# A.D. 1680 and Rapa Nui Prehistory

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THE NOTION THAT A.D. 1680 REPRESENTS A PIVOTAL POINT in the prehistory of Rapa Nui is embedded in popular accounts as well as contemporary archaeological and ecological literature for the island (e.g., Bahn and Flenley 1992; Diamond 1995, 2005, 2007; Flenley and Bahn 2002; Stevenson and Haoa Cardinali 2008; Stevenson et al. 2006). As we describe, the date was first proposed as the year of an epic battle calculated from the number of generations recounted in the oral traditions. Later, this estimate was linked to a radiocarbon date from the Poike Ditch. Under this view, this specific date is held to represent a point of catastrophic change for the prehistoric populations of the island often interpreted as a great battle (e.g., Smith 1961*b*:391; Routledge 1919:280) or the tipping point of environmental and demographic collapse caused by centuries of resource overexploitation and overpopulation (e.g., Diamond 1995, 2005). In other cases, researchers tacitly reject the specific context for the radiocarbon date as marking a battle, but use the point in time to structure their discussion of the island's chronology (e.g., Bahn and Flenley 1992:180; Flenley and Bahn 2002:170; Stevenson and Haoa Cardinali 2008; Vargas et al. 2006:233). In these ways, the notion that something critical happened around mid- to late seventeenth century continues to play an important role in contemporary interpretations of Rapa Nui's archaeological record.

Given the role the date of A.D. 1680 plays in explicitly or implicitly structuring the chronology of Rapa Nui, it is critical to consider its origins and evaluate its validity. Our work indicates that there is at present no reason to believe that A.D. 1680 or any late seventeenth-century date marks a prominent, indeed transformative, event in prehistory. Further, there exists no warrant to consider A.D. 1680 a chronological marker, event, or framework of interpretation for the archaeological record of the island. In addition, as the evidence now points to the initial colonization at about A.D. 1200 (Hunt and Lipo 2006, 2007, 2008), it is necessary to fully reassess the overall chronology of the island. While we know that the Dutch arrived in A.D. 1722, we have much to learn about prehistoric cultural chronology on the island.

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## THE ORIGIN OF A.D. 1680

The earliest specific mention of AD 1680 as an important date in Rapa Nui prehistory comes from the work of Sebastian Englert (1948 [1974]). Englert (1948) arrived at A.D. 1680 as an estimation of the date of a legendary battle between two groups known as Hanau Eepe ("Long Ears") and the Hanau Momoko ("Short Ears"). This battle was thought to have taken place at the base of Poike where a long linear depression exists, the so-called "Poike Ditch" (see Reanier and Ryan 2003). Given its frequent mention in ethnohistoric accounts (e.g., Metraux 1940; Routledge 1919; Thomson 1891) it was traditionally considered to have been an actual historic event, and one that took place prior to Rogeveen's arrival on the island in A.D. 1722.

Although Englert is cited as having reached this date by calculating it from genealogical records (Smith 1961*b*:391), its value seems to have been chosen using several principles. First, Englert (1974:91) appears to have assumed that the legendary battle occurred prior to European contact, probably given the lack of direct historical European accounts. Second, Englert placed this event toward the latter end of prehistory on the basis of a relatively short chronology he assumed for the occupation of the island. Englert calculated the island's time of colonization based on the A.D. 1850 birth date of Rapaui Enrikque Ika and 18 reported generations of descendants separating him from Hotu Matu'a, the legendary original founder and progenitor of Rapa Nui. Using 25 years as an average span for each of the 18 generations, Englert estimated the island to have been colonized in A.D. 1400. This date provides only 322 years for the span of prehistory—from Hotu Matu'a to the arrival of Roggeveen—thus he reckoned the battle must have been closer to A.D. 1722 than 1400. Englert opined the event took place a "few decades before Roggeveen" and "fixed the date at AD 1680" (1974:91).

