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The search for Thomson's "lost platform", Ahu Rikiriki

Paul Horley

The paper presents an analysis of historical records and archival materials about Ahu Rikiriki, first mentioned by Thomson. The ahu was described as located on the southern cliffs of Rano Kau. In the 20th century, the site was searched for without success at the vertical cliffs below the Karikari, in the vicinity of 'Ōrongo, suggesting that Ahu Rikiriki may have fallen into the sea in the late 19th or early 20th century. Other inaccessible places, such as the cliffs of Pōike were also mentioned as a possible location of Ahu Rikiriki. This study aimed to find the place at the Rano Kau caldera that would produce the best possible match with Thomson's description of the ahu. The entire southern rim of Rano Kau was studied, both from the cliff top and from the sea. In one particular place, in the area formed by a large landslide, a patch of densely-packed stones was found in the middle of the cliffs, which may possibly represent remains of fill of a destroyed ahu. In the shallow surf under the site, one can see numerous ochre-colored boulders reminiscent of Rano Raraku tuff, standing out on the background of greyish stones that are common to the place. The dimensions of these ochre-colored boulders are within the ranges expected for moai.

Este artículo se dedica al análisis del registro histórico y de los materiales de archivo relacionados con el Ahu Rikiriki, mencionado por primera vez por Thomson. El ahu fue descrito como localizado en la caldera exterior sur de Rano Kau. El sitio fue buscado sin éxito en los acantilados verticales por debajo de Karikari, en la vecindad de 'Ōrongo, sugiriendo que el Ahu Rikiriki había caído al mar hacia finales del siglo 19 o a inicios del siglo 20. Se mencionaron otros lugares inaccesibles, tales como los acantilados de Pōike, como una posible ubicación del Ahu Rikiriki. La presente investigación se enfocó en la búsqueda del lugar que se asemeje mayormente a la descripción del ahu publicada por Thomson. Se estudió la parte sur de la caldera de Rano Kau, tanto desde la parte superior como desde el mar. En un sitio en particular, en el área formada por un gran corrimiento de tierras, se encontró una zona llena de piedras, ubicada a la mitad del acantilado, la que probablemente puede representar los restos del relleno de un ahu destruido. En el mar poco profundo debajo del sitio, se puede ver muchas rocas de color ocre que parecen ser toba de Rano Raraku, las que se diferencian de las rocas grises comunes al lugar. Las dimensiones de las rocas color ocre están dentro de los rangos esperados para los moai.

Original Discovery and Historical Documentation

Among the ships that called on Rapa Nui's shores in the late 19th century, the 1886 visit of the USS *Mohican* was definitely one of the most remarkable. Despite a short stay – December 18 to December 31 (Thomson 1891:476) – the expedition team completed a huge amount of work: 113 ceremonial platforms (*ahu*) were surveyed along the entire circumference of the island, the statues of Rano Raraku and the stone houses of 'Ōrongo were studied and photographed, several important records of Rapanui lore were made, and a large collection of artifacts was acquired, including two premium *rongorongo* tablets. The *Mohican* Expedition was also the first to produce ample photographic documentation of the island; the pictures were taken by Lt. William E. Safford. Many of these images were published in the report of the expedition (Thomson 1891:Pls. 13-22, 24-28, 30-34).

The survey of ceremonial platforms circumscribed the coastline of the entire island in a clockwise direction, starting from Hanga Roa. For each ceremonial platform, the local name was recorded and some basic measurements were made. Drawings and photographs were produced for particular sites of interest. Reading the survey pages (Thomson 1891:500-513) it becomes clear that the *Mohican* crew was not aware of the size of the task that they voluntarily assumed. In the beginning, every new platform was met with enthusiasm, with the team recording measurements and comments on the number and condition of the statues. Upon reaching the south shore, the crew evidently grew tired. Only the largest structures such as Ahu Tongariki, Ahu Akahanga, Ahu Tahiri, and Ahu Vinapū were studied in detail. The less-spectacular platforms were simply marked on the map: "Platform No. 71. – Called "Hanga-tetera" [sic., Hanga Tetenga]; 60 feet long, 6 feet wide, and 7 feet high, and has no wings. The main stones of sea-face average in size 5½ feet long and 1½

feet wide. *No images.* [emphasis mine]" (Thomson 1891:509). Yet, Ahu Hanga Tetenga features a statue measuring 9.9m (taller than Moai Paro of Ahu te Pito Kura), which seemingly collapsed during the erection process because no eye sockets were carved (Van Tilburg 1994:28). Ahu Oroī is also described to be "in a bad condition and no images" (Thomson 1891:509), while several statues are clearly visible on the *ahu*. The survey continues with: "Platform No. 87. – Called "Manumea". A mere mass of ruins. Platform No. 88. – Called "Hanga-tee". Same condition as the last" (Thomson 1891:511). The reconnaissance party also produced photographic documentation of Ahu Hanga Te'e (Vaihū), both from front and back (Thomson 1891:Pls. 33 and 32, mislabeled as Ahu Tongariki), clearly showing that the statues and the masonry were in better condition than they are now. After spending some time in the Vinapū valley to measure, describe and excavate Ahu Tahiri and a walled enclosure in front of Ahu Vinapū (Thomson 1891:511-512), the *Mohican* crew continued along the shore, climbing the slopes of Rano Kau. Between the briefly mentioned sites of Ahu Tupai and Kaokaoe, the expedition report includes the following passage:

"Platform No. 112. – Called "Ahurikiriki." Situated on the extreme southwestern end of the island, and remarkable from its position on the face of a perpendicular cliff nearly 1,000 feet high and midway between the sea and the top. Sixteen small images are lying on this platform and many of them

seem to be in excellent condition. We could find no way of reaching the narrow ledge upon which this platform stands. No road leads down from the top; it can not be approached from either side, and from below it is a straight up and down wall against which the sea dashes continually. It is hardly probable that the images were lowered from the top by ropes, and the natural conclusion is, that a roadway once existed, which has been undermined by the waves and has fallen into the sea" (Thomson 1891:513).

