Chapter 9
Undelivered Moai or Unidentified Monument?

Nicolas Cauwe and Morgan De Dapper

1 Introduction

In 1919, Katherine Routledge published the first interpretation to account for *moai* scattered on the landscape lying far away from any architecture. Her hypothesis was twofold. She postulated that some of them probably had adorned the paths that could carry large statues to their final destination, while others seemed to her to have been abandoned during transport (Routledge 1919: 194–196). In conducting excavations in the vicinity of the statues she found nothing around them, except that one was set up within an excavated pit (Routledge 1919: 196). She also took an interest in the runnels created by rainwater runoff located on the back of the statues (Routledge 1919: 195). She suggested that a portion of the images was upright for a long time and that other statues were prone without any obvious reason for their location, except abandonment during their transfer.

After this initial work, few studies were devoted to this phenomenon of isolated statues, except in 1986, when the Czech engineer Pavel Pavel experimented with

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V. Rull, C. Stevenson (eds.), *The Prehistory of Rapa Nui (Easter Island)*,
Developments in Paleoenvironmental Research 22,
https://doi.org/10.1007/978-3-030-91127-0_9

the moving of *moai* in a vertical position. This research was conducted with Thor Heyerdahl and Arne Skjølsvold, and on this occasion, an excavation was made in the vicinity of an isolated *moai*. A small platform was found, confirming the thesis of Routledge that some statues were erected along the roads (Heyerdahl et al. 1989). In the 1990s and 2000s, following the recognition of profound landscape changes caused by deforestation, a collapse scenario was suggested that included intertribal warfare, struggles for survival, destruction of *ahu* platforms and abandonment of the statue quarries. In such a framework of collapse, the single statues, laying on their belly or on their back, were interpreted as abandoned *moai* in which transport was suddenly disrupted by hostilities originating from the 'ecological crash' (Bahn and Flenley 1992, 2011; Flenley and Bahn 2002; Diamond 2005). More recently, a new research effort by Lipo et al. (2012) embraced the same principle of statue abandonment during their transport and came to Pavel Pavel's conclusion that the *moai* could 'walk'. This seems to solve the question of transport technics but not the other historical events surrounding these statues.

Our goal in this chapter is to present a comprehensive analysis of these sculptural remains, for which an inventory has been published (Cauwe and De Dapper 2015) and two recent studies produced (Cauwe and De Dapper 2019; Hamilton 2013). In previous works, Routledge recorded 56 isolated *moai* (Routledge 1919: 194–199) and Carl Lipo and his colleagues noted 61 statues (Lipo et al. 2012). There are many questions about the attributes of these statues, their creation and the context in which we find them. Do all of these statues share the same archaeological and geomorphological conditions? Are they all carved from Rano Raraku tuff? What is the reality of the roads on which they are supposed to rest? Why did the islanders move so many statues at the same time? Why did they place the majority of the *moai* only in the vicinity of the quarries and not all along the roads? Therefore, in 2010 and 2011, within the context of the Belgian Expedition to Easter Island, a database was built to list all single statues still visible on Rapa Nui (research organised with the support and the financing of the Federal Public Planning Service Science Policy (BELSPO), project MO38/18). We have found 67 *moai*, but it is possible that some statues were partially destroyed or removed over time, and some others are now on private properties and are difficult to access. Nevertheless, we can assume that the sample considered here is representative of the phenomenon.

2 Historical Testimonies

With respect to the isolated statues, the main historical data we have available to us is the testimony of William Wale, a lieutenant of Captain James Cook during his second voyage around the globe (1772–1775). He states:

> This side of the Island is full of those Colossean [sic] Statues which I have mentioned so often, some placed in Groups on platforms of Masonry others single and without any being fixed only in the Earth, and that not deep; these latter are in general much larger than the others. I measured one which was fallen down & found it very near 27 feet long & upwards

> of 8 feet over the breast, or shoulders and yet this appeared considerably short of this size of one which dined near: its shade at a little past 2 oClock being sufficient to shelter all our party, consisting of near 30 persons from the Rays of the sun (Beaglehole 1969: 825).

