

The Antiquity and Timeframe of the *Rongorongo* Script on Rapa Nui (Easter Island)

Gordon G. Berthin & Robert M. Schoch

Abstract. We examine the timeline of the *rongorongo* glyphic script of Rapa Nui (Easter Island) from its possible origins in the ancient indigenous rock art to artifacts collected by non-Rapanui in the 1860s and later. The demonstration of pen and ink writing by Spanish visitors to the island in 1770 may have inspired a prolific classical age of tablet inscriptions, with several large, recovered artifacts ¹⁴C (radiocarbon) dated to circa 1820s-1860s. We present a regression model based upon ¹⁴C data, tablet physical characteristics, and glyph paleography, to estimate the relative ages of seventeen larger artifacts. Recognized possible *rongorongo* inscriptions pre-dating or contemporaneous to 1770 are limited—perhaps due to environmental decay—to an inscription on a red *scoria* stone *pukao* (head-covering used to adorn or complement the giant *moai* statues) and an inscription on a treaty document produced and collected during the Spanish visit. Blackbird raids (1862–1863) and disease (smallpox was spread by a repatriated Rapanui) apparently decimated those knowledgeable in the script, and thus the *rongorongo* instructional system collapsed, leading to the demise of the script. Nevertheless, an inscribed wooden fish sculpture, possibly dating from the early 1900s, exhibits characteristics of *rongorongo* composition, although not composed using classical *rongorongo* glyphs.

1. Early History

To identify the timeframe for the development and literary lifetime of the *rongorongo* script it is first necessary to determine the initial date of settlement of Rapa Nui (Easter Island) and the place of origin of its first settlers. Sampling of the genetic profile of the indigenous population of Rapa Nui has associated “(about 90% in average) to a Polynesian-like ancestry” (Moreno-Mayar et al. 2024, p. 390). Additionally, the typology of

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the Rapanui language is associable to that of the Malayo-Polynesian language family (Figure 1). Again, this indicates a dominantly Polynesian ancestry of the original inhabitants.

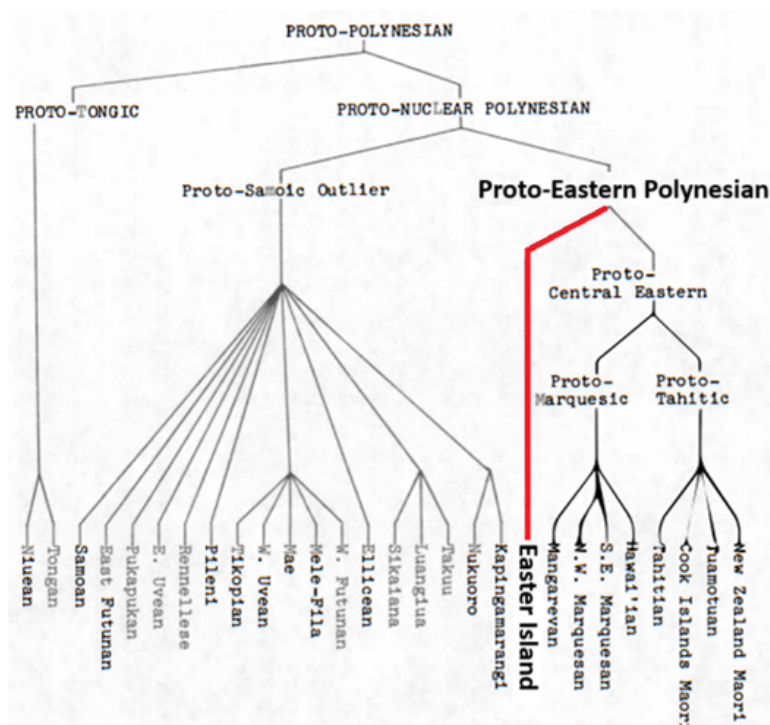


FIG. 1. Tracing the Polynesian settlement pattern based on linguistic relationships. The Rapanui (Easter Island) language is old (isolated for a long time) and descended directly from Proto-Eastern Polynesian. Illustration reference (Biggs 1978, p. 697)

The settlement of the Polynesian people throughout the Pacific Ocean likely originated with the Lapita people of Taiwan and Philippines. They expanded through Indonesia and Fiji by about 1500 BCE, reaching Tonga and Samoa somewhere between 1100 and 800 BCE (Irwin 2017, p. 4). Between 300 and 1000 CE, after a hiatus of 1,000 years, further exploration resumed in a generally eastward direction to Tahiti, the heart of East Polynesia. Perhaps the renewed exploration was driven by the emergence of periods of intense El Niño weather patterns causing “the prevailing south-easterly trade-winds to weaken, while the frequency of westerly winds increases” (ibid., p. 5). Under such conditions voyagers could have reliably sailed or tacked in any direction. More-

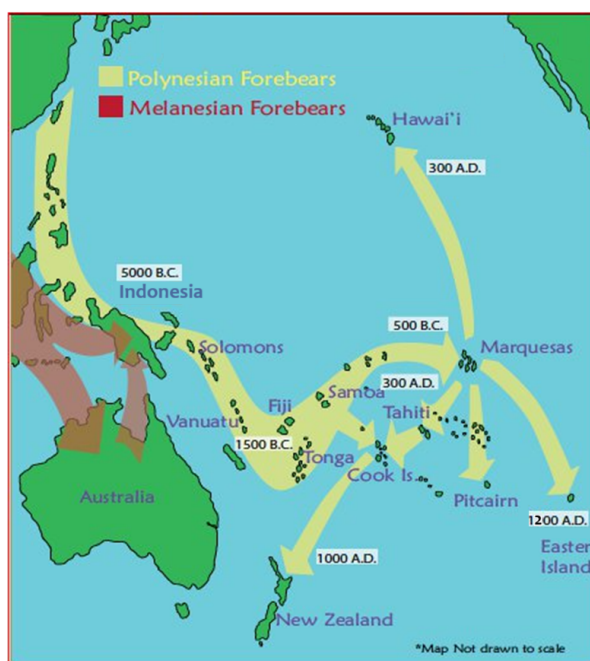


FIG. 2. Polynesian Migration Patterns. Illustration reference: Alan Armstrong, <https://www.quora.com/What-route-did-Polynesians-take-Did-Maori-and-Samoans-come-from-Tonga-Whats-the-dateline-of-the-Polynesian-history>

over, empty, high above sea level, volcanic (resource-rich), well-watered lands having surrounding ocean banks teeming with wholesome (non-toxic) fish stocks were ever-prized territories for new immigrants. To the North, Hawaii, to the Southeast, Rapa Nui, and to the Southwest, New Zealand (the extremities—vertices—of the so-called Polynesian triangle) each afforded these attributes. Rapa Nui was likely explored and occupied (perhaps intermittently) as early as 500 CE and the introduction of the invasive (South American) *Sisyrinchium* weed (blue-eyed grass) at that time raises the possibility of Amerindian sojourns (Rull 2022, p. 296); even more provocative, the presence of the weed *Verbena littoralis* suggests an Amerindian discovery of Easter Island as early as circa 450 BCE (ibid.). Extended Polynesian colonization followed, not later than the 1200s CE after a moistening of the island climate (ibid., pp. 299, 302). Figure 2 shows a feasible progression of Lapitan/Polynesian colonization across the Pacific.

Rapa Nui formed when outflows from three (now extinct) volcanoes (Rano Kao to the Southwest, Poike to the East, and in the North, Maunga Terevaka—the largest, at 511 m) merged to produce a roughly triangular

landmass (Rull et al. 2015, p. 220) 22 km east to west and 11 km north to south. Figure 3 is a map of Rapa Nui showing important landmarks.

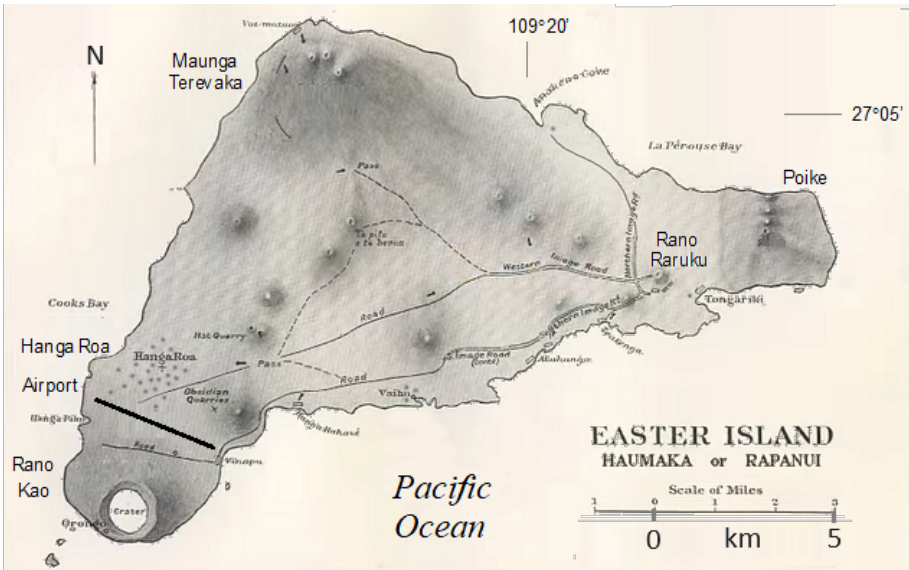


FIG. 3. Map of Rapa Nui. Illustration reference from Routledge (1919, p. 194)

Opinions differ as to the exact route followed by the first explorers and colonists of Rapa Nui. Per oral tradition, the expeditions, sponsored or led by Hotu Matu'a, originated from Hiva (Marquesas)—3,600 km distant (Englert 1980, pp. 28-33). On the other hand, a successful, shorter voyage originating from Mangareva/Pitcairn was demonstrated in 1999 by Hokule'a, a replica Polynesian sailing craft (Fischer 2005, p. 18). Furthermore, en route Pitcairn (24.4° S) and its eastern neighbour Ducie (24.7° S), along with Salas y Gómez (an isle at 26.4° S, just 375 km east of Rapa Nui [27.1° S]) are all in nearly exact east-west alignment. Navigating the Pacific between these aligning Islands could have been effected by referencing the arcs of the sun by day and stars by night from their rising (East) to their setting (West). Likewise, Rapa Iti (Austral Islands; 27.6° S) is a nearby starting point along that same East-West axis. Yet, a fourth point of origin for the sailors may have been Ra'iatea (Society Islands) (Barthel 1989, p. 132). Genetic evidence published by Moreno-Mayar et al. (2024, p. 390) reveals that Native American [genetic] admixture dated 1280–1495 CE was detected not only in present-day individuals from Rapa Nui, but also from other East Polynesian Islands: Rapa Iti, Tahiti, Palliser, Nuku Hiva (North Marquesas),

Fatu Hiva (South Marquesas), and Mangareva. This raises the likelihood of there having been an inter-island confederacy in Eastern Polynesia in the distant past, with indigenous sailors from the archipelago occasionally visiting South or Central America. Any one of those America-bound voyagers (from any of the aforementioned islands) could have established a vital outpost at Rapa Nui along the way.