Alas, this first known description of the Ahu Rikiriki – together with its approximate location marked on the island map – are seemingly the only direct observations of the intact site available. The manuscript map on which Thomson's Plate 12 is based (image NAA 04951400 from the National Anthropological Archives) does not show any additional detail in this area; the *ahu* numbers are written in red ink that is very faded, and for this reason it was decided to illustrate a close-up of the published map (Figure 1). The intensive search for the 1886 photographs from the USS *Mohican* Expedition in the National Anthropological Archives did not result in any image identifiable with the area of interest (Gina Rappaport and Molly Kamph, pers. comm. 2016). Thomson's original notebooks were also impossible to locate. According to the correspondence, preserved in the Archives of the Smithsonian Institution, after publication of the expedition report, the original manuscript was returned to the author in 1904 (Mary

Figure 1. Close-up of Easter Island map published by Thomson (1891:Pl. 12). The numbers denote locations of the surveyed platforms (in Thomson's orthography): 106 – Tehuteaheru; 107 – Ahumeamea; 108 – Ahumata-iti; 109 – Tahiri; 110 – Vinapu; 111 – Ahutupai; 112 – Ahurikiriki; 113 – Kaokaoe. The inset shows the modern map (courtesy of Mara Mulrooney) displaying the correct locations of the platforms with survey numbers 106, 109 and 110.

Markey, pers. comm. 2014). The number of statues mentioned for the site – sixteen – is a record number for the island, surpassing Ahu Tongariki with 15 images. A possible answer to this singularity can be found in the name of the site, which is usually translated as a “small *ahu*”. However, in the Rapanui language “*iti iti*” “small” has a suppletive plural *rikiriki*; the use of this form is obligatory when the adjective modifies a plural noun” (Kieviet 2016:105). Thus, the proper translation would be “small platforms”, suggesting that the site was composed by several (two?) adjacent *ahu* with 16 *moai* in total.

The survey map published by Thomson (Figure 1), unfortunately, becomes especially inaccurate about site locations after the reconnaissance team leaves Hanga Hahave (*ahu* survey number 105). Thus, platform 112 is marked to the east from the Vinapū valley. The Vinapū platforms themselves (Nos. 109 and 110) are also displaced to the east, being shown on the opposite banks of a small bay in front of Mt. Orito, where Ahu No. 106, modern name Ko Te Aheru, should be located (Cristino et al. 1981:Quadrangle 5). There appears to be another unintentional “trap” on the map – the number “1000” written next to the west cliffs of Rano Kau, near “Karikari Pt.” and ‘Ōrongo. This number closely echoes the “1,000 feet” appearing in the description of Ahu Rikiriki, possibly contributing significantly to the establishment of the view that the *ahu* was located just below the Karikari, the marked notch in the Rano Kau caldera not far from ‘Ōrongo.

Routledge briefly mentions the site in her book:

“the ocean is ever encroaching: in some cases part of an *ahu* has already fallen into the sea, and more is preparing to follow [. . .] One row of images, on the extreme western edge of the crater of Rano Kao [sic, Kau], which were visible, although inaccessible, at the time of the visit of the U.S.A. ship *Mohican* in 1886, are now lying on the shore a thousand feet below” (Routledge 1919:174).

Note how Thomson’s “extreme southwestern end” transforms here into the “extreme western edge”. Though no explicit mention of the Karikari appears in this passage, Routledge’s field notes are clear about this (Figure 2a). Decipherment of Routledge’s handwriting requires a considerable effort; here is an attempted transcription of the upper part of the figure, using a double slash “//” to mark line breaks: “Orongo q.r.// Edge: // Ahu Rikiriki, has stood about on S side of the c(???) often(?) // said t(o be?) The work of 2 Tatanes // Ko Vohu + Ko Titoke. Statues seen // standing by now(?) be in that way(walls?) at(?) // the foot. They were seen standing on the notch(?) // but were inaccessible. It is said the *ahu*(?) // the as said

Ohau falle(n?) and 12 years // before Ahu(?) clan(?) of the (???) Ahu statues // are reported to have been of Raraku // stone.”

Luckily, the field notes also contain a set of typewritten survey pages covering several areas of the island. It may have been prepared for the second book: “for those who would have preferred more scientific and fewer personal details, I can only humbly say wait, there is another volume in prospect with descriptions and dimensions of some two hundred and sixty burial-places [*ahu*] on the island, thousands of measurements of statues, and other really absorbing matters” (Routledge 1919:viii). Alas, such a volume never materialized. Among the typewritten pages, there is a brief reference to Ahu Rikiriki (Figure 2b). It is not a word-by-word retyping of the handwritten passage, though both texts are strongly related. Here, Routledge explicitly states that the platform was located near the “Knife-Edge”, the term she used for the Karikari. The typewritten passage makes reference to Motuea – a name which sounds Polynesian, but is not very familiar. Studying the other pages of the same document, it becomes clear that the person who re-typed the notes (Routledge herself?) also had a difficulty with handwriting, especially with proper names: for example, Dutrou Bornier is mentioned either as “Borniu”, “Bornia”, and even “Bonna”. Taking into account these variations, “*Motuea*” may be a confused reading of the hand-written “*Mohican*”, which thus refers to Thomson’s expedition.

Figure 2. Ahu Rikiriki in the field notes of Katherine Routledge: a) handwritten record and b) typed text (images courtesy of the Royal Geographical Society with IBG; digital images courtesy of the Pacific Manuscript Bureau, Manuscript R531).

The publications of the Métraux-Lavachery Expedition list Ahu Rikiriki in two very different locations – the southeast cliffs of Rano Kau and the east cliffs of Pōike (Lavachery 1935:286, 287; Métraux 1940:Figure 1). Lavachery (1935:171) writes:

“Nous voilà sur la rive sud, et le vent s’apaise. Le troisième ahu montre deux rangées de dalles dispersées: Ahu Riki Riki. Nul plan incliné, pas d’endroit où exposer les morts, où placer les ossements. Tepano soutient portant que ces ahus servaient de tombeaux, mais que les habitants de Poiké étaient très peu nombreux” (Lavachery 1935 :171).

[We are on the south coast [of Pōike], and the wind calms. The third *ahu* shows two rows of scattered flagstones: Ahu Riki Riki. No inclined surface, no place where to expose the dead, where to put the bones. Tepano maintained that these *ahu* served as tombs, but the habitants of Poike were not so numerous.] (translation by the author).