While the value of this date was established to fit what Englert knew of the history of Easter Island and the oral records he collected, its veracity as an historical event remains somewhat dubious. As an absolute date, however, its establishment has provided a numeric basis for researchers to discuss a central feature of the chronology for the island. Considering his radiocarbon dates (i.e., the date designated K-501)[1] from the Poike Ditch, Smith (1961*b*:391) took a date of "approximately AD 1676" and interpreted it as "remarkably close to the estimated date of ca. 1680" for the event described by Englert from the oral traditions. Smith (1961*b*:391) then went on writing about Rapa Nui culture history, for example, asserting "the date of ca. 1680, for the great fire, and the absence of *mataa*, or obsidian spear head used in warfare, suggests that the war between the Hanau Eepe and the Hanau Momoko marked the end of the Middle Period, when the *mataa* seems to have been unknown or rare and the beginning of the Late Period when it was common." In his integration of Englert's estimate and his own radiocarbon dates, Smith further reified the A.D. 1680 date as the turning point in Rapa Nui prehistory. In addition, Ferdon (1961:532) writing in the same volume, frames culture historical periods using the date: "the Late Period (A.D. 1680–1868) is initiated by the battle of the Poike Ditch which, according to legend, resulted in the near annihilation of the Hanau Eeepe, or Long Ears, by the Hanau Momoko, or Short Ears." In this way, the date of A.D. 1680 was seen

as integrating the oral history and radiocarbon records. It became established as an "event" without further critical evaluation.

## CULTURE HISTORY AND RADIOCARBON

The date of A.D. 1680 and its relationship to this supposed prehistoric event is embedded in notions of the prehistory of Rapa Nui. Part of the reason for its prominence is that it seemed to support the ethnohistoric claim for an actual event. The origin of this evidence can be found in the work of investigators who joined Heyerdahl in his 1955 expedition: Edwin N. Ferdon and Carlyle Smith. These Americanist archaeologists were trained as culture historians and worked in the American Southwest and northern Plains, respectively. Smith, for example, had worked with James Ford in Louisiana and was certainly familiar with the standard methods employed in constructing culture history.

These two culture historians played a major role in the expedition and led much of the excavation, stratigraphic interpretation, and chronology-building for Rapa Nui. While Heyerdahl focused his research primarily on resolving the cultural relatedness of the prehistoric populations, it is Ferdon, for example, who summarized the prehistoric chronology of the island in the concluding chapter of the expedition monograph (Ferdon 1961), while Smith (1961*c*) reported on the radiocarbon dates.

One of the problems facing a culture historian working on Rapa Nui at the time would have been a lack of theoretical basis to explain why their methods worked (Lyman et al. 1997). In particular, the role of stylistic descriptions of artifacts was not, at the time, well explicated as the central tool to measure change through time. If the dictum of form changes in time was understood as methodological, then researchers on Rapa Nui would have appreciated that the primary challenge of building a chronology entailed describing the record in terms of stylistic variability. Lacking ceramic decorative variability, well established in places like North America, made this task difficult. With artifact classes largely consisting of aggregate stone piles and simple stone tools, finding ways of measuring the archaeological record that will not be driven by functional variability (i.e., forms that reflect interaction with the environment) is a challenge that still plagues researchers today. Studying stylistic variation in architecture and statues was an initial attempt to use aspects of form to build chronology on the island (e.g., Smith 1961*a*).

Lacking decorative variability, as commonly seen in pottery in the Americas, that could be used to construct stylistic classes, Ferdon and Smith made use of basic principles to build their chronology. First, the end date of prehistory could be assumed to be European contact in A.D. 1722. Second, it was assumed that the island was largely barren of trees and that no statues were being constructed during the earliest European encounters. Third, ethnohistoric legends recounted a major war that occurred in prehistory.