Eastern Polynesian associations with the settlements at the fringes of their dominion were short lived. When Spanish seafarers reached the region in the 1500s (led by Ferdinand Magellan) they found an archipelago in which the Central-Eastern islands (Society Islands, Cook Islands, Marquesas, Austral Islands) had lost contact with the outlying 'marginal' Eastern Polynesian lands (Rapa Nui, Hawaii, New Zealand, plus the Americas) (Horsburgh and McCoy 2017, p. 14). Horsburgh and McCoy (*ibid.*, p. 7) view this societal retrenchment as being the consequence of evolution away from a colonizing focus and toward a trading focus (*viz.* ships beginning to carry trade items such as stone tools and timbers rather than immigrants). The strengthening of the Tongan Maritime Polity (trading empire) (*ibid.*, p. 14) in Western Polynesia may have quickened this transformative process. Positioned 2,600 km distant, and directly against the trade winds, Rapa Nui and South America (a further 3,800 km) would never have been lucrative destinations for traders. Both apparently became isolated quickly—soon after colonization. In the case of Rapa Nui, its early disengagement from other Polynesian settlements is attested by language phonology (see Figure 1) wherein Rapanui remains the language most closely related to the original Proto-Eastern Polynesian tongue and the other East Polynesian languages were later in diverging from one another (for additional discussion of this topic, see Du Feu and Fischer 1993).

Polynesian settlers to Rapa Nui brought rats with them as a food source. The rats ate the nuts of the palm trees that forested the most arable parts of the island at the time, impairing the ability of the trees to reproduce (Bahn and Flenley 2017, pp. 197, 200). Moreover, trees would have been felled for their wood to build and carve and, perhaps, to provide fuel for fires. Droughts and wildfires additionally caused damage to the palm canopy (Rull et al. 2015, p. 7). By the 1600s, the continuing loss of palms had led to nearly complete deforestation. Besides losing their forests, the burgeoning island population overharvested many bird and fish species leading to extinctions (Bahn and Flenley 2017, p. 108). Turning almost exclusively to raising chickens and farming taro, bottle gourds, sweet potato, sugar cane, and bananas (Roggeveen in Corney 1908, p. 21; Rull 2022, p. 292), the Rapanui reached ecological balance with the land. Their numbers increased and were estimated to be about 3,000 (Jakubowska 2014, p. 72) when Easter Island was discovered by Dutch explorer Roggeveen in 1722 (Roggeveen in Corney 1908, pp. 4-6).

On islands that they settled, the Polynesians constructed *marae* (ceremonial places), which typically included an *abu* - “a platform-like structure made of stone and/or coral slabs” (Molle 2021). Stone assemblages (sometimes in human form) were placed upon the tops of the *abus*. The *marae* also incorporated wooden platforms, upon which portions of food were offered to the deities. “*Unu* [a Tahitian denotation] were upright-standing wooden boards carved with animal motifs symbolising the identity of the social group” (ibid.). They were an additional prominent feature of the *marae* (ibid.).

It seems that the Rapanui began construction of *abus* almost immediately following the establishment of their colony. The stone effigies customarily installed upon the *abus* took the form of massive human head and torso monoliths (*moai*) carved from single volcanic tuff blocks. The *moai* averaged 4 m height and 12.5 tonnes weight (Tribes 2012) and are believed to have been carved primarily between 1250 and 1500 (Fischer 2005, p. 33). To serve as head coverings for certain important *moai*, *pukao* (topknots) were quarried from pumice-like red scoria and carved into cylindrical form. The *pukao* are believed by some to have been added in the 1500s and 1600s CE, after the depletion of structural timber on the island. Per tradition, the *pukao* were raised to the tops of the *moai* using temporary ramps (and possibly ropes in parbuckling arrangement to gain 2:1 mechanical advantage) (Hixon et. al. 2018). Figure 4 shows a possible ramp arrangement for installation of a *pukao* on a *moai*. An included illustration of a traditional fish lookout (*tupa*) affirms the skillfulness of the Rapanui people in constructing elevated ramps from stones. Figure 6 shows an illustration of three *moai* statues on an *abu* with the centre statue adorned by a *pukao*.

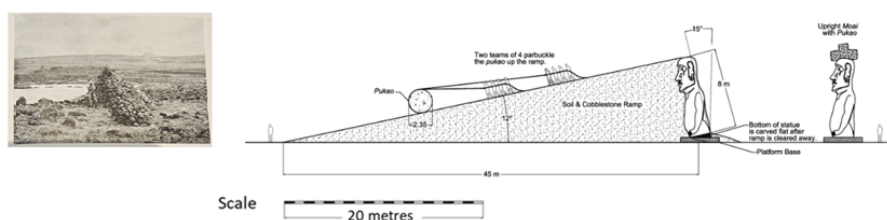


FIG. 4. At left, traditional Rapa Nui ramp-like structure and, at right, similarly constructed (proposed) ramp for installing *pukao* on *moai* statues (illustration references: left, Routledge 1919, p. 172; right, Hixon et. al 2018)

After Roggeveen’s 1722 visit—and perhaps in response to violent experiences with the visiting European or American ships’ crews during the years that followed—inslander leaders increasingly opted for military rule and prosecution of intertribal wars. They pulled down their *moai*

statues and by 1868, in the wake of incessant belligerent campaigns, the last behemoth had fallen (Palmer 1870, p. 177).

2. The Script

Other than on Rapa Nui, there has never been a Polynesian history of writing east of Indonesia prior to modern times (examples of recent scripts are the Woleai or Caroline Islands script, see Riesenbergh and Kaneshiro 1960, and the Eskayan language and script of Bohol, Philippines, see Kelly 2016). The traditional Indonesian Lampung (Lamong) script, a 20-character syllabary enhanced via diacritics (accents) (Pudjiastuti, undated; Pandey 2022) appears, morphologically at least, to be very different from Rapanui *rongorongo*.

Routledge (1919, p. 249)—an early Rapa Nui ethnographer—recounts discussions with an islander who said that, according to tradition, there had been a *rongorongo* board purportedly brought by the first immigrants to the Island. “... Ngaara, trusting him entirely, gave into his care this most valuable kohau [wood] known as ‘ranga’. It was the only one of the kind in existence, and was reported to have been brought by the first immigrants.” Fischer (1997, p. 291) has expressed doubt about such claims, since *rongorongo*-style writing is unattested elsewhere in indigenous Eastern Polynesia.

Acknowledging genetic and botanical evidence for probable contact between the Eastern Polynesians and the Pacific Coast South Americans,¹ it is possible that some coastal Americans may have imparted knowledge of the logo-syllabic Meso-American script to visiting Polynesian explorers and traders. If such education did happen, then it was—at best—confined to the elucidation of basic concepts and never encompassed the specific calligraphy of the writing. Meso-American glyphs bear no more resemblance to *rongorongo* than does the Lampung script. In summation, the Rapanui may or may not have been aware of systems of writing which had been developed at the outer boundaries of their realm. Even if the Islanders did possess this awareness, *rongorongo* was nevertheless a system of glyphs that they devised on their own.²

1. The Quechuan (Peru/Bolivia) word for the sweet potato (an American plant [Horsburgh and McCoy 2017, p. 10]) is *kumar*. It is nearly identical to the Rapanui word for the tuber, which is *kumara*. Thor Heyerdahl (1976) also noted many artistic and cultural similarities between Rapa Nui and the Americas.

