

this figure represents a relatively low rate. To explain how islanders maintained peace in a challenging resource-poor environment, the authors introduce a game-theoretical model of “hawks” and “doves,” utilized by evolutionary biologists to explain the development of cooperation. This model assigns arbitrary pay-offs and penalties to playing either strategy—depending on how these values are defined, the stable ratio of “hawks” to “doves” can vary considerably.

Viewed in cross-cultural perspective, a rate of injury of 2.5%, far from being low, is actually very high (e.g., Keeley 1996). Furthermore, a review of the primary data from which this number was abstracted reveals that this is the averaged percentage of all cranial remains, not individuals, bearing such evidence. If one considers frontal bones of males only, where one would expect the primary evidence for injuries to be most prevalent in close range fighting with blunt weapons—as appear to have been primarily utilized on Rapa Nui—over 15% of all individuals in the cited study bear signs of injury. Similarly, 7.4% of male left parietal bones—where a right-handed attacker would also be likely to strike—were fractured. Admittedly, it is unclear whether the study sample, spanning the period between AD 1400 and 1650, is to be interpreted as a reliable average for that time period, or a severe but brief outbreak of violence averaged across a longer period of relative peace. At any rate, the lack of any skeletal material dating prior to AD 1400 makes it difficult to judge whether or not violence increased dramatically after this time, or was prevalent from the time of first settlement. While many injuries appear to have been sub-lethal (i.e., did not result in death), the frequency in the Rapa Nui skeletal material nonetheless indicates a high rate of inter-personal violence. It remains to be demonstrated that declining ecological conditions and growing population did not in fact contribute to shifting the relative pay-offs and penalties such that more and more “hawks” entered the game. If so, endemic and/or epidemic violence may have played a role in keeping population in line with resource availability on the island.

Despite these concerns, and particularly given the popularity that Diamond’s accounts of human history on Rapa Nui and elsewhere have enjoyed, this book serves a valuable role in providing a counter argument in a data-rich, well-written, entertaining format that should appeal to the general public. In an age in which data seem to play little role in public discourse on important scientific concerns (e.g., evolution, global warming, etc...), Hunt and Lipo provide a valuable example of how scientific debate proceeds in a manner that will hopefully demonstrate to readers that dissent and disagreement can push forward the pursuit of knowledge and are fundamental strengths of the scientific approach to understanding the world, not weaknesses that undermine rational inquiry into nature and our place in it. While there are certainly points where critical pieces of evidence are lacking to fully support all arguments put forth, *The Statues that Walked* presents a compelling rewriting of the popular understanding of Rapa Nui, and provides fresh hypotheses ripe for testing.

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Review by John Flenley and Paul Bahn

Science and other kinds of knowledge progress by the promulgation of rival hypotheses, and the testing of these against observations. The trouble with observations is that selecting them, accidentally or deliberately, can bias the conclusions. The new volume by Hunt and Lipo is a striking illustration of this phenomenon. The book is well written and has some reasonably good black and white illustrations. But, it contains many contentious points.

The most fundamental is the date of arrival of people which, on the basis of an excavation at ‘Anakena, they place at AD 1200. But if one wanted to find apparent evidence of a late arrival of people on Rapa Nui—say, within the last millennium—where would one go to look? The obvious choice would be in a sand dune near the sea. Since sea level reached its present position only within the last millennium (Nunn et al. 2007), all earlier coastal dunes would probably have been destroyed. Your dune would have been formed over an earlier sub-soil, exposed by marine erosion, and the lack of conformity between the two would encompass perhaps several hundred years with no record.

This is exactly what Hunt and Lipo describe having done. It is sad that this attitude—using absence of evidence as evidence of absence—seems to be gaining popularity in Pacific archaeology. The astounding gap between the Samoan and Tongan evidence, of people at 2800 BP and no further migrations until AD 1100, could suggest that it is the lack of pottery in excavations, rather than the lack of people, which is the explanation (Flenley 2010). In New

Zealand, the use of rat-gnawed fruits/seeds is driving the late arrival idea, but this technique has been shown to be flawed (Sutton et al. 2008).