Based on these assumptions and notions of the A.D. 1680 date, Ferdon proposed three primary periods. The "Late Period" was assumed to have taken place *after* the battle in A.D. 1680 and led to the conditions observed by early European observers. The "Middle Period" preceded this from C. A.D. 1100 to 1680. Note

that only the A.D. 1680 date was considered to be a certain for this period. The "Early Period" began with settlement in A.D. 400 based on radiocarbon results from the Poike Ditch (see Smith 1961*b*, *c*). Thus, this period was largely speculative and its certainty based on the need to rationalize the radiocarbon date. In this light, there are actually two "periods" that comprised Ferdon's construction of prehistory: the period before and after the date of A.D. 1680. Thus, the original basis of the island's chronology following settlement is structured almost entirely on this single date. The mythical story and the coincidental radiocarbon date have served to solidify A.D. 1680 as a real, empirical event.

## CONTEMPORARY VERSIONS OF A.D. 1680

While the origins of the A.D. 1680 date exist in the interpretations of ethnographic legends, most contemporary researchers do not not necessarily believe the story of the battle has much in the way of historical veracity (e.g., Flenley and Bahn 2002:154). Even the original recorders of the traditions were aware that legends of this sort had to be taken with a considerable amount of caution, particularly if attempting to assign them historical status. When writing of her interviews of elder native inhabitants on the island, Routledge (1919:211) remarks that it is "even more difficult to collect facts from brains than out of stones." Metraux (1940:74) goes so far as to question whether the story itself has any antiquity and suggests "very likely the fight between the Long-ears and Short-ears is a fairly recent theme."

Despite the problems linking a radiocarbon date with an assumed event recounted in legend and recorded some 200 years after its supposed occurrence, the notion that a transformative event transpired in late prehistoric times and before European contact remains a core part of the chronology envisioned for the island. Some have now transformed an A.D. 1680 event into a *period* of transformative change marked by some combination of environmental and sociopolitical shifts. Rather than a single war, it is common for researchers to argue about a period of instability and decline preceding A.D. 1722. For example, after arguing against the idea that a great battle occurred at the Poike Ditch (Flenley and Bahn 2002:153–154), Flenley and Bahn (2002:171) reason that the changes in marine food resources indicate a significant decline in population that "would fit the oral traditions which point to big sociopolitical changes on the island c. AD 1680, with a shift in religion, burial practices, architecture, and leadership." In the same way, Vargas et al. (2006:233) argue that beginning in the sixteenth century and continuing until the arrival of the Europeans, major cultural, political, religious, environmental, and population changes occurred.

Of course, the most famous of these claims comes from Diamond's popular account of "collapse" in late prehistory. Drawing heavily on the work of Bahn and Flenley (1992), Diamond (1995:213) argues that "with the disappearance of food surpluses, Easter Island could no longer feed the chiefs, bureaucrats, and priests who kept a complex society running.... By around 1700, the population began to crash toward between one-quarter and one-tenth of its former number."

In this way, although the emphasis on A.D. 1680 has changed from a single date of a lengendary battle, it remains central to discussions of chronology and prehis-

toric transformations in culture and environment. Stevenson and Haoa Cardinali (2008:176), for example, recently divide settlement patterns for the island using the date A.D. 1680 to delineate two phases (Phases III and IV) since it is "the year in which political upheaval between elite lineages and the lesser-ranked population began." They (Stevenson and Haoa Cardinali 2008:176) continue to conclude that this date is related to "a profound organizational shift indicated by an abrupt change in the settlement pattern and use of the landscape."

The settlement changes envisioned include abandonment of agricultural field systems for more clustered occupation with the use of caves as "refuge" from warfare (Flenley and Bahn 2002:154; Stevenson and Haoa Cardinali 2008:174). While the intensive occupation of caves appears to have been a late phenomenon, its signficance in prehistory remains poorly documented. Certainly some camouflaged and fortified caves include historic occupations, following European contact (A.D. 1722), as indicated by the presence of historic artifacts such as a European glass bead (Flenley and Bahn 2002:154).