2. Here we should mention “for the record” that, although not widely accepted, Robert Langdon in his 1975 book *The Lost Caravel* “suggested that *rongorongo* was derived from the system of writing that castaways from the Spanish caravel *San Lesmes* had brought to the leeward Society Islands in 1526. It was argued that the caravel had run aground on Amanu Atoll, 800 km east of Tahiti; that the crew, which included Basques, saved their ship by pushing their heavy guns overboard; and that they

There are three types of *rongorongo* and related “scripts” (using the term loosely) that developed on Easter Island: Classical, which is generally of most interest to epigraphers and the focus for this paper, *ta’u* which was created for trade purposes (1880s through to early 1900s), and *mama* which was a 20th century creation having a limited number of characters; most specimens of the latter two may not be scripts at all, but fundamentally “decoration” and, therefore, not *rongorongo* per se (see Fischer 1997, and Horley 2021, and references cited in these monographs, for a discussion of the three types of Easter Island “scripts”). The Classical corpus consists of about 14,000 signs or glyphs (the actual count depends on the definition of a sign or glyph) and about 300 different glyph forms, depending upon how one distinguishes distinct glyph forms (the numbers given are estimated by GGB). According to Rapanui tradition, the single or compounded glyphs—everyday indigenous objects, creatures, and astronomical signs—were only taught at special schools to select male cantors. Inscriptions are read horizontally, left to right, from bottom to top with a 180° turn at each line end such that alternate lines are presented upside-down when viewing a tablet as a whole. This arrangement is referred to as ‘inverse boustrophedon’. The variety of glyphs were meticulously catalogued and numbered by Barthel (Barthel 1958, End Pages). We designate Barthel numbers with an ‘RR’ prefix in this paper. A ‘V’ suffix to a Barthel catalogue number denotes a variant of a standard form whereas ‘x’ and ‘y’ suffixes to the catalogue number indicate vertical and horizontal glyph inversions respectively (opposite to the Cartesian coordinate system). Suffixes ‘h’ or ‘t’ indicate superscripted or subscripted forms respectively. Other suffixes denote

then continued on a westerly course until reaching Ra’iatea. There some of the men settled, married local women and produced Hispano-Polynesian descendants. Later, some of those descendants were drifted to Ra’ivavae whence some of their descendants reached Easter Island, probably in the second half of the 17th century. Evidence used to support this scenario included numerous descriptions by the early European explorers of Caucasian-looking people in the Society Islands, Ra’ivavae and Easter Island and the discovery, in 1971, that 18 Easter Islanders with no known non-Easter Island ancestors were carriers of certain genes that are peculiar to Europeans and especially common among Basques.” (summary quoted from Langdon 1996, p. 117). We find this hypothesis interesting but extremely unlikely, and we want to be clear that we do not endorse it. Due to the predominant winds and currents, Polynesian voyagers would not naturally drift east; a skilled crew and a seaworthy vessel would generally be required for an eastward voyage to Easter Island. Furthermore, European crews of the sixteenth and seventeenth centuries most likely had low literacy rates, thus they would be unsuited to the task of teaching non-Europeans about writing, and even if they had introduced the concept of writing, it would most likely have been in the form of a Latin alphabetic system, not a system like *rongorongo*. Regarding the “Basque genes” detected in 1971, we suspect that these were probably the result of interbreeding with European visitors following the “discovery” of Easter Island by Jacob Roggeveen in 1722.

glyph affixes, viz. ‘f’ where fibers are attached to the glyph, and ‘i’ and ‘j’ for lozenges attached on right or left sides of a glyph respectively (‘k’ denotes the total omission of lozenges in situations where lozenges are commonly a part of the glyph form). A colon identifies a vertical stacking of glyphs (catalogued top to bottom but presumably read bottom to top). A period denotes a horizontal fusion of two glyphs. Dashes denote space between glyphs. Twenty-five wooden tablets or carved wooden artifacts, designated by letters of the alphabet A through Y, are used to catalogue important *rongorongo* artifacts. Common names such as the Rapanui word *Mamari* ‘egg’ or the specimen domicile, like ‘Santiago Staff’, are also given to these specimens (Barthel 1958, pp. 14–33). There are various other *rongorongo* objects in addition to those recorded in Barthel (1958), Fischer (1997), and Horley (2021), some of which we shall discuss. The faces of the wooden boards, on which most inscriptions are written, are designated ‘r’, recto, for tablet front, and ‘v’, verso, for tablet back. The designation is ‘a’ for one side, and ‘b’, for the other side, if it is uncertain as to which side is which. Glyphs are incised singly or—importantly—in compound forms.

3. Early Rock Art and *Rongorongo* Inscriptions

There remains ample evidence of a rich history of carving and surface art on Rapa Nui. The wooden carvings of antiquity (viz. *unu* [if such effigies were ever a part of the island’s *abu*-based culture] or drawings painted upon traditional Polynesian *tapa* [bark-cloth]) were vulnerable to degradation by the subtropical heat and humidity of the island climate (Horley 2021, p. 298; many other researchers have made the same point previously) and have, therefore, been largely lost to modern ethnographers. However, stone carvings remain. Indeed, some *moai* bodies retain petroglyph-like patterns, which have been associated with traditional island ring and girdle tattooing motifs (Routledge 1919, p. 220). The British Museum *moai* (Figure 5) displays body art forms, which are evocative of *rongorongo* glyphs; viz. bird (RR600) or vulva (RR51) likenesses perhaps added over the years following the carving of the original statue (Heyerdahl 1976, Plate 5). Of particular interest to us, icons, closely matching to *rongorongo* glyphs, are found on rock art throughout the island. Some of the incisions even appear upon *abus* and possibly date back to the time of construction of the ceremonial platforms. This art has been extensively reported by (among others) Routledge (1919, p. 220), Schulze-Maizier (1926, p. 193), Lavachery (Poussart 2010, p. 122), Lee (1992, pp. 113–116), Lee (1993, pp. 112–121), Bahn and Flenley (2017, p. 239), and Lee et al. (2016, pp. 157–209). Georgia Lee and Paul Horley (Horley 2021, p. 391) have compiled a quite impressive list of rock art icons which match to *rongorongo* glyphs. Table I highlights



FIG. 5. Royal Museum *moai* (rear view showing body art). Photo Credit: Babelstone https://commons.wikimedia.org/wiki/File:Hoa-Hakananai%27a_rear_view.jpg. Usage: Attribution-Share Alike 3.0 Unported License

their findings with rock art forms (at left) compared to glyphs upon *rongorongo* tablets (at right). Icons associated with the ceremonial village of Orongo possibly date to the later era of island birdman competitions (1600s—early and mid 1800s).

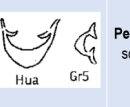
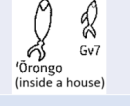
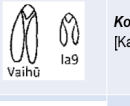
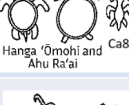
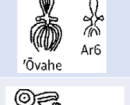
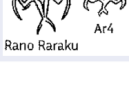
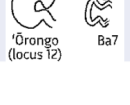
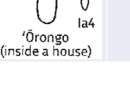
At some point the Rapanui became aware that icons could be associated with abstract concepts such as *komari* (vulva) becoming a traditional synecdoche³ for female ‘coming of age’ (Kaeppler and Van Tilburg 2020, pp. 396, 400). Perhaps the Islanders even considered near-rebus associations (viz. *hōnu* ‘turtle’ versus *hōnui* ‘provider’?).⁴ A further realization

3. An expression where a part is made to represent the whole as in “all hands on deck” (the ‘hand’ signifies the ‘entire crewmember’).

4. GGB observes that, unlike the vulva forms, the contexts of other *rongorongo*-like rock art tropes are usually obscure. It remains speculative as to how often they were ever contemplated in rebus, synecdochic, or metaphoric senses. By contrast, Guy (1990, pp.140-141, 144) has offered evidence that there *was* proxy usage of certain rock art resemblant to *rongorongo* glyph forms in writings upon the Mamari tablet. The apparent *rongorongo* lunar calendar of the Mamari tablet is the only passage of *rongorongo* for which the underlying meaning is somewhat understood. Guy (ibid.) has demonstrated, within the calendar, that ‘crescent moon’ may be a representation for ‘lunar night’, and ‘leaping fish’ and ‘diving fish’ may represent metaphors for the concepts of ‘increasing’ and ‘decreasing’ respectively.

that icons could be lined up one after the other in strings and called out—in succession—either directly, or as proxies, in such manner as to produce intelligible communications, could have led to the genesis of the *rongorongo* script.

TABLE 1. Rapanui Rock Carvings Possibly Showing *Rongorongo*-like Precursors (from Georgia Lee and Paul Horley [Horley 2021, p. 391]). (Snippets in white boxes from Horley [2021, p. 391]; compilation of glossary translations, and likely date estimates for *tangata manu*, *ika*, *mautini* by GGB.)

 Hanga Oteo and 'Anakena Pr9	Human figure. (<i>Tangata</i> [Englert 1974, p. 353])	 Papa Tataku Poki Ia3	Splayed sitting figure	 Hua Gr5	Pectoral reimiro. ('Rei' ≡ canoe sculpture [Chauvet 1935, Fig. 175])
 inland from Ahu Ra'ai Ca9	Roosters. (<i>Moa</i> [Englert 1974, p. 339])	 'Ōrongo (inside a house) Gv7	Generic fish. (<i>ika</i> [Englert 1974, p. 329]) (likely 1600-1700s)	 Vaihū Ia9	Komari. (Vulva ≡ female nubility [Kaepler and Van Tilburg 2020, pp. 396, 400])
 Hanga 'Ōmohi and Ahu Ra'ai Ca8	Turtle. (<i>Hōnu</i> [Englert 1974, p. 323])	 'Ōvahe Ar6	Octopus. (<i>Heke</i> ≡ audacious [Englert 1974, p. 321] or God <i>Tangaroa</i> [Au 2018, p. 26])	 'Ava o Kiri and Ahu Ra'ai Ca8	Moon. (<i>Mahina</i> [Englert 1974, p. 335])
 Rano Raraku Ar4	Frigate bird in diving stance (or [per GGB] taking flight)	 'Ōrongo (locus 12) Ba7	Birdman. (<i>Tangata manu</i> , [Fischer 1997, p. 333]) (likely 1600-1700s)	 'Ōrongo (inside a house) Ia4	Gourd. (<i>Mautini, hue</i> [Churchill 1912, pp. 208, 227]) (likely 1600-1700s)

4. *Moai pukao* 36 *rongorongo* Inscription

In addition to rock art icons, a brief *rongorongo* inscription appears upon a downed *pukao* (designated No. 36 by archaeologists) among the ruins of the Ahu Akahanga *moai* platform on the Easter Island south shore (Figure 7). The photo inset shows the large size of a *pukao* relative to a person. Pukao 36 is in the lower right of the photograph and indicated by an arrow. Inscribed on the *pukao*, left to right, are a two-headed bird RR680 and a single bird (sooty tern) RR600 (Poussart 2010, p. 122). Above the birds is a smaller hominid character—RR385Vy. This human-like form would have been concealed from view when the *pukao* rested atop the standing *moai* (Figure 6). Perhaps RR385Vy is graffiti by the carvers. Figure 8 provides detailed views and drawings of the Pukao 36 inscriptions. Fallen red topknots have proven to be targets for vandals and scavengers and on Pukao 36 a large slab has been broken off the right side of the sooty tern glyph. Fischer (1997, p. 548) has posited that the *rongorongo* glyphs were carved into this *pukao* long after it was toppled. However, the



FIG. 6. Artificial Intelligence conception of *moai* statues as they once stood upon the traditional *abu* at Akahanga. The *pukao topknot* adorning the centre statue is engraved with *rongorongo* characters. Illustration reference: aicreate.com

glyphs are very large and restricted to a 140° sector around the cylinder: evidently meant to be seen and read head-on and from afar (see Figure 6). What a sight it would have been in its golden age: a 5-metre *moai* with infinite blue ocean beyond, flaunting a surmounting red topknot, emblazoned with bold *rongorongo* characters, scribed in the form of beautiful birds!