Hunt and Lipo go on to suggest that population reached a peak of 3,000 by AD 1350, and was still 3,000 in 1722, when the first Europeans visited. This estimate for the peak seems extremely low. Given that 70% of the island was covered with lithic mulch (Bork et al. 2004), to assist with agriculture, it seems likely that a larger population was being maintained at the peak. The authors point out that many of the soils are not productive, since they are derived from volcanic rocks that are over 100,000 years old. This is correct, but they omit the fact that the volcanic substrate at Maunga Hiva-Hiva has been dated to less than 2,000 years old (González-Ferrán et al. 2004), and the shallow, fresh soils thereon have much evidence of use for agriculture (Stevenson et al. 2008). A peak population of at least 6,000 seems plausible, especially since the authors claim (p. 41) that 10% of the island was covered in *manavai* (rock-shelters for cultivation) in which the soils were manured with ashes and domestic waste, leading to great productivity. The total number of *manavai* is given as 2,553 (p. 40), so if they really covered 10% of the ca. 165km² island, the average area of the *manavai* would be ca. 6463m². Yet the *manavai* mapped on p. 197 cover an area of ca. 100m². Which is correct? Actually, the nutrient values on p. 198 suggest that the *manavai* could well have been used as domestic toilets, as well as vegetable gardens. But would only 3,000 people need 2553 toilets? It seems a peak population of even 10,000 would be supported by this idea.

Moreover, the authors believe (p. 141) that there were far more men than women on the island, on the flimsiest of evidence; and their scenario of the Dutch in 1722 having caused an epidemic which reduced the population to a few hundred survivors in a few years is sheer fantasy, with no basis in oral tradition. Smallpox and other infectious diseases tend not to survive long voyages, and Roggeveen had been at sea for more than seven months. We have not the slightest evidence about whether—or which—noxious germs may have been left on the island by the first few European visitors, as their stays were often extremely short—some less than one day. So scenarios about devastating epidemics (which they refer to as an “onslaught”) before smallpox was brought by the returning survivors of the Peruvian slave raids are mere speculation. Venereal disease was certainly introduced at some point before 1830, but we do not know when. In any case, the attribution of all blame for the island’s problems to Europeans is a lazy *Deus Ex Machina* explanation that simply does not hold water.

The causes and mechanism of deforestation are other contentious points. Despite the evidence of Mieth and Bork (2010) that only 10% of the palm fruits in soils show signs of rat-gnawing, Hunt and Lipo insist that rats were the primary mechanism of deforestation. They even bring evidence to bear from Hawai‘i, where rats appear to have preceded burning by 100 years. The evidence for this is from

the sediments in a coastal pond on the exposed south west coast of Oahu, where the prevailing wind would be expected to carry away most of the evidential charcoal.

The section on the carving and moving of the statues is the best. Hunt and Lipo argue strongly for the “refrigerator method”, and claim that the tell-tale chipping of the statue bases was removed on arrival at the *ahu*. This idea has some plausibility for short-distance transportation, but it seems highly unlikely that fragile and heavy statues could be easily moved distances of over 10km by this technique without severe damage. They argue that no palms would have been felled for statue moving, which is very hard to believe—levers would certainly have been needed, and use of sleds and/or rollers remains likely in some cases. Moreover, they neglect to discuss the origins of the many ropes which were essential. The pollen evidence from Rano Kau (Flenley et al. 1991) suggests a peak of *Triumfetta* (*hau hau*, the rope tree) as the palm pollen declines. Is it possible that *hau hau* was cultivated, and that palms were felled to make space for this?