This quotation from the report of William Wale takes place during his account of a party on the southeast sector of the island. We cannot know exactly what he saw, but in this sector of Rapa Nui, there are images associated with platforms, *moai* erected on the south slopes of Rano Raraku and probably isolated *moai*. Wale's description of single *moai* corresponds to the statues we can observe today laying along the ancient transport paths, and as noted centuries earlier, these statues have more impressive dimensions than those associated with *ahu* platforms. According to Wale, in the eighteenth century, a portion of these *moai* was upright and placed on *ahu*.

No other explorer of the eighteenth or nineteenth century noted the presence of isolated statues or considered them important enough to record. Only William Thomson gave a short mention of a single *moai*:

> Scattered over the plains extending towards Vaihu are a large number of images, all lying face dounward. The indications are that they were being removed to their respective platforms when the work suddenly arrested. These heavy weights were evidently moved by main strenght, but why they were dragged over ground face downward instead of upon their back, thus protecting their features, is a mystery yet unsolved. One statue in a group of three is that of a female; the face and breast is covered with lichen, which at a sort distance gives it the appearance of being whitewashed (Thomson 1889: 496).

This testimony marks the starting point of the hypothesis that all of the single *moai* scattered between Rano Raraku and Vaihu were abandoned during their transportation. But the most interesting detail of Thomson's account is that all of the observed isolated images were laying down at the end of the nineteenth century. If we give credibility to his report or to the one of WilliamWale, only a portion of single *moai* were yet lying down at the end of the eighteenth century, but all of them were in a prone position by the middle of the next one.

Katherine Routledge was the first to propose the hypothesis of *moai* verticality. This was generated by the important observation that eroded runnels created by rainwater runoff were on the statues and that they formed when the statue was in a vertical position (Routledge 1919: 195). Thus, all of the historical testimonies agree. In the eighteenth century, some *moai* were perhaps still upright in the southern plain of Easter Island, but some decades later, all of them were laying down. Routledge also recorded that the larger part of the set of images was unbroken and only some of them would have fallen by accident, natural process or violence (Routledge 1919: 195).

3 The Archaeological Data

3.1 Categories of Single Statues

The 67 *moai* recorded during our surveys can be placed into six groups:

1. The most important group (46 *moai*) includes the statues laying along what is usually called the '*camino de los moai*' (road of images). Except for four of them, all are carved in Rano Raraku tuff.
2. Six *moai* are partially buried in front of two *ahu* (five at Ahu Hanga Poukura and one at Ahu Ura Uranga te Mahina). Their story seems to be different from that of the statues along the ancient roads.
3. Two *moai* are very small (only 1 m high) with a distinct round head and without facial details. They form a special type unrelated to the images on *ahu* and from Rano Raraku.
4. On the northern slope of Rano Kau, an outcrop of basalt is carved in the shape of a *moai*. The proportions are unusual and unique to the island.
5. One image is inside a small cave that opens on the eastern flank of Vai a Heva (Poike). This archaeological context has no significant relationship to the problem of *moai* transport on the open landscape.
6. Finally, 12 *moai* were probably moved in recent times. Those at Hotuiti Bay lie fragmented and their poor state may be tied to a natural breakage caused by a tidal wave perhaps. Another one is lying in front of *Ahu* Tongariki, a monument destroyed by a modern tidal wave in1960 and recently restored. A *moai* was also re-erected near *Ahu* Tongariki after its use for an experimental moving of a *moai* by Pavel (1988, *Idem* 1995). A statue also lies in front of the *Ahu* Runga Va'e where it was recently consolidated within a retaining wall. The statue was moved during this conservation work (Rafael Rapu comm. Pers.). In 2000, some young Islanders have re-erected a *moai* close to the Vaihu Bay (*Rapa Nui Journal* 14/42000:120). The face of the *moai* laying near *Ahu* Riata (Hanga Piko) is 'repaired' with cement. Finally, there are tree *moai* re-erected at Hanga Roa (one at the Hotu Matua Plaza near the *caleta*, and two inside the garden of the Museum Sebastian Englert).