5. Spanish Visit of 1770

5.1. Treaty Document

In 1770 Spanish visited Rapa Nui and took possession of the land through religious and diplomatic acts, first by planting three wooden crosses (Agüera in Corney 1908, pp. 103-104) and then signing a treaty—“*and for the greater confirmation of so serious an act some of the natives present signed or attested the official document by marking upon it certain characters in their own form of script*” (ibid., p. 104)—and thus came to be the treaty document, which the Rapanui ‘signed’ with three lines of glyphs. Kenneth Emory (1972,



FIG. 7. Pukao 36 (identified by arrow) at its current location among the ruins of the *moai* at the Ahu Anakanga site. Illustration reference: <https://imagarapanui.com>

p. 63) has previously noted the resemblance between the Rapanui signatures and the *rongorongo* script:

What they drew for their “signatures” were petroglyph designs for birds and the vulva, and some other marks which might have been attempts to imitate European writing. The same petroglyph designs appear among the characters of the Easter Island script and could have served as a basis for developing its signs.

Berthin (2024, p. 494) asserts that the first line of glyphs does not resemble *rongorongo*. The second line, on the other hand, consists of four *rongorongo*-style characters, all codable via Barthel’s cataloguing system and all exhibiting axes of symmetry. The first character of the second line appears to be of simplified construction. The third line consists of a single birdman: glyph RR400. A criticism of the chiefs’ signatures is that they do not meet the high standard of calligraphy seen on *rongorongo* tablets. This is expectable. If one scribes something ad hoc (and being unfamiliar with stylus and ink methods of inscription) then the resulting calligraphy will not meet the standard of a formal work such as a *rongorongo* board carving (where inscriptions—per tradition—were first drafted with a pointed stick onto a banana leaf, before being final-copied

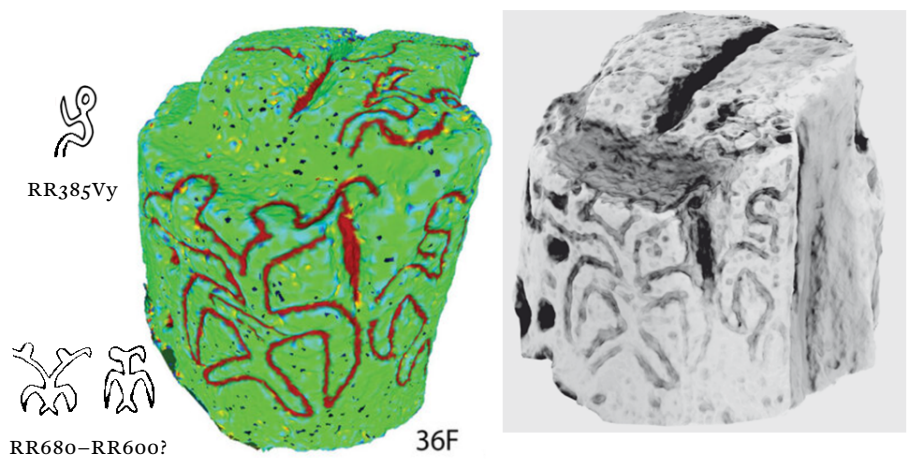


FIG. 8. Details of *Rongorongo* Glyphs (left) and Pukao 36. Illustration references: Computer enhanced image from Hixon et al. (2017) (centre). Pukao 36 photo from Lee et al. 2016, p. 195 (right)

in the wood) (Horley 2021, pp. 384-385, and citations of earlier authors along the same lines therein). De Landa, investigating the Mayan script and obtaining a Mayan-written communication from his informant (Coe and Kerr 1998, p. 228), was likewise in receipt of calligraphy which was inferior to the engravings on the stone monuments (Berthin 2024, pp. 494-495). The Spanish treaty document, and a Barthel cataloguing of its *rongorongo* glyphs, is illustrated in Figure 9.

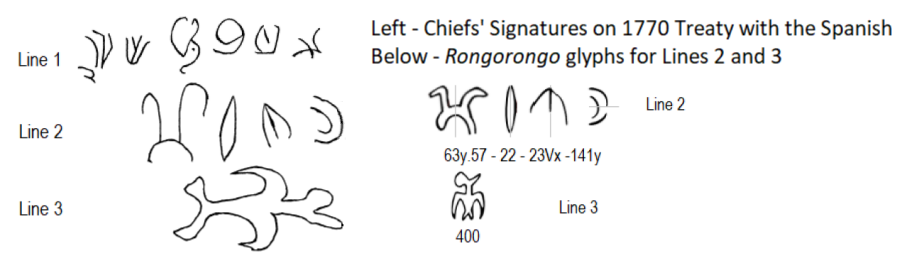


FIG. 9. Spanish Treaty Document of 1770 and morphologically similar *rongorongo* glyphs. Illustration reference: Berthin 2024, p. 493

5.2. Agüera's Numbers

Francisco Agüera, an officer of the 1770 Spanish Expedition, compiled a glossary of the Rapanui language including words for numbers one through ten. He may have inadvertently elicited a few *rongorongo* sign definitions by writing Western Arabic numerals and then noting integer names which Islanders offered for them. Later, it was discovered that their submissions did not even remotely match the Polynesian language words for digits one to nine. Therefore, it's theorized that the Rapanui instead gave names of familiar icons resembling the numerals. Blanco (1994, p. 38) importantly associated the Rapanui's *moroki* (*moroki*) with "small fish that is used for bait", contending that a distorted 8-shape perhaps resembled a small fish (Blanco 1994, pp. 38-39). More importantly, the *Rapanui* word *moroki* also denotes the concept of "make something in perfect condition" (ibid., p. 38). And the figure-eight (8) equally resembles the common "stacked-circle" glyph RR2. Jausсен's List (Jausсен 1893) synonymously interprets that "8" glyph-form as 'what is good' (Chauvet 1935, Fig. 175). Whereas the unreliability of Jausсен's [glyph definition] List is acknowledged, Butinov and Knorozov (1957, p. 8; and earlier work of Métraux 1940) contend that its complete dismissal (as a tool for interpretation of *rongorongo*) is an extreme and incorrect position. Jausсен's informant Metoro often interpreted *rongorongo* glyphs according to their appearances (see additional discussion in, among others, Barthel 1993, Fischer 1997). Hence, the figure-of-eight signifies 'small fish', which signifies '*moroki*', which signifies 'what is good'. Note well that Metoro was apparently primed to associate the icon shape with its intangible (but most useful) definition: 'what is good'.

Table II lists the definitions that Agüera garnered for numbers one to nine. The Spanish 'J' symbol has the same pronunciation as Rapanui 'H'. In addition to the '8', Blanco (1994, p. 38) has also proposed a *rongorongo* glyph morphology which resembles numeral 5. Indeed we (GGB) may suggest that up to five Arabic numerals somewhat resemble *rongorongo* characters. These possible *rongorongo* look-alikes would be the numbers 1, 2, 3, 5, and 8 (see Table II). Two more, 'buoy' for numeral 6, and 'roll-up' for numeral 9, are possible pictographic representations. In the case of numeral 3, perhaps it resembles a vertical compound of two southern hemisphere waning crescent moons. One (GGB) may speculate that since this waning moon style is (from the perspective of a night sky observer) 'going away', then it might be a metaphor for the act of 'going away'. Finally, numeral 10 is not included in Table II. Blanco's (ibid., p. 38) transcription of the pronunciation of this number (*queromata pait-paca quacaxixiva*) is incomprehensible to fluent Rapanui speakers and we are, therefore, unable to evaluate it.

TABLE 2. Agüera's Numbers Compared to RR Glyphs (Blanco 1994, p. 38)

Num- eral	Agüera Word	Rapanui Word & Definition (FMB = Blanco)	Alternative Possibility	<i>Rongorongo?</i> (GGB=Berthin)
1	<i>cojana</i>	<i>ko bana</i> : heat, to be hot	<i>koboa</i> (?): stick (GGB)	
2	<i>corena</i>	<i>ko renga</i> : little girl, pretty	attention-grabbing (=pretty)	𐎔
3	<i>congoju</i>	<i>ko ngobu</i> : eat eagerly	<i>ka obo</i> : go away (FMB)	𐎕
4	<i>quirote</i>	<i>kiróto</i> : toward the inside	?	𐎖
5	<i>majaná</i>	<i>mabana</i> : warm	<i>mabanga</i> : treachery (Maori)	𐎗
6	<i>te úto</i>	<i>te úto</i> : buoy	(obvious pictograph, no RR)	
7	<i>tejèa</i>	<i>te benga</i> : type of fish	?	
8	<i>moroqui</i>	<i>moroki</i> : fish used for bait	make in perfect condition (FMB)	8 (FMB)
9	<i>vijoviri</i>	<i>vebi viri</i> : encircle, roll up a sail	(obvious pictograph, no RR)	

5.3. Cultural Diffusion Theory (Fischer)

... what these aliens [the Spanish] had ritually enacted would doubtless have lent the Rapanui's experience a supernatural solemnity, indeed one of temporarily sharing European *mana* through the act of signing.