Rano Kau gets a brief mention, but the pollen evidence is dismissed because of poor dating. Since dating techniques have improved, that problem is now solved. Cores now give perfect dates (Gossen 2007) and the pollen results give the real history of the vegetation (Butler & Flenley 2010; Gossen 2011). Rano Kau also negates some of Hunt and Lipo’s other ideas. There was not a lack of terracing on the island. Terraces in Rano Kau are known (Ferdon 1961). Nor was it impossible for irrigated taro to be grown on the island. It persists to this day around the Rano Kau swamp.

Their suggestion that Rapa Nui was a peaceful island is not supported by the evidence. We have already dealt with their blinkered and mistaken view of *mata‘a* elsewhere (Flenley et al. 2007). Here, Hunt and Lipo cite a 1994 paper by Owsley et al. to support their claim that “the skeletal remains of prehistoric Rapanui show few signs of lethal trauma.” They thus appear unaware that in a 2003 television documentary, Owsley stated that, after examining more than 600 skeletons from Rapa Nui, he realized he was looking at the evidence of people at war with themselves: “When I compare the frequency of injuries that I’ve observed in the Easter Island population with other collections that I’ve worked with, it certainly shows the high end, it’s the extreme. It was a period of social disintegration. You’ve got endemic warfare, it’s chronic—they’re slugging it out, there’s no doubt about it.” So much for the “Peaceable Island”! Moreover, we have never before heard of the toppling of many *moai* being attributed to “inattention and lack of maintenance” (p. 153)!

The authors’ coverage of earlier work is inconsistent, to say the least. The text states (p. 171) that they and their team have been responsible for the first extensive survey of the statues since that of Thomson in 1886, thus making no mention of the decades-long (and ongoing) investigation by Van Tilburg of the *moai*. There is also no mention of the extensive survey work of Cristino and Vargas (e.g. Vargas 1998; Vargas et al. 2006). Even stranger is their claim that

theirs was also the first modern survey of *ahu*, even though they have earlier (p. 112) cited Martinsson-Wallin's *ahu* inventory of 1994. It is also striking that absolutely no mention is made of the fact that all the basic foundation stones of the authors' scenario—such as the supposedly late date for human arrival, the alleged devastation of palm trees by rats, the lack of evidence for weapons or violence on the island—have been challenged and refuted in recent years, mostly in papers in this journal (e.g. Flenley & Bahn 2007, 2010; Flenley et al. 2007).

One of the greatest omissions is that there is no mention of the bird-man cult at 'Orongo. This is exceptionally convenient for Hunt and Lipo as it flourished especially in the 18th century which, they say, saw a complete collapse from disease. Actually, the bird-man cult seems to have provided a new form of government to replace the previous system. The cooperative carving and erection of *moai* ceased in the 17th century, one symptom of the first decline. The second decline, resulting in part from European-introduced disease, probably occurred mainly in the 19th century. Both the bird-man and *moai* carving seem to have been ingenious ideas by the highly intelligent Rapanui people to establish a stable yet competitive social system, as suggested in the third edition of our own book (Bahn & Flenley 2011).

The dust jacket claims that the authors have an “ironclad case” and provide a “definitive solution” to the mystery of what really happened on the island. Needless to say, neither of these claims holds water. It is always a telling and ominous sign when a book's enthusiastic jacket-blurbs are not written by specialists in the subject concerned, and when such specialists are also rare or absent in the acknowledgements. It generally means “buyer beware”.

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Review by Riet Delsing

This edited volume, financed by the Chilean government's *Fondo Nacional de Desarrollo Cultural y las Artes* (FONDART), constitutes a terrific contribution to Rapa Nui studies. Perhaps the most interesting feature of the book is that all the authors are Chileans, many connected to the Universidad de Chile, including one of its editors, archaeologist Claudio Cristino, who headed the research team, as well as anthropologist Rolf Foerster and several recent *licenciado(a)s* in history, anthropology, archeology and law. Other well-known contributors are Nelson Castro, Edmundo Edwards and Rapanui islanders Alberto Hotus and Felipe Pakarati.

This irruption of Chileans—although long overdue—in a field largely dominated by American and European scholars offers exiting possibilities for future research. Another