Only the first category of *moai*, those scattered along the ancient roads, can support an analysis. The recently moved statues can no longer be considered and other categories form special cases. The 46 *moai* covered by our analysis are now laying on their back (16 *moai*) (Fig. 9.1a) or on their face (30 *moai*) (Fig. 9.1b). This situation has long allowed persons to claim that the statues came from the Rano Raraku quarry and were transported standing on wooden sleds. The unexpected event during their transport caused their fall on the ground, in one or other direction and led to their abandonment.

Fig. 9.1 (**a**, **b**) Intact or broken images along the ancient roads (total: 46 items)

3.2 Stade of Conservation of the 46 Moai Scattered Along the Paths

Lipo et al. (2012) mention that 37% of broken *moai* occur along the old paths. They conclude from the presence of broken *moai* that all of the images scattered along the paths did fall while they were being moved. Actually, only two statues were probably broken before or during their being placed on their back because of the scattering of their fragments. These are two small *moai* of red scoria abandoned

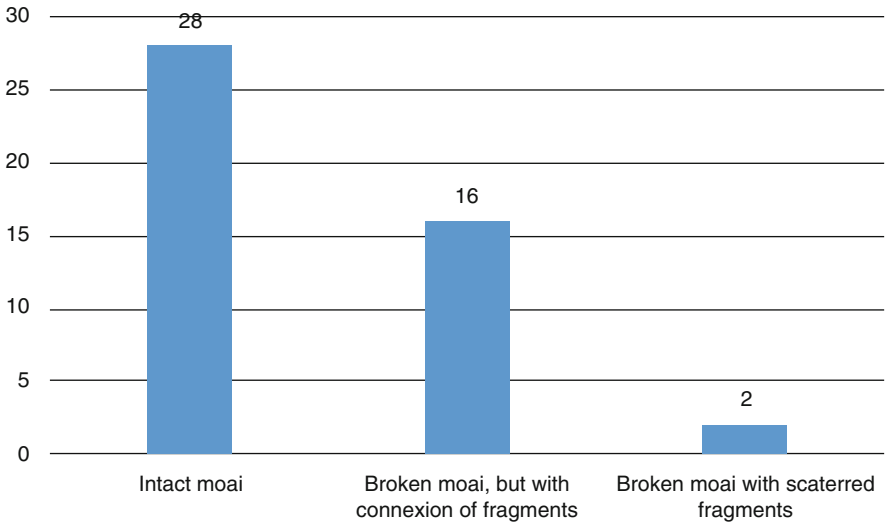

Fig. 9.2 More than half of the images lying along the roads are intact (**a**), the rest are broken, but without dispersion of their fragments (**b**)

along the 'North-Western road' of Routledge (1919: Fig. 74) or at the end of the 'road B' of Lipo and Hunt (2005).

For the remainder, 28 statues are undamaged, while 16 *moai* are broken, but their fragments remain adjacent to one another, and two are broken with scattered fragments (Fig. 9.2). Lipo and Hunt do not make any distinction between the two categories of broken *moai*, those with adjacent parts and those with scattered fragments. However, the reasons for both situations cannot be the same. The only explanations for the adjacent fragments are a deliberate reconstruction of the statues after their accidental or intentional toppling, or that breaks occurred later as a result of stress or bending when the images were already lying down. In this, case the tuff is not strong and compact enough to withstand such stresses.

The biggest *moai* along a path, close to the northern face of Rano Raraku, has its face partially fragmented, but the nose and other fragments were replaced back to their original position, certainly before the Mana Expedition of Katherine Routledge (Routledge 1919: 195). We can observe the same process of reconstruction of the face of other images. In addition, the inside breaks of nine *moai* have intentionally positioned small blocks. This placement is an old action since the slow-growing lichens form a continuous veneer on both sides of the image fragments and also on small stones put inside the breaks. Maybe, the insertion of small stones can be

Fig. 9.3 An example of a 'repaired' statue (small stones have been placed inside the break). The development of lichens inside the break and on the small stones indicate the antiquity of this 'healing' of the *moai*

considered as a symbolic repair or a 'healing' (Fig. 9.3). But there are also *moai* undoubtedly broken by overhang stresses without rebuilding or repair (Fig. 9.1b). We do not observe any trace of a voluntary mechanical action on these last images (intended shocks to the statue). Routledge also spoke about 'cleavage' and 'partial fall' (Routledge 1919: Fig. 76).