The Spanish claim of 1770 was never enforced. The name "San Carlos" for the island was soon forgotten.

But the wonder of writing had arrived on Rapa Nui.

(Fischer 1997, p. 7)

In the preceding quotation, Fischer speculates that the observation of and the participation in the pen-and-ink treaty-signing of 1770 inspired the Rapanui to develop *rongorongo*. A case can be made that all the surviving wooden *rongorongo* artifacts were created post-1770. On the other hand, the perishability of wood or *tapa* artifacts, exposed to the island environment, augurs for natural loss of any such artifact having an age of

some half century or more (the approximate interval between the Spanish visit and the beginning of recovery of *rongorongo* artifacts by Euro-American visitors). Nevertheless, *rongorongo* inscriptions upon the Spanish treaty document and Pukao 36 (in particular) remain physically contradictory to Fischer's hypothesis. The close relationship between rock art icons and *rongorongo* glyphs, coupled with the observed propensity of certain Islanders to associate intangible (non-nounal) terms with such glyph-icons, likewise signifies the potential for there having pre-existed a communication system based upon drawn and etched figures. That said, there have throughout history been countless examples of cultural diffusion. The possibility remains (albeit speculative) that interaction with the Spanish inspired a resurgence or coming of age for the indigenous Rapanui script. At the very least, the three wooden crosses that were planted by the Spanish on Easter Island during their visit could have supplied wood (Orliac 2010, p. 137) for production of novel *rongorongo* compositions (as would have additional raw wood pieces from ship's crews who were anchoring at Easter Island and trading with the Rapanui ever more frequently as the years went by).



RR67

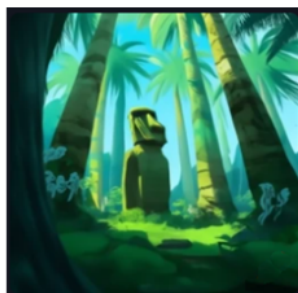


FIG. 10. RR67 glyph compared to forest palms. Illustration reference: www.crayon.com

6. Glyph Morphological Relationship to Anthropological Timeline

It may be possible to benchmark the development of *rongorongo* based upon the morphology of certain glyphs. Perhaps the best example is RR67 which resembles an island palm tree (Figure 10; see Barthel 1958, p. 233; Horley 2021, p. 454; Christenhusz and Govaerts 2024, p. 8). Rapa Nui palms had gone extinct by the middle 1700s at the latest (Christenhusz and Govaerts 2024, p. 8) but most likely a century or more earlier

(see the summary of this subject in Horley 2021, p. 409) and, therefore, the genesis of *rongorongo* likely happened before the loss of the palms and their erasure from memory. Similarly, we may consider traditional Rapa Nui house design. I (GGB) have wondered why there is no *rongorongo* glyph in the shape of a house. Perhaps it is because the general Western preconception of what a house should look like is that of a cube surmounted by a gabled roof (Figure 11- upper left). However, traditional Rapanui houses were built as the one in the photo (Figure 11—upper right). This type of house, known as *bare paenga*, was in the shape of an upside-down canoe with an oblong footing ringed by base-blocks having holes carved/reamed into them. On the long sides, arching tree or bush branches were looped across from one set of base-block holes to those on the opposite side to form the ribs of the upside-down canoe shape. These ribs were then spanned over with reeds and grasses to give protection from the elements. Because this design required no structural timber it would have become dominant once the island supply of wood had been exhausted. Possessing an aerodynamic-like shape, the *bare paenga* design was well-suited to withstanding windy conditions in unsheltered areas.⁵ The appearance of the *bare paenga* form in the *rongorongo* lexicon would likely date from its time of introduction into island life: the late 1500s or beginning of the 1600s at the earliest.

Figure 11 shows some of the glyphs that morphologically resemble elements of canoe house construction: *bare paenga* cross-section (RR27x), long-side foundation base blocks (RR25), foundation plan view (RR22). Some of the *bare paenga* family of glyphs occur quite frequently in the corpus. If added to an already established nucleus of vocabulary, these glyphs would have enhanced the effectiveness with which *rongorongo* was able to present communications. To that end, consider the myriad house glyph synonyms that could be represented by the RR27x *bare paenga* form: niche, harbor, dynasty, enterprise, estate, containment, protection, base, abode, home ... to name but a few. In summation, the palm tree and house glyphs benchmark the classical *rongorongo* script as having undergone significant forward development during the 1500s and 1600s when the palms were yet present but being depleted and *bare paenga* construction was being driven by necessity.

5. In the latter part of the nineteenth century, when vessels laden with timber cargos shipwrecked off Rapa Nui, the Rapanui began to convert from *bare paenga* houses to Western-style home design.

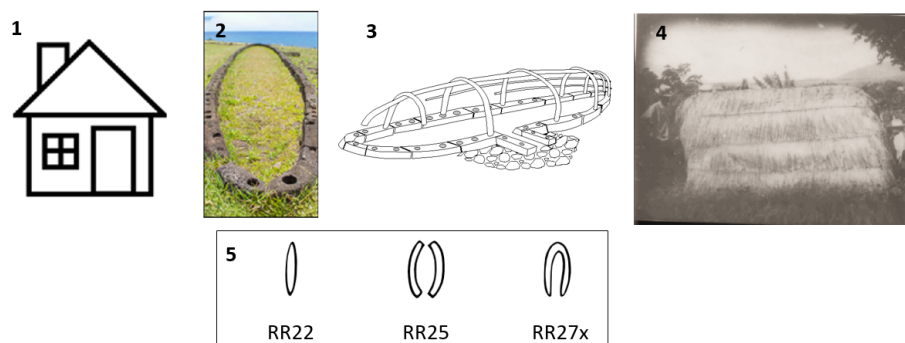


FIG. 11. (1) Generic drawing of 'Western' house. (2) Foundation of Rapa Nui *bare paenga* house (Photograph reference: Kevin Wagar | Wandering Wagars—Adventure Family Travel <https://wanderingwagars.com/>). (3) Framing pattern of *bare paenga* house. (4) Completed *bare paenga*. Photograph reference: Page 63 of Pakarati, C. and R. Wiczorek [2020]. "Identifying Places and People in Walter Lehmann's Photograph Collection of Rapa Nui [Easter Island, 1911]". In: *Rapa Nui Journal* 33.1, 33.2, pp. 44-83. (5) *Rongorongo* glyphs exhibiting similarity to *bare paenga* components

7. Estimating the Production Dates of the *Rongorongo* Tablets

7.1. ^{14}C Radiocarbon Dating

The ages of the surviving *rongorongo* wooden artifacts may be estimated by several means including ^{14}C radiocarbon dating, assessment of physical characteristics of the specimens themselves, and paleography of the recorded inscriptions.

As of early 2025, ^{14}C dating had been conducted on six artifacts. There were no lumberyards on Rapa Nui circa 1650 through the 1860s. Native wood was precious. It was apparently used immediately upon becoming available, and there would have been lively competition among tradespeople for procurement of any discovered flat slab of significant surface area. Completed *rongorongo* tablets were hung from the ceilings of the *bare paenga* houses, in reed wrappings (Routledge 1919, p. 244). Whereas this afforded protection from the elements, the wood yet remained vulnerable to degradation by insects, rainfall and moisture, salt and air-sprays from the Pacific Ocean, and Polynesian rats. Rats gnaw on wood, are very agile, and could possibly climb up walls and onto items hanging from ceilings. Tablet F (Chauvet Fragment), for instance, bears the marks of gnawing rats, although this may have also happened in a cave or some other area where the tablet was stored (Orliac and Orliac 2008, p. 261).

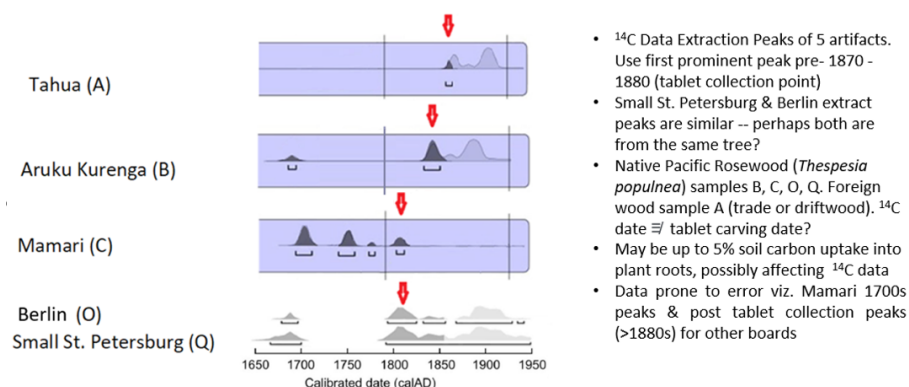


FIG. 12. ^{14}C radiocarbon extraction data peaks for five *rongorongo* tablets. D (Échancrée) is not shown but has been radiocarbon dated to the late fifteenth century. Illustration graphical data: Tablets A, B, C from Ferrara et al., 2024, p. 5; Tablets O, Q from Wieczorek et al., 2023, p. 324

