.
- 67 Sorrenson, ‘The Ship as a Scientific Instrument’, p 224.
- 68 Sorrenson, ‘The Ship as a Scientific Instrument’, p 225.
- 69 Cook, 2004, 15 April 1769. Emphasis added.
- 70 Cook, 2004, 1 May 1769.
- 71 Cook, 2004, 13 October 1769.
- 72 Cook, 2004, 16 January 1770.
- 73 Cook, 2004, 4 November 1769.
- 74 Sorrenson, ‘The Ship as a Scientific Instrument’, p 228.
- 75 Banks, 2004, March 1770.
- 76 Cook, 2004, 1 February 1769.
- 77 Cook, 2004, 16 January 1769.
- 78 Cook, 2004, 29 May 1770.
- 79 Cook, 2004, 21 October 1769.
- 80 Cook, 2004, 15 April 1769.
- 81 Cook, 2004, 13 June 1770.
- 82 Banks, 2004, 11 June 1770.
- 83 Banks, 2004, 22 June 1770.
- 84 Cook, 2004, 22 June 1770.
- 85 Raphael Cilento, ‘Sir Joseph Banks, FRS, and the Naming of the Kangaroo’, *Notes and Records of the Royal Society of London*, vol 26, no 2, 1971, p 157.
- 86 Glyndwr Williams and Alan Frost, ‘New South Wales: Expectations and Reality’, in Glyndwr Williams and Alan Frost (eds), *Terra Australis to Australia*, Oxford University Press, Melbourne, 1988, p 165.
- 87 Cook, 2004, 23 June 1770.
- 88 Banks, 2004, 14 July 1770; Cook, 2004, 15 July 1770.
- 89 Cilento, ‘Sir Joseph Banks, FRS, and the Naming of the Kangaroo’, p 161.
- 90 Cook, 2004, 17 August 1770.
- 91 Banks, 2004, 24 July 1769.
- 92 Banks, 2004, 15 December 1769.
- 93 Banks, 2004, 15 December 1769.
- 94 Banks, 2004, 9 March 1770.
- 95 Cook, 2004, 13 August 1770.
- 96 Cook, 2004, 14 August 1770.
- 97 Cook, 2004, 16 August 1770.
- 98 Banks, 2004, 4 March 1771.
- 99 The vessels were used to try to prevent French access to the harbour: ‘Divers Find Endeavour-Maybe’, *Naval History*, vol 20, no 5, 2006, pp 8-9. Despite an announcement in May 2016 that the *Endeavour* had been located, only the general resting place rather than the specific vessel had been found: ‘Captain Cook’s *Endeavour* May Have Been Found’, *National Geographic*, 3 May 2016; Kristin Romey, ‘No, Captain Cook’s Ship Hasn’t Been Found ... Yet’, *National Geographic*, 4 May 2016. Similarly, announcements in 2018 that the *Endeavour* had been found referred to a narrowing of the search area rather than the definite location and identification of the vessel: Michael McGowan, ‘Wreck of Captain Cook’s HMS *Endeavour* “discovered” off US coast’, *Guardian*, 19 September 2018.
- 100 Sorrenson, ‘The Ship as a Scientific Instrument’, pp 226-7.