3.3 Pavements, Chocking Stones and Pits

Overall, very few statues support the accident hypothesis. If the *moai* along the roads were abandoned during their transport, they would have had to be moved in a horizontal position, sometimes on their belly, sometimes on their back. If this was not the case and they were transported in a vertical position, then they were toppled with care. It is significant that 30 of them (65%) are maintained in horizontal position with the help of chocking stones. The reason for this is not clear but it is undoubtedly human work. The statues are lying on stone pavements which is evidence for their intentional positioning (Fig. 9.4a, b).

Fig. 9.4 (**a**, **b**) Images of *moai* along the road lying on stone pavements

Furthermore, four isolated *moai* scattered along the paths are partially buried inside shallow pits (Fig. 9.5) and four other cover graves (Fig. 9.6). Whatever the story of these statues was, these circumstances indicate that their current position is the result of intentional acts and totally unrelated to failed transport. Stone pavements, burials or associated pits are not features that are usually associated with the transportation process of colossal statues.

Fig. 9.5 An isolated *moai* partially buried in a pit

Fig. 9.6 An isolated *moai* covering a burial. We do not know if the grave is contemporaneous with the statue, but the latter is lying on a stone pavement on which were buried one or two bodies. One can be sure the pavement is older than the burial and the laying down of the image

3.4 Bevelled Eyes and Rock Art

The orientation of the *moai* along the roads is also interesting whether they are lying on their back or their face. If we re-erect all of these statues, they would have their backs oriented to Rano Raraku, the quarry from where they were made then extracted. This particularity was recorded by Routledge (1919). This preferred orientation cannot be a result of chance and some will argue that it is further evidence of the moving of upright statues with their faces visible to the approaching visitors and their backs indicating their origin (Lipo et al. 2012).

However, the archaeological data allow us to generate other hypotheses. It is very exciting to note that 38 *moai* (83%) have their eyes carved only as bevelled indentations, similar to the images of Rano Raraku, and not with sockets as found on the statues erected on *ahu*. The traditional hypothesis is that the bevels were carved before the transport process and later converted to more rounded eyes. This seems to be a correct interpretation since, except for a few *moai* as those of Ahu Nau Nau, the *moai* of the *ahu* have eye sockets without a trace of primitive bevels. Another interesting observation is that a large number of the *moai* from Rano Raraku, or the ones laying along the ancient roads, have bevels so deep that it is no longer possible to carve rounded eye sockets (Fig. 9.7a, b). This would indicate they were not intended to undergo the final transformation.

We, therefore, hypothesise there are two categories of statues. There are *moai* belonging only to the ancient roads and those erected on *ahu*, with a large proportion of the first type not able to support a transformation to the second. The physical sizes of the two types are also discordant where the *moai* from the roads are on average longer and wider than those of the platforms (Fig. 9.8). Jo Anne Van Tilburg has built a computerised database of 887 *moai*, including the 387 statues from Rano Raraku where 134 of them were suitable for taking measurements (Van Tilburg 1994). The result of this research is the recognition of four groups or size categories, with the biggest *moai* being those preserved on the slopes of Rano Raraku and along the roads. Therefore, it seems that the *moai* never associated with an *ahu* belongs to a special category (Van Tilburg 1994). Their average height is 6.2 m (Fig. 9.8) compared to 4.05 m for those *moai* moved to an *ahu* (Van Tilburg 1994). Faced with this observation, it is not so easy to accept the idea that the statues along the paths were destined to arrive at an *ahu*.