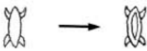
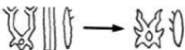
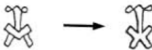
Figure 12 presents ^{14}C radiocarbon extraction data peaks for five tablets, specifically A (Tahua), B (Aruku Kurenga), C (Mamari), O (Berlin), and Q (Small St. Petersburg). The 1476 ^{14}C date for D (Échancrée) demonstrates that it is older than the other radiocarbon-dated tablets by several centuries (Ferrara et al., 2024, pp. 4-5). However, botanical identification has revealed the Échancrée wood to be a species of *Podocarpus*—an evergreen genus not native to Rapa Nui. The possibility remains that this specimen might have originated from driftwood or as an article obtained from visiting Euro-American seafarers. As such, Échancrée may have been incised a great many years after its mother tree was felled. For this reason, we do not consider the Échancrée ^{14}C results to be reliable proxies for the dating of its *rongorongo* inscription. Four tablets derive from native *Thespesia populnea* (Pacific rosewood) and are, therefore, more likely to have originated on Rapa Nui and been promptly worked and finished into *rongorongo* artifacts. These may all date to the nineteenth century, although it is possible that C (Mamari) dates to the eighteenth century based on the earlier radiocarbon peaks (shown in Figure 12). The Tahua tablet is carved from foreign wood but ^{14}C dated no earlier than circa 1861. All five sample extraction results are multi-peaked. For further analysis in this paper, we tentatively picked as the possible/probable artifact inscription date the most recent significant extraction peak which is older than the date of procurement of the *rongorongo* artifact by Euro-American interests. There may be up to 5% uptake of carbon via tree root systems, and this may produce small peaks that are older than most of the data. Moreover, some of the ^{14}C extraction peaks are implausible since they happen after the dates at which their

respective tablets were documented as having been collected by Euro-Americans. In Figure 12, such peaks are shown in lighter color, and they are not considered in our analysis. Finally, we concede that this methodology, at best, affords only an estimate of the date of inscription. The date can be older or younger, as the ¹⁴C laboratory procedure and/or calibration can be vulnerable to error, or an inscription could have been added to a re-purposed old tablet.

7.2. Physical characteristics of the boards

Rongorongo board physical characteristics include botanical identification (wood species) and artifact condition. Because of the possibility of continuing trade in foreign wood with Euro-American seafarers, contrasted with the likelihood of native Pacific rosewood tablets predating foreign contact, the native-wood assortment of tablets may, on average, be expected to be older than the foreign-wood collection. However, numerous exceptions to this generalization are to be expected (see further discussion in Section 7.4). Finally, and with respect to the matter of artifact condition, crisp clean tablets would likely be newer than worn, distressed ones.

TABLE 3. *Rongorongo* Glyph Paleography (Wieczorek 2011, p. 37)

base of difference		older than →	← newer than	reference
form of RR70		B, N, Q, R	E, I, P, T	Barthel 1958 page 159
general economics of glyph usage		H, P, Q	A	Guy 1985 page 387
form of RR99 & RR522		D, F, M, N, Q, R, S	B, C, E, G, H, I, K, P	Wieczorek 2011 page 37

7.3. Paleography

We develop two paleographic proxies. Firstly, *rongorongo* characters may simplify over time and the simplifications would then become incorporated into subsequently incised texts. Secondly, novel characters might be invented. Wieczorek (2011) has studied the paleography of *rongorongo* artifacts, specifically the evolution of glyph shapes. Table III presents three of his most credible endorsements for glyph evolution, including

material from studies by Barthel and Guy. The RR70 form (first row) appears to have been redrawn to present a concentric-oval centrepiece in later similar texts. The (presumed archaic) ‘collapsing stool’ form in Table III row three is superseded by the ‘X’ form in newer texts. Within Table III, Wieczorek divides the tablets (each identified by its alphabetic identifier) into two camps: “older than” or “newer than”.

Table IV records the prevalence of the ‘hollow’ RR28/RR29 glyphs. Presence or absence of the 76 ‘penis’ glyph is also indicated. The RR28/RR29 family and the RR76 glyph occur upon some tablets but not others. There appears to be some commonality as to which boards display them, and which do not (see Figure 13). Some tablets (such as A) show usage of all four glyph types, other tablets (such as O) show none. The most recent tablets are assumed to make widest use of the four glyphs. The oldest are assumed to have been incised before the RR28, RR29, RR76 glyph styles entered the *rongorongo* lexicon.

TABLE 4. Appearance of RR28/RR29 variants (✓) or RR76 (■) glyph on major artifacts

Tablet/ Artefact	 RR28	 RR28x	 RR29	 RR29y	 RR76
A	✓	✓	✓	✓	■
B	✓			✓	■
C	✓		✓		
E	✓	✓			■
G				✓	■
H	✓	✓		✓	■
I	✓			✓	■
K					
N					■
O	✓				
P	✓	⌋ ⌋ RR25			■
Q		✓			■
R	✓				
S					
T					
Y		⌋ ⌋ = RR28x?		✓	

Note: RR25 appears in place of RR28x on Tablet P (Great St. Petersburg).
RR25 appears on artifact Y (Paris Snuff Box) whereas RR28x does not.

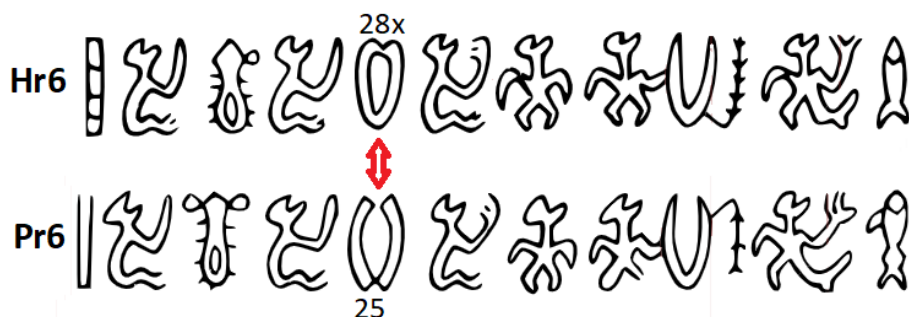


FIG. 13. RR25, appearing on the Great St. Petersburg tablet line Pr6, is replaced with RR28x (of the RR28/RR29 glyph family) on the Great Santiago tablet line Hr6. Characters from Spaelti 2012

7.4. A Model for Estimating *Rongorongo* Tablet Age

To develop a model which estimates the production dates of *rongorongo* tablets that have not been radiocarbon dated, ^{14}C results may be compared to the previously discussed proxy attributes: tablet physical and paleographic characteristics. We limited the artifacts eligible for such comparison to those having 85 legible glyphs or more, to assure that at least a few of the paleographic variations shown in Tables III and IV might have the opportunity to present themselves. Physical characteristics included in our model were tablet condition and botanical identification. We used the classification posted by Spaelti (2012, Tablets) as a representation of general tablet condition. Rankings were: Very Fine = 0.5, Fine = 0.375, Good = 0.175, Poor = 0. A further physical characteristic was investigated by the authors. Namely, special attention was given to visible surface wear along artifact edges, as this was largely attributable to 'Handling Wear' by *rongorongo* board readers. The 'Handling Wear' category was scored between 0.5 (perfect condition) and 0.0 (worn to the point of serious glyph illegibility). All tablets exhibited some degree of wear attributable to handling and the ones in the best condition were only scored 0.35. No estimates of 'Handling Wear' were submitted for the Great Washington (S) (later re-worked into a canoe hull plank) or the Paris Snuff Box (Y) since both artifacts had been repurposed (and their edges significantly altered) at some point after glyph incising. 'Wood Species' (botanical identification) was the final physical attribute which was assessed. Each artifact was rated 0.4 if being of foreign wood and 0.0 if being of native Pacific rosewood (native tablets presumed to be older). There is no information pertaining to the wood species of the Atua-Mata-Riri / Small Washington (R) tablet and, therefore, no 'Wood Species' score was entered for this object.

Three elements of paleography were incorporated into the regression model: the results published by Wieczorek in Table III, the presence or absence of the RR76 glyph, and the extent of representation of the four different glyphs of the RR28/RR29 family. Wieczorek's newer *versus* older assessments were transformed into a ranking of the tablets by rating them as 0 whenever listed as 'older than' in Table III. New tablets were awarded 1.0 wherever they were listed as 'newer than' in the table. Ratings were then totalled for each artifact, and the data from the entire group of objects was collectively normalized to span a 0 to 1.0 range. Artifacts not graded by Wieczorek were not given a score. Tablets displaying the RR76 glyph and glyphs of the RR28/RR29 family were each awarded a score of 1.0 if these glyphs appeared once or more on the artifact and 0 if they did not appear. Since there are four glyphs in the RR28/RR29 family then a total score of 4.0 was possible for this attribute. Shorter legible inscriptions of less than 200 glyphs (viz. Berlin [O] and Snuff Box [Y]), which each exhibited one glyph from the RR28/RR29 family, were awarded a bonus of 0.5 point 'benefit of the doubt', conceding that the small number of total characters upon these boards afforded a less-than-average opportunity to display further RR28/RR29 glyph family members.

The final age attribute score for each tablet is the average score of each of the physical elements (Spaelti's tablet condition, handling wear, botanical identification) and the paleographic elements (Wieczorek's coded ratings, RR76 presence, RR28/RR29 family presence). This age attribute score retains our general principle that a lower score is consistent with an older artifact, and a higher score is representative of a newer one. In the case of the five artifacts for which ^{14}C results were available (not including the outlier Échancrée tablet), it becomes possible to produce ordered data pairs directly, by matching the artifact ^{14}C date to its age attribute score. Moreover, having such data pairs enables the estimation of a statistical best fit linear equation and regression coefficient (Figure 14). For the tablets evaluated, the regression coefficient was a respectable 0.94.