The field notes of Lavachery provide more detailed picture (Figure 3a):

“AHU RIKIRIKI // Cet ahu est déjà sur la rive // Sud. Il est fort confus. On // distingue cependant deux // rangées de dalles les unes // encore debout. // Nous ne voyons pas trace du // remplissage habituel du // cadre de dalles par des // morceaux de lave. Ceux-ci // font en effet défaut dans // la région. Probablement

les // habitants de Poike déposaient // ils leurs morts en Terre, dans // le cadre de l’ahu. Nous ne // pouvons vérifier cette // hypothèse sur le moment. // Nous poursuivons le tour // de la presqu’île. // Au moment où l’île de // Marotiri apparaît dans // le fond l’île en même temps // se montre a nous (rive sud) // sous un aspect de grandeur // étrange pour la 1^{re} fois // constaté. Les différents // plans des collines se dessinent // nettement a contrejour. // Et s’étagent assez haut // dans le ciel pour figurer // une sorte de cordillère. // Au premier plan le // terme tracé du Rano Raraku // se dessine et ferme le // tableau. // Tepano nous signale encore // on à mi-hauteur de la falaise // et dev[an]t Marotiri une muraille // de rochers de formation // naturelle qui semble la // façade marine d’un ahu.”

[Ahu Rikiriki. This *ahu* is on the South coast. It is very indistinct. However, one distinguishes two rows of flagstones, some of which are still standing. We have not seen any trace of common filling of the flagstone frame with the pieces of lava. This shortcoming is characteristic for the region. Possibly, the habitants of Pōike buried their dead in the frame of the *ahu*. We can not verify this hypothesis in this moment. We continue to tour the peninsula. At the same time as Marotiri islet appears, for the first time the island shows up in the background (south coast) in all its strange greatness. The different plans of the hills clearly picture themselves in backlight and stack up quite high towards the sky, forming a kind

Figure 3. Ahu Rikiriki documented in field notes of a) Henry Lavachery (images courtesy of the Pacific Manuscript Bureau, Manuscript R529) and b) Alfred Métraux (images courtesy of the Institute of Ethnology, Cultural and Social Anthropology, Tübingen University).

of mountain range. The contour of Rano Raraku appears in foreground and completes the picture. Tepano also pointed out, at half-height of the cliff and in front of Marotiri, a wall of stones of natural formation that looked like a sea wall of an *ahu*.] (translation by joint efforts of the author, Konstantin Pozdniakov and Irina Pozdniakova).

Thus, Ahu Rikiriki with survey number 75 (Lavachery 1935:286) is located on the south-east end of Pōike and was accessible, but apart from it there was a natural wall-like formation at the cliffs of Pōike. Another Ahu Rikiriki, with a number 136bis (Lavachery 1935:287), is placed between the Karikari and the south cape (Lavachery 1939:Figure 1). Métraux writes:

“the line of burial platforms follows the shore and, though wave erosion is certainly rapid along the ashy volcano slopes, only two monuments have been attacked by the sea. Ahu-rikiriki, on the southern slopes of Rano-kao [sic, Rano Kau] has fallen, and the same fate awaits ahu Ohau at the northwestern point. At the time of my visit (1934), one of its wings had been cut away from the main building by a deep fissure and could not be approached without danger” (Métraux 1940:10).

In Field Notebook No. 5, Métraux provides the following information (Figure 3b): “En ahu Rikiriki hay un pasto ukukoko que se empleaba para canasto y sombrero. Ahu Rikiriki au pied du Rano Kao (cyperus)”. [At Ahu Rikiriki there is a grass *ukukoko* that was used for [making] baskets and hats. Ahu Rikiriki [is located] at the base of Rano Kau (cyperus)] (translation by the author). The Latin name seemingly corresponds to the *ukukoko* plant. However, the *Cyperus* species are called *hikukio’e* (rat’s tail) in Rapanui (Dubois et al. 2013:44-45). Remarkably, while being explicit about the destruction of Ahu Rikiriki, Métraux notes that the islanders knew and used the plants from the *ahu*. The map published by Métraux (1940:Figure 1) marks two locations for Ahu Rikiriki. Surprisingly, both of them are somewhat different from those provided by Lavachery – one is marked at the easternmost end of Pōike, which would be Lavachery’s site 74, Ahu Pukukeretea (Lavachery 1935:286), and the other, in contrast to Lavachery’s site 136b, is located at the south-east cliffs of Rano Kau, on the opposite side of the south cape.

Charlin Ojeda (1947:59) essentially repeats Thomson’s description of the site. The extensive survey of the ceremonial platforms published by Englert includes the following description:

“Detrás del cráter del Rano Kau. 244. Ahu Rikiriki, es ahu único por su posición al pié del acantilado del Rano Kau, debajo del “*karikari*” que es como una

escotadura, habiéndose derrumbado la parte más alta de la angostura entre el cráter y el mar. El ahu está destruido. Desde el borde del precipicio se ve abajo en la misma orilla del mar, un moai botado, y un poco más arriba, en una pequeña planicie, se ven piedras labradas. Probablemente había más de un moai. Es difícil imaginarse como ha sido posible llevar el moai (o los moai) hasta ese lugar tan inaccesible, al pié del abrupto barranco. La única explicación plausible es que el transporte se habría hecho en una embarcación de dimensiones más grandes que el usual bote *vaka ama*, en un *vaka poepoe* que, según la tradición, hacían algunas veces en los tiempos antiguos” (Englert 1948:533).

[Behind Rano Kau crater. [Survey number] 244. Ahu Rikiriki, is a unique *ahu* because of its location at the base of Rano Kau cliffs, below Karikari that is like a dent, formed upon collapse of the topmost part of the narrow edge between the crater and the sea. From the border of the precipice one can see below at the very border of the sea, one fallen *moai*, and a little bit above, on the small ledge, one can see worked stones. Possibly there was more than a single *moai*. It is difficult to image how it was possible to bring a *moai* (or several *moai*) to this place, so inaccessible, at the bottom of a steep cliff. The only plausible explanation is that the transport was made with a boat of dimensions larger than the common *vaka ama* [outrigger canoe], using *vaka poepoe* which, according to the lore, was constructed several times in ancient times] (translation by the author).