Obsidian hydration dates for this range of time are no less secure. The overall distribution of obsidian hydration dates for large portions of the island, as shown by Vargas et al. (2006:233) and Stevenson and Haoa Cardinali (2008:8), show only marked or continuous declines in dated habitation structures occurring during an interval around A.D. 1700–1750. However, given the degree of uncertainty between specific obsidian hydration values and actual calendrical dates (Anovitz et al. 1999), more conclusive statements are unwarranted. While we may be confident that the range of obsidian dates for "late" phenomena fall somewhere in the early seventeenth century, it currently is not possible to unequivocally distinguish that settlement and social changes began at A.D. 1680 or, as present distributions of dates would suggest, at some later date, in the post-European contact period.

## EMPIRICAL CALIBRATION

Given the centrality of the A.D. 1680 date to these discussions and to questions of the chronology for Rapa Nui, it is reasonable to examine its empirical basis. The often cited date K-501 consisted of "charcoal derived from crop cuttings and wood in the main burned layer of the [Poike] ditch" (Smith 1961*b*:393). The sample was analyzed in 1956 in the radiocarbon laboratory of the National Museum in Copenhagen, Denmark, and its radiocarbon age was determined to be $208 \pm 100$ radiocarbon years before present.

Turning a radiocarbon age-estimate into a calendrical date-range requires calibration. Since the 1950s, much work has gone into the refinement of calibration curves that correct for variation in the production of atmospheric radiocarbon, and these developments now include a high precision curve for the southern hemisphere. None of these were available to Heyerdahl, Smith, and Ferdon. When calibrated using Calib 5.0.2 (Stuiver and Reimer 1993) the southern hemisphere calibration dataset (McCormac et al. 2004), one obtains a rather complicated distribution of likely values (Fig. 1, Table 1). In fact, at a single standard deviation ($1\sigma$) level of confidence, the actual date is just as likely to be prior to A.D. 1600 as it is to be after A.D. 1726. At a two standard deviation ($2\sigma$) level of