The regression equation, fitted for the five ^{14}C -sampled artifacts may be applied to any artifact having an age attribute score, to produce a numerical estimate of its age. This enables creation of a table for the group of artifacts having calculated age attribute scores in which they may be ranked from the (probable) most recent date of production to the (probable) oldest date of production. Table V lists these estimated production dates with accompanying age attribute scoring data.

Horley (2021, pp. 426-428) has presented estimates for the relative ages of tablets P, Q, H, K, G. He determined that among the tablets P, Q, and H, which display substantially parallel texts (as in Figure 13), the P and Q boards may have inspired the presumed later-edited, tablet H. Additionally tablet K may have offered material for the possibly later

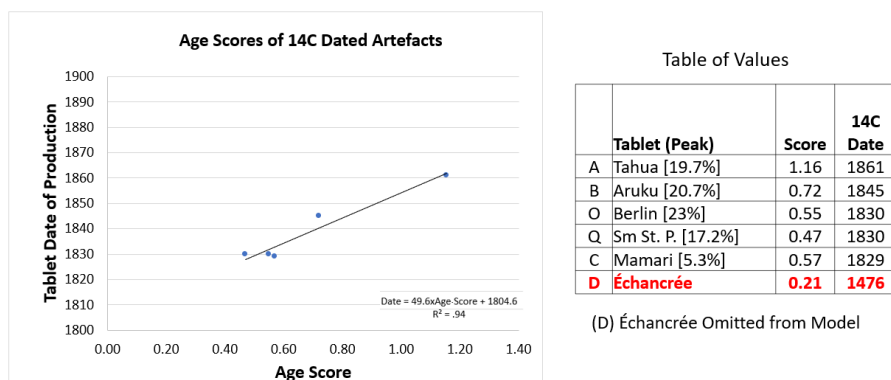


FIG. 14. Data regression of Artifact Age Score predicts the ^{14}C -related production date

written tablet G. Table V data agree with Horley's determinations insofar as Q (1828) and P (1836) pre-date H (1848). Moreover, K (1806) appears to be older than G (1829). Yet it may be possible to "fool the system". Among the seventeen artifacts that were graded, the London tablet (K) is graded as the oldest. However, Barthel (1958, p. 158), Fischer (1997, p. 488), and Wiczorek (2011, p. 38) rate it as a newer board, perhaps an example of the "*Verfallszeit*" (declining period—latter era of *rongorongo* inscriptions, characterized by mediocre calligraphy). ^{14}C testing would settle this issue.⁶ Excepting, perhaps, the Mamari tablet and Échancrée tablet (see the radiocarbon peaks in Figure 12), all artifacts date from the 1800s. Any older ones were probably lost due to decay, wear, repurposing, or vandalism.

Tablet paleographic attributes of the average age model score are better predictors of production date than are the tablet physical characteristics. The presence or absence of some members of the RR28/RR29 glyphs within a tablet inscription proves to be the best predictor of relative tablet age from among any of the attributes considered—paleographic or physical. The RR28/RR29 Top Eight total age score to Bottom Eight total age score ratio (Table V bottom row) is 5.8. At the opposite extremity, Wood Species is the poorest predictor of production date: The respective numbers of native and foreign boards in the oldest half of the population were the same as the numbers in the youngest half (Top Eight to Bottom Eight ratio of 1.0). Well-conceived techniques of

6. Early *rongorongo* writings would display a less developed lexicon than classical age tablets. On the other hand, *Verfallszeit* inscriptions would also be inferior to those of the classical age. Hence, the conundrum of the London tablet. Its mediocre lexicon could place it either at the beginning or the end of the classical age.

paleographic analysis would, therefore, seem to be methods of choice for successfully estimating relative ages of *rongorongo*-bearing artifacts.

8. Euro-American Discovery and the End of the Age of *Rongorongo*



FIG. 15. The Kotzebue Hair Amulet (Endcap shown centre and sideview at right). Details of *rongorongo* glyph drawings are at left. The arrow indicates the RR24.RR400 compound. Illustration reference: (Melka and Schoch 2024a, pp. 14-15) © R. M. Schoch, taken with the permission of the anonymous owner

Finally, we summarize the Euro-American discovery of the indigenous Rapanui script and the conclusion of the classical *rongorongo* timeline. Melka and Schoch (2024a, p. 13) describe the Kotzebue Hair Amulet (KHA) (Figure 15): a cylindrical artifact collected by a crewmember “of the brig *Rurik*, captained by Otto von Kotzebue, during the ship’s visit to Easter Island in 1816” (ibid., p. 13). The end cap of the KHA displays three *rongorongo*-like glyph tropes. This artifact is important as a surviving wood specimen from an early era. Its presentation of anthropoid/zoomorphic glyph forms affirms knowledge of sophisticated glyphs in the second decade of the nineteenth century. The encircled RR400 is an example of the Barthel RR148–RR156 series: all of which feature glyphs infixed within an oval. Melka and Schoch report that (to the best of their knowledge) none of the subsequent handlers of the piece prior to their study recognized its symbols as being *rongorongo* and—at least with respect to the earliest owners of the artifact—this is not surprising since awareness of *rongorongo* did not exist outside of Easter Island at the time of the KHA’s collection.

Code	Name	Wood Species	# of Glyphs	Condition (Spalti) D=Destroyed	Coded Condition (Spalti)	Handling Wear (GGB)	Wood Species	RR76 Glyph	RR28/29 Glyph	Model Wleczorek	Condition, Wear, Wood Average	76, 28/29 Average Text Score	Combined Average Score for Model	Carbon Dating & Chosen Peak % of Sample	Best Fit Age
A	Tahua	Fraxinus excelsior	1825	Very Fine	0.50	0.23	0.4	1.00	4.00	0.8	0.38	1.93	1.16	1861-19.7%	1862
H	Great Santiago	Native Thespesia populnea	1580	Good	0.17	0.35	0.00	1.00	3.00	0.7	0.17	1.57	0.87		1848
E	Keiti	Foreign unidentified	822	D(Fine)	0.38	0.23	0.4	1.00	2.00	1	0.34	1.33	0.83		1846
I	Santiago Staff	Native Thespesia populnea	2920	Good	0.17	0.35	0.00	1.00	2.00	1	0.17	1.33	0.75		1842
B	Aruku-Kurenga	Native Thespesia populnea	1135	Fine	0.38	0.23	0.00	1.00	2.00	0.7	0.20	1.23	0.72	1845; 20.7%	1840
P	Great St. Petersburg	Podocarpus sp. cf. Latifolia	1163	Fine	0.38	0.35	0.4	1.00	1.00	0.7	0.38	0.90	0.64		1836
Y	Snuff Box	Proteaceae sp.	85	Fine	0.38		0.40	0.00	1.50		0.39	0.50	0.57		1833
C	Mamari	Native Thespesia populnea	1000	Fine	0.38	0.23	0.00	0.00	2.00	0.8	0.20	0.93	0.57	1829; 5.3%	1833
O	Berlin	Native Thespesia populnea	172	Good	0.17	0.35	0.00	1.00	1.50	0.3	0.17	0.93	0.55	1830; 23%	1832
G	Small Santiago	Native Thespesia populnea	720	Fine	0.38	0.23	0.00	1.00	1.00	0.3	0.20	0.77	0.48		1829
Q	Small St. Petersburg	Native Thespesia populnea	218	Poor	0.00	0.115	0.00	1.00	1.00	0.7	0.04	0.90	0.47	1830; 23%	1828
R	Atua-Mata-Riri	unidentified	357	Good	0.17	0.35		0.00	1.00	0	0.26	0.33	0.30		1820
T	Honolulu Tablet	unidentified - possible Euro oar	163	Good	0.17	0.35	0.40	0.00	0.00	0.7	0.31	0.23	0.27		1818
N	Small Vienna	Podocarpus sp. cf. Latifolia	718	Good	0.17	0.23	0.40	0.00	0.00	0.2	0.27	0.07	0.17		1813
D	Échancrée	Podocarpus sp. cf. Latifolia	270	Good	0.17	0.115	0.40	0.00	0.00	0.2	0.23	0.07	0.15	1476	1812
S	Great Washington	Latifolia/Picea sp.	600	Good	0.17		0.40	0.00	0.00	0	0.28	0.00	0.11		1810
K	London	Native Thespesia populnea	499	Poor	0.00	0.115	0.00	0.00	0.00		0.04	0.00	0.02		1806
TOTALS					4.08	3.825	3.2	9	22	8.1	3.97	13.03	8.61	Average >	1830
New 8 / Old 8					2.2	1.3	1.0	3.0	5.8	2.7	1.4	4.1	3.1		

TABLE 5. Artifact Date Estimation by Physical and Paleographic Assessment

Horley (2021, pp. 358-359) implies a discovery date of 1845 for an artifact (the Annapolis bird) inscribed with *rongorongo* glyphs collected by Americans and formerly stored at the Naval Lyceum in Brooklyn, New York (the current whereabouts of the object, if it still exists, are unknown). The documented date noted by Horley refers to a similar (but by no means identical) bird sculpture and there is no evidence that the two pieces were obtained at the same time.