The field notes of Padre Sebastián Englert (1947:27) contain essentially the same description of the site, explicitly marking the location of the *ahu* below the Karikari. Heyerdahl’s (1961:83) description of the site is as follows: “On the south coast and half way up the three hundred meter high perpendicular cliffs east of Rano Kao [sic, Kau] (Plate 2e), Thomson’s party witnessed the presence of an *ahu* known as Rikiriki, which subsequently has tumbled down to the sea through the gradual undermining of the waves”, and further: “On our visit in 1956 a visible section of a statue emerged from the talus above the surf at the foot of the cliff” (Heyerdahl 1961:83, footnote 64). Plate 2e, mentioned in the text, shows a sea-view of the Karikari with the legend “cliffs overhanging Ahu Rikiriki, site of seaborne statues.”

The final solution of Ahu Rikiriki’s riddle seemed unavoidable with the beginning of the Easter Island Survey Project on February 20, 1968 (Mulloy 1997:4). The survey work for Quadrangles No. 1 (Rano Kau) and No. 2 (Vinapū) was completed during June-December 1968 (Mulloy 1997:20), showing no trace of Thomson’s “lost platform”. A dedicated search for Ahu Rikiriki was undertaken by Emily Mulloy (1987:2-3):

"December 1960 [sic, 1968?] found Bill Mulloy confined to bed [. . .] Emily set off on an expedition to see the legendary Rikiriki. She was accompanied by her daughter Kathy, the Chilean archaeologist Gonzalo Figueroa, and several other friends [. . .] Ahu Rikiriki was reputed to be just below the lowest point of Karikari so the plan was to reach it from the east. The group drove as far as Vinapu and then started up the side of the volcano [. . .] By the time they reached the cliff edge, it already was into the afternoon. Then time was needed to fix the ropes and prepare for the descent [. . .] the men descended, one by one, and disappeared under the overhanging cliffs [. . .] At last they reached the shoreline, being hidden at times by immense house-sized boulders which had fallen from the cliffs above [. . .] they had explored every possible bit of terrain below, without finding any trace of *ahu*, *moai*, or any other evidence of any sort of human activity. From above, the large blocks of stone which have a rectangular shape might appear to be tipped-over statues, but on approaching them, they turned out to be naturally-fractured stone. Not only that, but had they been statues, their size would have dwarfed all but the largest *moai* at Rano Raraku [. . .] In recent years, survey teams with the Universidad de Chile rechecked this same area and confirmed that no cultural remains lie below or on the cliffs. Yet old legends die hard; as late as 1984, islanders were still making references to Rikiriki and in addition, some insisted that a *moai* was located on the interior slopes of the caldera of Rano Kau. Lee personally checked this latter rumor, which also proved to be false."

Surprising as it may seem, Ahu Rikiriki does appear in the *Atlas Arqueológico* in a completely different location – about 200m inland from the shore, halfway between Hanga Hahave and Hanga Poukura (Cristino et al. 1981:Quadrangle 5). This is definitely not the site described by Thomson.

Ahu Rikiriki is also mentioned in Rapa Nui string figures *kaikai* and associated chants. Field notes of Routledge record a number of string figures, one of which is called Ahu Rikiriki (Figure 4a). The brief sketch depicts a rectangular frame covered with interlacing shapes representing *moai* lying on top of an *ahu*. The string figures collected by the Métraux-Lavachery Expedition show how this string figure looks in real life (Figure 4b), with a complex pattern of strings representing the statues. A chant associated with the string figure *Ngā uka a Torio, a Ho'i Ata* (Blixen 1979:54-56) mentions the *ahu* briefly:

<i>I Hiva 'oti ngā uka</i>	Ended up in Hiva, the girls
<i>A Torio, a Ho'i Ata</i>	Torio and Ho'i Ata
<i>E aha 'ana?</i>	What are they doing?
<i>E uruuru pukao</i>	They are making [their] <i>pukao</i>
<i>Atarangi ana</i>	?
<i>E tomotomo pukao</i>	They are putting together [their] <i>pukao</i>
<i>Veri Hiva 'ana</i>	As it is done in Hiva (?)
<i>I te motu 'oti au</i>	On the islet I finished
<i>Kaukau 'oti au</i>	I finished swimming
<i>Hopuhopu 'oti au</i>	I finished washing [myself]
<i>(I) Tua 'Oti au</i>	I am at Tua 'Oti
<i>I Ahu Rikiriki</i>	At Ahu Rikiriki
<i>E hakahingahinga 'ana</i>	They are making
<i>i te moai</i>	the <i>moai</i> fall
<i>E ko Hanga, e ko Vohu,</i>	Hanga, Vohu,
<i>e Titoke, Kere Matapea</i>	Titoke, and Kere Matapea
<i>Ka ngaro ki Hiva!</i>	Disappear towards Hiva!

The names Vohu and Titoke were recorded earlier by Routledge (Figure 2a). Métraux (1940:306, footnote) mentions that "the only names of statues recorded by present natives are: Hanga, Vohu, Titoke, Kere-matapea-ka-ngaro-ki-hiva", which definitely come from the aforementioned chant. Despite various possible

Figure 4. String figure called Ahu Rikiriki: a) sketch by Routledge (images courtesy of the Royal Geographical Society with IBG; digital images courtesy of the Pacific Manuscript Bureau, Manuscript R531). The inscriptions say: *cat's cradles* (top left), 8 (at the left margin), *Ahu Riki Riki* (bottom of the figure), *moai* (above the drawing) and *ahu* (to the right of it); b) string figure C.08957.027 labeled *Ahu rikiriki*, collected by Métraux-Lavachery Expedition (image courtesy of the Bishop Museum).

interpretations (Blixen 1979:55-56), the chat strongly suggests purposeful toppling of the statues. There is no hint, however, whether the standing *moai* were toppled on the platform, or whether they were somehow pushed off the platform to the sea below, which would definitely cause them to “disappear in the direction of Hiva”. If the latter were the case (assuming that this *kaikai* chant documents real historical events), it may mean that the chant for the string figure *Ngā uka a Torio, a Ho’i Ata* was composed after Thomson’s visit of 1886.