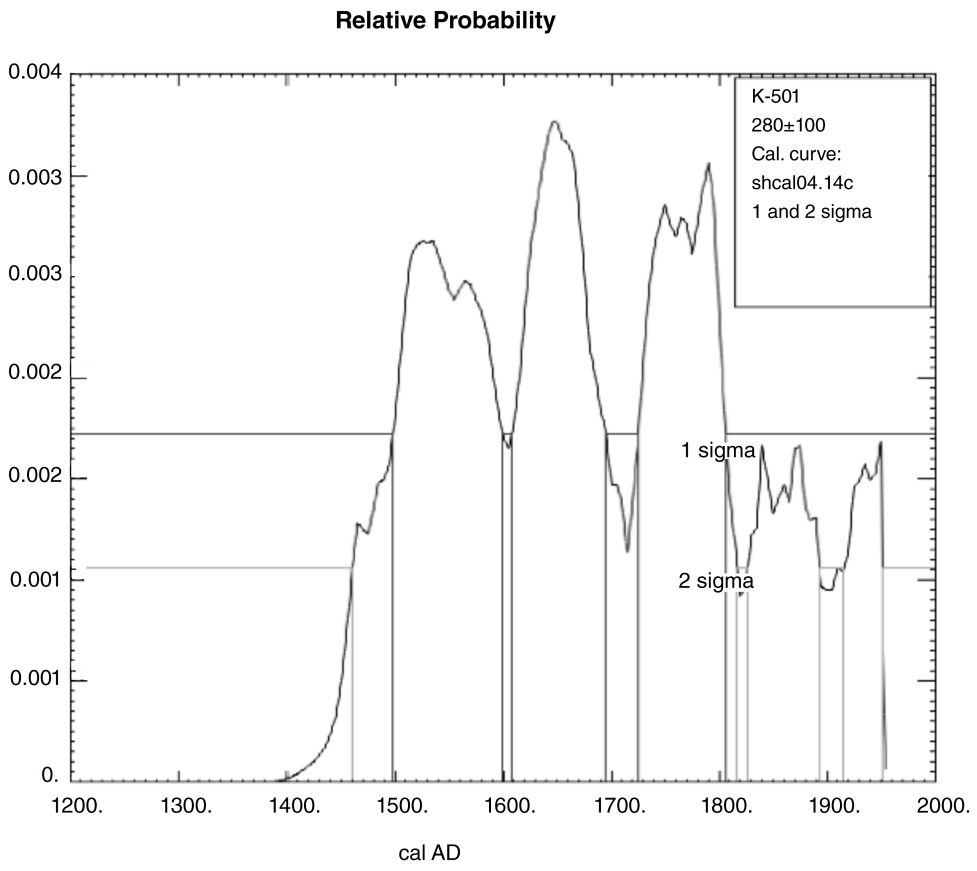


Fig. 1. Calibration curve for K-501 derived using the Southern Hemisphere Calibration Curve (McCormac et al. 2004).

Table 1. Radiocarbon Calibration for K-501 (280 ± 100 B.P.) using the Southern Hemisphere Calibration Curve (McCormac et al. 2004)

| % area enclosed | A.D. age ranges | relative area under probability distribution |
|---|---|---|
| 68.3 (1 sigma) | A.D. 1498–1600 | 0.353 |
| | 1608–1694 | 0.336 |
| | 1726–1806 | 0.311 |
| 95.4 (2 sigma) | A.D. 1460–1817 | 0.847 |
| | 1827–1894 | 0.099 |
| | 1916–1951 | 0.054 |

confidence all we can say is that the actual value is somewhere between A.D. 1460 and 1817. Thus, if we were to accept that radiocarbon date K-501 related to the construction of the Poike Ditch (as a defensive feature) then used in a battle, its calibrated age places such an event over a wide temporal range, including the probability of an historic (post-Contact) age.

## CONCLUSION

None of this critical evaluation would have likely been lost on the original researchers who proposed the radiocarbon date interpreted to be "A.D. 1680" as a key turning point in Rapa Nui prehistory. Smith (1961*b*:391) was quite clear that the dates from the expedition were largely tentative and cautiously stated that "the radio carbon dates must stand or fall in terms of comparison with dates from samples that may be obtained by future investigators." Given their knowledge of the archaeological record of the time, previous accounts, their assumptions, and the results of their radiocarbon analyses, the notion that some kind of major event occurred prior to European contact appeared to be a reasonable enough conclusion.

The time for reassessing this conclusion is long overdue. Given our understanding of the poor precision of the date itself and its ambiguous association with any specific archaeological events, we should no longer use this chronological point as a milestone in Rapa Nui prehistory. Rather we must reevaluate our understanding of the chronology in modern methodological terms. By careful analysis of the radiocarbon record as well as a suite of new dates, inroads have been made in assessing the colonization date, now established 400 to 800 years later than what has been traditionally claimed (Hunt and Lipo 2006, 2007, 2008). Similar to faulty notions of a long and even invisible early chronology, a date of A.D. 1680 cannot be considered a reliable date in radiocarbon or ethnohistoric terms that marks an event of transformative cultural change. Additional chronological investigations are necessary to distinguish changes in the archaeological record that occurred prehistorically or in the aftermath and as a consequence of European contact.

## ENDNOTE

1. The second date from associated context, designated K-502, was described as "A.D. 386" and became equated with the settlement date for the island (Smith 1961*b*, *c*).

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ABSTRACT

A.D. 1680 remains a central date in the prehistory of Rapa Nui (Easter Island). The date was first proposed as the year of an epic battle calculated from the number of generations recounted in the oral traditions. Later this estimate was linked to a radiocarbon date from the Poike Ditch. While the emphasis of the date has shifted in the literature from being the timing of a war between prehistoric groups, it is now taken to represent a prehistoric turning point of environmental collapse and social upheaval. Here, we examine the origins of the A.D. 1680 date and evaluate the reasoning behind its initial determination as well as its empirical basis. We conclude

that a date of A.D. 1680 cannot be considered a reliable date or event of transformative cultural change. Additional chronological investigations are necessary to distinguish changes in the archaeological record as either prehistoric or occurring in the aftermath and as a consequence of European contact. KEYWORDS: Rapa Nui, Easter Island, chronology, radiocarbon, collapse, European Contact.