FIG. 16. Left, HMS Topaze Fragment. Right, Rangitoki Bark-cloth Fragment. Possible glyph catalogue identifications are given for both artifacts. Pertaining to the coding of the two rare glyphic forms on the Rangitoki Bark-cloth Fragment, RMS suggests as possibilities RR7? instead of RRV27 and RR87?/RR88?/RR127? instead of RR39_{Top}:107 (see the discussion in Schoch and Melka 2019, pp. 137-140, 414; Schoch and Melka 2020, pp. 28-30). Illustration references: Topaze Fragment (Melka and Schoch 2024a, p. 2). Rangitoki Bark-cloth Fragment: (Schoch and Melka 2019, p. 413). Both photographs © R. M. Schoch, taken with the permission of the anonymous owners

The classical board Tahua (A) is likely the newest of the remaining major artifacts; collected in 1870 and carbon dated to the 1860s. Blackbirder slave raids occurred 1862 to 1863. Approximately 1,500 able-bodied workers were removed, the majority (1,282) to indentured servitude as agricultural laborers or domestic servants, a few to the *guano* deposits of the Chincha Islands off the coast of mainland Peru (Fischer 2005, p. 89). Almost all died of disease in South America from lack of natural immunity, “poor nutrition, overwork, lack of hygiene, crowded accommodation, the harsh climate of plantation heights and especially ‘nostalgia’ (clinical depression)” (ibid., p. 89). About a dozen survived the ordeal to the point of repatriation, and one of those was infected with smallpox. About half the Rapanui population subsequently died from the epidemic that ensued when the carrier entered their midst and the remaining elderly *rongorongo* sages were especially hard hit (ibid., p. 90). In 1866 Missionary Eugène Eyraud first published a journal entry noting his observation of the *rongorongo* script (Fischer 1997, p. 12).

The HMS Topaze Fragment with a three-glyph inscription (Figure 16 left) was gifted or traded to a ship's crewman in 1868 (Melka and Schoch 2024a, p. 2). There are differing opinions on whether the brief glyph triad represents the full intended inscription; there are wide spaces of un-incised wood to the left and right of the carved glyphs. It could have been an inscribed fragment from a larger artifact, such as a shaft or handle of some sort of implement. Nor can the time of manufacture of this artifact be precisely ascertained. It may have been scribed in the late 1860s around the time the artifact was received by the crewman. Alternatively, it could have been produced earlier and later retrieved for the purpose of gifting or trading. (It should be noted that the Indigenous Rapanui may have had a totally different notion regarding "gifts", "transactions", "trading", and the like, compared to the norms of Euro-Americans; for a discussion of such issues, see Ferdon 1966, pp. 92-102.)

In March 1869 sailor Albert Van Houten acquired a piece of a skirt from Rangitoki—a native woman—with ten *rongorongo* glyphs written upon it (Figure 16 right) (Schoch and Melka 2019, pp. 117-121, 413). A short note, written by Van Houten and accompanying the piece, indicates that it was a special gift to him from his beloved Rangitoki. In his 1872 sketches showing Indigenous Rapanui men and women and their apparel (or lack thereof), artist Pierre Loti showed no designs or inscriptions on the garment that he illustrated (Bahn and Flenley 2017, p. 111). Roggeveen (in Corney 1908, p. 13) noted that indigenous textile dyes were not colour-fast: "one finds the colour come [*sic*] off one's fingers, not only after touching new articles but also from old and worn ones". Any glyphs written upon a frequently worn skirt would have surely smudged (and, based on RMS's examination of the artifact directly, the glyphs on the Rangitoki Bark-cloth Fragment do show some degree of smudging), becoming indistinct after a short time. It, therefore, seems plausible that Rangitoki's skirt was unadorned and that she tore a piece from it for the express purpose of inscription and presentation to her lover. This would imply that the artifact creation date was nearly the same as the time at which the piece was received. On the other hand, it is possible that Rangitoki possessed a separate beautiful, glyph-inscribed and infrequently worn, garment from which the *rongorongo* piece was taken. In this scenario, the skirt and its inscription could have been several years old in 1869. At this point, with only the evidence at hand, we cannot be certain which scenario is closer to the truth.

In June of 1869 Bishop Tepano Jaussen officially discovered *rongorongo* when he received the Échancrée tablet (see Figure 17) spooled with braided hair. He publicized his acquisition, and both tablet collecting and *rongorongo* epigraphy began in earnest (Jaussen 1893; for a recent recounting, see Horley 2021, pp. 16-17). In 1871 on account of disease ravaging their island, all but 175 Rapanui fled to Mangareva (Fischer 1997, pp. 34-35). The combined impact of the decimations of the blackbirder



FIG. 17. Échancrée (D) *rongorongo* tablet side b. Illustration reference: Chauvet, Stephen. 1935. *L'Île de Pâques et ses mystères*. Paris: Éditions "Tel". On-line translation by Ann Altman (2004)

raids and consequent islander mortality from disease, coupled with competition from the Latin alphabet—which missionaries freely taught to any who desired to learn—would have greatly impaired further *rongorongo* education and scholarship. And—as is apparently the stance of many Easter Island scholars and enthusiasts—the demise of the classical script was effectively sealed from that point forward. Those literate few who might have survived, lacking the tutelage of the former *rongorongo* master scribes, and pressured by lifestyle changes brought about by exposure to Euro-American customs and technologies (which archaized certain glyph forms and writing strategies), may have been drawn into the *ta'u* writing movement. Per Table VI, Berthin has arranged a line-by-line transcription of an early 1900s CE *ta'u rongorongo* specimen (Blanco 1996, pp. 57–59). This *ta'u* inscription includes features generally associated with the classic script, viz. glyph near-repetitions in stanza-like forms, and special signs, which might indicate the reading direction for the inscription. Authorship of this artifact (the Madrid Fish Sculpture—Figure 18) is attributed to Tomenika who lived from approximately 1843 to 1914 (Fischer 1997, p. 289).⁷ Routledge (1919, p. 252 and Fig. 99), con-

7. RMS considers the Madrid Fish Sculpture to be somewhat removed from the *rongorongo* phenomenon per se as he does not consider the *ta'u* “script” to be *rongorongo* although the creators of *ta'u* were inspired by *rongorongo* glyphs (see the discussion in Fischer 1997, pp. 528–537). Furthermore, RMS is uncertain regarding the date of the Madrid Fish, and he wonders if it could be from the 1910s or later. Another late piece, the *Routledge Miniature Tablet* with six *rongorongo*-like glyphs, was collected in 1914–1915 (Melka and Schoch 2024b).

sulted with Tomenika during his last year of life, and received *rongorongo* writing samples from him, but they too were rendered in *ta'u* form. Yet, the existence of the Madrid Fish teases of the possible existence of further recent (early 1900s) *rongorongo*-inspired artifacts, possibly even classical pieces. The search for these continues and remains an active field of ethnography (Melka and Schoch 2024b).

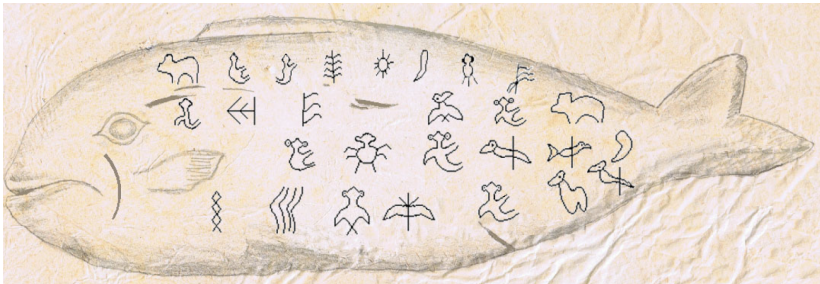


FIG. 18. Madrid Fish Sculpture—Side a. Artwork of GGB. After photograph and sketches by Blanco (1996, pp. 57, 59)

TABLE 6. Madrid Fish Sculpture *ta'u rongorongo* transcription (from Berthin [2024, p. 486])

Side a Line a1								(some before much following)
Line a2								
Line a3								
Line a4								
Side b Line b1 (some before)								
Line b2								
Line b2 and b3								(well filled)

9. Conclusions

The first stone carvings of icons having *rongorongo*-like imagery were possibly being carved concurrently with construction of the *abu* platforms on Rapa Nui in the later part of the thirteenth century. During the 1600s, as attested by the Pukao 36 inscription, *rongorongo* had already

become highly developed. One of the Rapanui chief's signatures on the 1770 treaty document with the Spanish Expedition seems to be a short sequence of *rongorongo* glyphs. Expedition member Agüera possibly uncovered a few *rongorongo* glyph definitions when he showed pictures of Arabic numbers to the Islanders in 1770, and they may have given names of *rongorongo* characters resembling our numbers. At minimum, Agüera's findings showed that the Rapanui possibly associated graphic images with intangible concepts, which did not obviously match to the morphology of the symbol. Per ^{14}C dating, a classical age of *rongorongo* was flourishing between 1800 and 1860, yielding the preponderance of the surviving *rongorongo* corpus. Perhaps the earlier contact with the Spanish and the witnessing of their writing inspired the Rapanui, ushering in an era of prodigious indigenous authorship. The surviving classical wooden *rongorongo* tablets have feasible radiocarbon dates from the early 1800s to the 1860s and people may have been composing *rongorongo* in the classical style, possibly even in 1869. Combined mass mortality from old world diseases and competition from the Latin alphabet greatly impaired further *rongorongo* instruction and scholarship. One of the last artifacts seemingly inspired somewhat by knowledge of classical *rongorongo*, the Madrid Fish Sculpture, may date to the very early 1900s. The search for even newer artifacts continues.

Note on Authorship

This paper is primarily the work of the first author, Gordon G. Berthin, who is responsible for its final form, language, and editing. The second author, Robert M. Schoch, has collaborated with the first author; however, as with many scholarly subjects, various *rongorongo* researchers have different levels of comfort and affinity with specific hypotheses, as well as what might be considered a fact or a valid assumption. RMS finds the material throughout this paper thought-provoking; however, he is not as confident or as comfortable with some of the proposals put forward in this paper as is GGB. Therefore, in some cases the material is explicitly labelled as from, or suggested by, GGB. It is important to give credit where credit is due, so in this sense RMS believes, and insists, that the reader consider GGB the author of the novel contributions found in this paper.

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