Thus, literature and archival materials make a strong point that Ahu Rikiriki was destroyed long ago, apparently nullifying the chance of finding any traces of it. The same sources say that another platform, Ahu Ohau (Thomson 1891:503, survey No. 12), also met its fate at the depth of the ocean. Métraux (1940:10) visited it, but the site was already in a precarious state. In slightly over a decade, this *ahu* seems to be gone, as it is absent from Englert’s survey (1948:516-533). Heyerdahl mentioned the site as “fallen into the sea” (1961:85, caption to Figure 13d). Unpublished field notes of Routledge (Figure 2a) also seemingly state that Ahu Ohau had fallen. In reality, the platform is still there, known today as Ahu Te Niu (Horley 2009:13-14). The name change possibly occurred at the time of Englert’s survey (1948:518, No. 37 Ahu Te Niu). One wing of this *ahu* indeed perished in a landslide, but the main platform and the statues survived safe and sound, attracting much scientific attention in recent years (Cauwe 2011:60, 66). The optimistic case of Ahu Ohau thus inspired a new search for Ahu Rikiriki.

The Study of the Rano Kau Caldera

In the 20th century, direct searches for Ahu Rikiriki were made at the Karikari. Recently, these cliffs suffered considerable deterioration (Steiner 2013-2014:398, Pl. 90). As one can see from Figure 5, there is a marked stripe of landslide-affected terrain extending from the shore up to the rim of the volcano. The bottom of the cliff to the left of the landslide cone has already collapsed into the sea. The portion of caldera located to the right of the Karikari is also unstable – one can clearly see a cone-shaped area reaching almost to the top of the cliff. It may be a possible place for another massive landslide. If Ahu Rikiriki was indeed located under the Karikari, no traces of it can be found today.

Carefully re-reading Thomson’s report and following the advances of the reconnaissance party on the map (Figure 1), one still remains with an impression that Ahu Rikiriki should have been located on the opposite, southeast side of the crater. As the crew members of USS *Mohican* made their observations walking along the Rano Kau caldera, it was decided to repeat their route, paying close attention to availability of access to the cliff border. If Thomson’s party was able to observe Ahu Rikiriki in detail and to study its surroundings, discovering that “it can not be approached from either side” (Thomson 1891:513), the terrain at the site seemingly should have allowed an ample view of the *ahu*.

From a logistic point of view, it was decided to walk the cliffs from the Karikari to the Vinapū valley – the direction opposite to that taken by the *Mohican*

Figure 5. Condition of cliffs below Karikari in November 2013. Note cone-shaped area marking the recent landslide.

Figure 6. Survey of Rano Kau from Karikari to Vinapū (map of Rano Kau courtesy of Mara Mulrooney). The principal views are marked A-H. The arrows on the map show the approximate direction in which the photographs were taken. The sea views of Rano Kau walls are shown below, with letters designating the corresponding view points. The triangle at sea level marks a reference point for the both images taken from the sea.

Figure 6. (continuation). The approximate elevation of view points above the sea level: A) 280m; B) 280m; C) 270m; D) 270m; E) 260m; F) 140m; G) 100m; H) 60m. A large amphitheater-like formation appears at the view point E. From Karikari (A) to Kikiri Roa (F) the cliffs are high and precipitous. After Kikiri Roa, the cliffs are significantly lower; the extensive erosion exposes ample patches of reddish soil (G, H).

reconnaissance party. Such choice of direction considerably reduced the need to climb steep slopes. Walking the cliff tops was a special experience by itself; the author is grateful to Olivia Hey Riroroko for her kind company and guiding through the entire route. The southeast plateau of Rano Kau, known as Vai a Tare, is an open grassy steppe. Similar to Ōrongo, the wind arrives here in strong gusts, which felt especially uncomfortable upon approaching the cliff border. The grassland is relatively easy to walk through due to the absence of densely-growing invasive plants such as *mauku piro* and *chocho*. The wild goats living in the area are very timid – seeing a person at a long distance, they rush for hiding to the goat trails on steep exterior slopes. The ubiquitous *manu toketoke* (*Chimango caracara*) behave in a drastically different manner. Being highly territorial, *Chimango* dive down to scare off the invader, leveling up at a short distance above one's head, repeating the attacks again and again until the person leaves the bird's territory. However, just adjacent to it there is a territory of another *Chimango*, so that the threatening dives continue for about a quarter of the route. As it was discovered during the walk, the reasonable-looking (but still dangerous) approaches to the cliff border were located in places where the caldera had U-shaped indentations, the most characteristic of which are shown in Figure 6. A fisheye lens provided a wider panorama, pronouncedly curving the horizon. On another occasion, the same route was repeated to a great extent by the sea, thanks to the kind help of Casimiro Hey Riroroko. In this way, the photographs taken from cliff tops were complimented with the views taken from the cliff bottom.

In the majority of cases, the views from the cliff tops were highly discouraging: one could see an abrupt precipice to the right and left, but the view of the shore was impossible to achieve remaining within the sane limits from the cliff's border (Figure 6, A-D). Studying the same places from the boat, one can see that the U-shaped indentations at the cliff tops are very shallow, followed by an almost vertical wall all the way down to the sea. This rule holds for all but two exceptional viewpoints located higher than 200m above sea level – the first is the view towards the Karikari (Figure 6A) and the second is a large amphitheater-like formation near the south point of Rano Kau (Figure 6E). Looking from the boat, one can see that the terrain at viewpoint E was formed by a huge landslide – unique in its scale for the entire south-east caldera. The cliff range becomes considerably lower when arriving to the place called Kikiri Roa (Figure 6F), some 140m above the sea level. A stone construction can be seen by the cliff edge in the upper left corner of the photograph. This place – with a small islet near the shore – seemingly corresponds to the location marked with the number 114 on Thomson's map

(Figure 1); however, Thomson places the name Kikiri Roa westward from this point. The landscape changes considerably from Kikiri Roa to Vinapū. Perhaps due to a different slope, this area receives stronger fluvial flow that leads to pronounced erosion. In contrast to viewpoints A-F, the ample areas of exposed soil extend up to the cliff edge (Figure 6 G, H). The soil is deep red to orange in color; in places, it is crisscrossed with gullies, though the degree of erosion is notably less than that of Pōike (Mieth et al. 2002:90-91).

The Possible Site of Ahu Rikiriki

Taking into account Thomson's words that Ahu Rikiriki was located "on the extreme southwestern end of the island [. . .] on the face of a perpendicular cliff nearly 1,000 feet high and midway between the sea and the top" (Thomson 1891:513), the search range can be reduced to viewpoints A-E (Figure 6). These are characterized with elevations of about 280-260m above the sea level, which corresponds to approximately 920-850 feet. Out of these, the only place that has a reasonable chance to match Thomson's description is the large amphitheater-like formation (Figure 6E). It is located slightly to the east from the south cape; but, returning to Thomson's map where Kikiri Roa is marked almost at the southernmost point of the island (Figure 1), it becomes clear that in Thomson's map viewpoint E should be located slightly to the west from the south end of the island, matching his description well. Surprisingly, no toponym is associated with this place in the *Atlas Arqueológico* (Cristino et al. 1981:Quadrangle 2). The crescent-shaped rim about 300m wide offers a good view of the site from different directions (Figure 7a) clearly showing that no path descends from any side to a grass-covered area located half way down to the sea.

Walking around the cliff border, a number of photographs were taken from several viewpoints to study of the site from different angles. The photographs presented in Figure 8 are thus marked with the letters "RV" for the Right Viewpoint (elevation about 250m), "CV" for the Central Viewpoint (elevation about 260m), and "LV" for the Left Viewpoint (elevation about 240m). The approximate locations of these viewpoints are shown in Figure 7b. As notions of "right" and "left" were assigned for an observer located on cliff top, they appear reversed in the picture taken from the sea. The photographs were taken on three occasions under different lighting conditions. The views from the cliffs were shot at about 2PM (on the way to Vinapū) and at about 5PM (on the way back to Vai a Tare). The views from the sea were taken at about 11AM. Digital images were processed with Agisoft PhotoScan to construct a 3D model of the site. Following the methodology

Figure 7. Views of the amphitheater formation: a) from the cliff top (Right viewpoint) and b) from the boat. The dense patch of stones is clearly seen in the middle of a grass-covered area.

Figure 8. Panoramic view of the grass-covered area with stone patch in the middle. The scale bar length is one meter. The most remarkable features are marked with letters: a) upper part of the patch with small stones; b) lower part of the patch with significantly larger stones. Note the object of greyish stone, resembling a large *toki* chisel or a digging implement.

Figure 8. (continuation). Two particular rocks c) and d) feature several flat faces; e) shallow waters in front of the site have a number of ochre-colored stones contrasting with predominantly dark-grey rocks on the shore. Panels f) and g) illustrate the difference of color and texture of the two types of rocks cropped from the same photograph. Fragment h) shows face-like features under certain illumination.

Figure 9. 3D model of the site rendered in orthographic projection: a) front and b) top views. False colors emphasize the complicated relief; c) vertical (Z-Z') and d) horizontal sections crossing the stone patch. The letters "H" and "V" denote the mutual location of the cross-sections; e) textured 3D model showing details of the stone patch (top view, orthographic projection). The stone patch is about 36-38m in diameter.

Figure 10. Perspective views of the 3D model: a) view of stone patch looking approximately to the east; b) view from the shore towards the cliff top. The stone patch (invisible from this position) is located some 80m above the observer, on top of the wall towering in foreground.

developed for other Rapa Nui sites (Horley et al. 2015; Lee et al. 2015-16), the advanced 3D visualization was performed with MeshLab (Figure 9). Ambiera CopperCube was used for building a virtual tour based on the low-polygon 3D model, permitting viewing of the site from specific points (Figure 10). To get an idea of dimensions, the leveled 3D model was first matched in scale to the height of the CV peak, which is about 263m (Cristino et al. 1981:Quadrangle 2); the mesh was then rotated to achieve the best match to the map. In this way, the measurements made for the 3D model should be reasonably close to reality.

Figure 7 provides a general view of the site. As one can see from the sea view (Figure 7b) and 3D model (Figure 9a), the place described as “Central Viewpoint” does not correspond to a strict center of the amphitheater-shaped depression. However, it provided safer access and some extra meters of elevation, so that the principal photography (Figure 8, top panel) was made from there. The true center of the depression is close to the vertical cross-section line ZZ' (Figure 9c). At the upper-most section, the cliffs drop precariously at 67°. The grass-covered area seen in the photographs starts about 100m below the cliff border. The maximum width of this area is over 100m. Despite the fact that it appears quite flat when seen from the cliffs (Figure 7a, Figure 8) its actual slope is well above 30° (Figure 10a). The grass-covered area ends abruptly at the height of about 80m above sea level. This detail is also somewhat hidden from the observer while standing on the cliff top. It is understood that a precipice is present, but its height is difficult to gauge from above. The view from the sea (Figure 7b) reveals an extensive curtain of landslides embracing the entire site. For the observer standing on the rocky shore below (which is expected to be up to 20m wide in places), the view towards the cliff tops will be almost blocked by a huge wall (Figure 10b). Due to this, the patch of grassland will be invisible from the shore.

The most remarkable feature of the grass-covered area is a dense patch of stones, located roughly halfway from the cliff tops to the sea (Figures 7-9). An extensive search for historical images was undertaken in hopes of studying the evolution of this formation. Archives and collections consulted included the National Anthropological Archives at the Smithsonian Institution (the 1886 photographs from the USS *Mohican*/Thomson Expedition), the Archives of the Peabody Museum of Archaeology and Ethnology (the 1905 photographs from the USS *Albatross*/Agassiz Expedition), the Photographic Archives of the British Museum (part of the 1914-15 photographs from the *Mana*/Routledge Expedition), the Archives of the Royal Geographical Society with the Institute of British Geographers (another part of the 1914-15

photographs from the *Mana*/Routledge Expedition), the Photographic Archives of Musée du quai Branly, and the Photographic Archives of the Bernice P. Bishop Museum (1934-35 photographs from the Métraux/Lavachery Expedition), as well as the Photographic Archives of the Kon-Tiki Museum (the 1955-56 photographs from the Norwegian Archaeological Expedition). None of aforementioned photographic collections included any images documenting the area of interest on the Rano Kau cliffs. The earliest publication showing this place known to the author is the aerial image dating to the 1980s (Ramírez Aliaga 1988:11). Rano Kau was barren at that time, with only a handful of tree clusters that would eventually develop into the present-day forest of Vai a Tare. The dense patch of stones is clearly visible in the photo at the same spot as observed in 2013.

How could this compact group of rocks have been formed? The straightforward suggestion is that these are the stones that were gradually falling from the cliffs above. Indeed, the vertical section ZZ' (Figure 9c) shows that the slope of 37°, characteristic to the upper part of the grass-covered area, is reduced for a short distance to about 13°, which would favor stone retention. However, the horizontal section (Figure 9d) questions such a simple explanation – the contour line features a pronounced shallow depression some 50m wide and 2-3m deep, roughly centered over the grass-covered area. Remarkably, the major part of the stone patch is not located at the center of this depression (as would be natural to expect), but rather covers a small elevation corresponding to the depression's border. However, if Ahu Rikiriki once stood here, the dense stone patch has a very clear logical explanation – these are the remains of stone fill from the ceremonial platform. Being initially close-packed inside *ahu* walls, the relatively small stones had a chance to remain together, while the larger *facia* stones and *moai* rolled down the steep slope. The average diameter of the stone patch is about 36-38m, which matches the central platform size of a moderate *ahu*, such as Ahu Akivi, with a central platform that measures about 35m long (Mulloy & Figueroa 1978:7). The grass islet located inside the stone patch measures about 13×10m. The pictures clearly show that the steep slope segregated the rocks according to their size: in upper areas, the patch is formed by smaller rocks about 10 to 30cm in diameter (Figure 8a); the bottom part of the patch contains stones measuring almost a meter in diameter (Figure 8b). The largest stones are located at the exterior of the stone patch, in the area that faces the sea (Figure 9e). The only object that stands in stark contrast to the surrounding area inside the patch is a greyish stone that superficially resembles a flaked tool – either a chisel (*toki*) or a digging stone (Figure 8b).

Looking from the Left Viewpoint, one can see that the stone is quite thin in profile, so it is likely flaked from the underside as well. The estimated size of this object is about 55×30cm, which is definitely too large for a hand-held tool. The observer standing in front of the stone patch and looking approximately to the east will see a view similar to that shown in Figure 10a. As suggested by Figure 7a, the tip of Pōike will not be visible from this location.

Outside the dense stone area, there are two particularly large slabs that may possibly be the remnants of *ahu* masonry. The first slab, measuring approximately 2×1.3m, is located seaward from the stone patch (Figure 8c). Views from the three viewpoints show that this slab is of a considerably rectangular shape. The other slab (Figure 8d) is controversial; it is located about 30m westward from the stone patch. Seen by the naked eye in midday hours, this slab – together with a smaller rock leaning over it – can be mistaken for a small basalt *moai*; the play of shadows enhances the impression. The illusion disappears in close-up pictures or in binocular-aided observation. The slab is about 3m long; it has a flat surface facing the observer. The notch above the flat surface may be interpreted as traces of stone fitting. The view from Left Viewpoint reveals that the slab is actually trapezoidal in profile, resting on its widest face. Such a shape is quite unexpected for a slab of *ahu* masonry, so that this stone can be of natural formation. The view from the boat (Figure 7b) shows several remarkably rectangular stones located at the landslide curtain. Alas, the distance was too large to study these stones in detail.

Finally, the observer on the cliff tops can savor the ocean view. The waters in front of the site are remarkably shallow and crystal-clear. The shore is composed of large boulders that are highly polished in the surf area. Their tones vary from dark-grey to light-grey; some rocks are reddish (Figure 8e). Remarkably, a group of rough ochre-colored boulders near the shore look distinctly different. The contrast becomes obvious in side-by-side comparison (Figure 8f, g). Several dozen of such rocks can be discerned in the immediate vicinity of the shore; they either project above the surf or loom in the shallows underwater. For example, more than ten ochre-colored fragments can be counted in panel E of Figure 8. It is natural to suggest that these different-looking boulders have fallen from the cliffs above. Indeed, the soil of the Right Viewpoint (foreground of Figure 7a) is ochre-orange in color, which may be close to the color of the bedrock. The photographs taken from the boat reveal an extensive ochre-orange layer underlying the area marked "RV" (Figure 7b). However, the major concentration of ochre-colored boulders in the surf does not coincide

with the location of the Right Viewpoint – they are rather clustered in front of the grass-covered area with its dense patch of stones. According to Thomson (1891:513), Ahu Rikiriki had 16 images. Routledge mentions that the statues were likely of Rano Raraku tuff (Figure 2). It is tempting to suggest that unusual boulders scattered in the shallow sea in front of the site may be the fragments of *moai*.

The ever-changing surf precludes direct photogrammetric reconstruction even with advanced masking techniques, because every shot is drastically different from the others. Under these conditions, the dimensions of the boulders were estimated in the following way. The panoramic image taken from the Central Viewpoint was rendered in cylindrical projection with PTGui (Figure 8, top panel) keeping the shoreline horizontal. This ensured that the equal pixel distances measured along the x-axis will correspond to equal angles, at least in the areas close to the center of the image. Marking the prominent points of the stone patch and other objects on the grass-covered area (both in the panoramic image and in the model), the lines of view were drawn from the Central Viewpoint to the shoreline in Figure 9b, providing the distances between various points on the shore level. For example, the area shown in Figure 8e appears to be about 48m wide. With this scale, the largest rectangular block (Figure 8f) would measure 3.5×2.6m; if this corresponds to the body piece (assuming neck breakage common to the statues), the projected total height of the *moai* (Horley 2006:37-39) would be about $3.5\text{m}/0.618 = 5.66\text{m}$. For comparison, the largest statue at the nearby Ahu Tahiri, Vinapū, is 6.5m tall and 2.6m wide; two other images at the same site are 5m tall and slightly over 2m wide (Mulloy 1961:109). For the moderately-sized *moai*, like those of Ahu Akivi, the average data are expected to be (calculated after Mulloy & Figueroa 1978:12): total height: 4m; body height: 2.43m; head height: 1.74m (as the statue's chin is located below its shoulder line, the sum of body height and head height is greater than the total height). The characteristic average widths are: base width: 1.54m; shoulder width: 1.94m; head width: 1.38m. Using the aforementioned numbers, one can see that essentially every ochre-colored boulder has measurements compatible with those of *moai*. The most remarkable fragment, however, is a small ochre-colored rock about 2.2m long, located at a distance from the shore (Figure 8h). Under midday illumination, it shows a series of dark patches (Figure 8h, CV), yet under the afternoon sun it becomes very intriguing (Figure 8h, LV): the shadows suggest that the stone has a nose with nostrils; below, just where the stone is broken, there is a shape resembling pouting lips. More observations at different tide levels and varying lighting are required to reveal the geometry of this fragment.

If the described ochre-colored boulders are indeed *moai* fragments, it will mean that the sea depth in front of the site is comparable to statue thickness, which is about a meter (Mulloy & Figueroa 1978:12). As the sea bottom is composed of large irregular rocks, the actual depth in many places will be much less than that, making these waters extremely dangerous for any type of sailing vessel. The high waves and strong surf bring this situation to an extreme.

If Ahu Rikiriki was indeed located half-way down the cliff, how it was constructed? In what direction should its statues be looking? It seems illogical to make them facing the wall, hence, should they face the ocean? If the access to the site was so complicated, how was it used? How many people could gather in a limited space in front of the platform to carry out the corresponding ceremonies? These are just a few basic questions appearing in connection with an unusual site location. Thomson (1891:513) supposed that an access road once existed, remarking that lowering the statues using ropes would be unlikely. Englert (1948:533), thinking that the *ahu* was located by the shore, proposed that statue transport was made by special boats, an idea that was warmly embraced by Heyerdahl (1961:Pl. 2e).

The 3D model suggests a different, but much more realistic scenario. It is obvious that the terrain at the site was formed by a large landslide. Connecting the opposite sides of the present amphitheater-like depression in the cliff top (Figure 9b) and measuring the distance from the obtained segment to the Central Viewpoint, one obtains a shocking number, exceeding 80m. In reality, the cliff border was most likely protruding rather than flat, so that a parcel as much as 100m long (measured from the cliff border inland) by 300m wide (measured between the sides of amphitheater-like depression) was affected by the landslide. Even the island's largest ceremonial platform, Ahu Tongariki, with its full wing span of 220m (Sanger 2011:111), would fit completely in the estimated area. The original *ahu* would not necessarily be constructed over the precipice; it may have stood some 20-50m from it, which is a common case for many ceremonial platforms island-wide. Platforms standing at cliff borders are known (Cauwe 2011:58, 60, and 66); their present position might be also a product of ever-continuing erosion.

Thus, Ahu Rikiriki might have had a normal ceremonial life similar to that of other platforms. Its statues were facing inland, where a small village was possibly located. As the 1838 Expedition of Du Petit Thouars reported that several statues were still seen standing by the shore (Heyerdahl 1961:67), it may be that less than a century separated the toppling of Ahu Rikiriki's statues and Thomson's visit of 1886. In a certain moment postdating desecration of the site, a

huge landslide may have begun. It was apparently a lengthy process continuing for decades, because even today the remains of affected terrain can be seen in the form of a grass-covered area. Just for comparison, Métraux – about half a century after Thomson's visit – reports that one wing of Ahu Ohau surveyed by Thomson “had been cut away from the main building by a deep fissure and could not be approached without danger” (Métraux 1940:10). It is quite realistic to assume that the landslide at Ahu Rikiriki had started not long before 1886, perhaps at scale of several years or a decade. The crew of the USS *Mohican* thus saw the site when the parcel bearing the *ahu* was already half way down the cliff, still integral enough to sustain the monument and keep its statues intact. By the time of Mulloy's survey about 80 years after the USS *Mohican* Expedition, this parcel fell apart, destroying the *ahu* in the process. The large objects such as masonry slabs and statues slid down the slope to the sea. Only the smaller stones of *ahu* fill remained on a grass-covered area half way down the cliffs – an inconspicuous patch of stones that do not invoke a thought of being a man-made structure, which explains why the site was not discovered during the archaeological survey of the late 1960s. The present hypothesis provides a realistic explanation to every stage of site evolution, without the need to consider any exotic techniques of statue transport and the overly-complicated construction logistics for the platform being located on a narrow ledge in the middle of the cliff. For the suggested landslide event progressing at a slow pace, there is a very slim chance that a half-destroyed Ahu Rikiriki could be discovered in a historic photograph depicting the southern cliffs of Rano Kau, if such an image dating to the late 19th – early 20th century could eventually turn up in a museum, archive, or private collection somewhere in the world.

Conclusions

The material presented in this paper is based on a remote observation of the site with further study of photographs and 3D models. The results obtained are definitely insufficient to announce the re-discovery of Ahu Rikiriki. However, a number of unusual features observed at the site strongly suggest that, if one considers Thomson's description accurate, it is the only place on the entire southern caldera of Rano Kau where such an *ahu* could have possibly existed. The dense patch of stones seen on the grass-covered area may represent the remnants of *ahu* fill; the dimension of this patch (36-38m) matches the central platform size of a moderate *ahu*. There are a couple of rectangular blocks seen at the site, which may have formed the external masonry of the platform.

The shallow sea below features numerous ochre-colored blocks with dimensions that are seemingly within the ranges characteristic of monolithic Rapa Nui sculpture. One of the boulders in the surf area, when viewed in the second half of the day, features the shadow pattern suggesting the presence of a *moai*-style nose and lips. The estimated dimensions of this block are well within the ranges expected for the head of a moderate-sized statue.

The answers to numerous questions connected with the site seemingly require more study. However, all future researchers should be explicitly warned again, again, and again about the extreme life-threatening danger of such field work: the land side of the site is a precipice about 100m high that ends on a grass-covered area with an inclination of over 35°; from there, another precipice drops down on a rocky shore about 80m below. The eroded cliff border and strong gusty winds (to say nothing about slippery grass after the rain) considerably amplify the degree of danger. The approach to the site from the sea is also life-threatening due to the extreme shallowness of water, rough sea bottom, and very strong surf.

Note

1. Original Spanish (Blixen 1979:54-56): "Acabaron en Hiva las dos muchachas Torio y Ho'i Ata // ¿Qué están haciendo? // Se están haciendo el copete // ? // se componen el copete (?) // al modo de Hiva (?) // En el islote he terminado // termino de nadar // termino de bañarme, // estoy en Tua 'Oti // en el *ahu* Rikiriki // Están haciendo caer el *moai* (o: los *moai*) // Ko Hanga, Ko Vohu, Titoke y Kere Matapea. // ¡Desapareced en dirección a Hiva!"

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