Finally, we observed the presence of engravings on five *moai* along the roads. The *rei miro* is the main theme (three cases; Fig. 9.9a) and one statue has on its

Fig. 9.7 (**a**, **b**) *Moai* with bevelled eyes (**a**: along an old road; **b**: a large statue on the southern slope of Rano Raraku). Often the bevels are too deep to carve eye sockets

left cheek the face of Makemake (Fig. 9.9b). On two other *moai* we can only see some poorly defined engraved lines. All of the figurative patterns were drawn after the statues were in a prone position. Indeed, one *rei miro* is engraved on the base of a *moai* and all other markings are in accessible places. It is our interpretation that some *moai* along the roads have experienced a symbolic re-use after their placement in horizontal position.

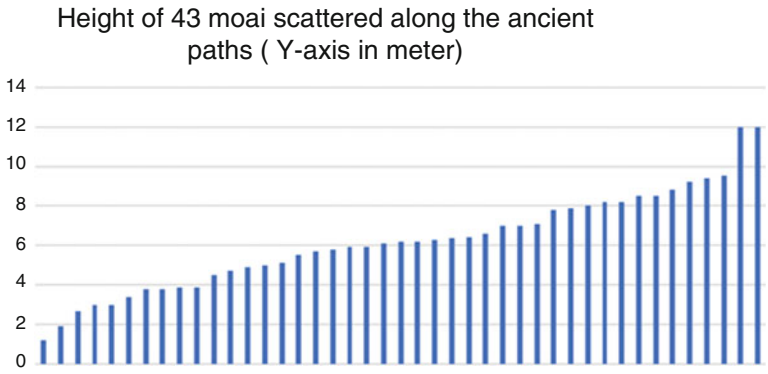

Fig. 9.8 A bar graph showing the height of the statues along the roads (43 items). 33 of them are more than 4 m in height, including 11 exceeding 8 m (measurements made by the authors). The average is 6.2 m for statues along the road compared to 4.05 m for the images installed on *ahu* (refer to Van Tilburg 1994: 23 for the dimensions of *moai* on *ahu*)

4 A New Geomorphological Approach

This brief analysis of the statues along the *camino de los moai* shows that they had a more complicated history than a simple abandonment during their transport and a geomorphological approach will help decipher the life history of these images.

4.1 Geomorphological Processes Acting on the Statues

The vast majority of the statues in our data set are carved from the Rano Raraku palagonite tuff (Gonzales-Ferran et al. 2004; Fig. 9.10). This tuff, resulting from the interaction between water and the basalt melt, can be considered a sedimentary rock consisting of alternating horizontally bedded coarse and fine pyroclastic material with a certain strike and dip. It stands for this reason that such a sedimentary structure is prone to differential erosion by water runoff with the layers formed by finer clastics being more erodible than those with coarser ones. As a result, when exposed for a considerable time to rainfall, which was certainly the case on Easter Island, the original humanly smooth surface of the *moai* will be transformed into a rough eroded surface marked by a distinct network of runnels. The runnel pattern will depend on two variables which include the way the statue was cut from the tuff and its position when attacked by rainfall.

The pattern of the sedimentary layering on the statues will depend on the spatial position of its structural axes (x, y, z) with regard to that (strike, dip) of the tuff. To assess this effect a simulation was done using a digital 3D model. It stands to reason that the morphology of the runnel network will also depend on the position of the statue, whether it is standing or laying down, when subjected to differential erosion

Fig. 9.9 (**a**, **b**) Engraved statues (**a**: *moai* with a line of *rei miro* petroglyphs along its right arm; **b**: *moai* with a the face of Makemake on its left cheek)

by rainfall runoff. The effect of the latter will be strikingly different when compared to cutting as the bedding planes of the tuff run more or less along the *y*-axis which is in most cases (Fig. 9.11).

A few examples will illustrate the effect of erosion on upright and horizontally positioned statues. In the case of a *moai* along road 'E' (X 0669139; Y 6998022; Fig. 9.12a) the runnel runoff direction will be different depending upon its position. To begin with, the major runnels are along the long axis of the statue and widen consistently towards the base (Fig. 9.12b) and even affect its shape (Fig. 9.12c). In

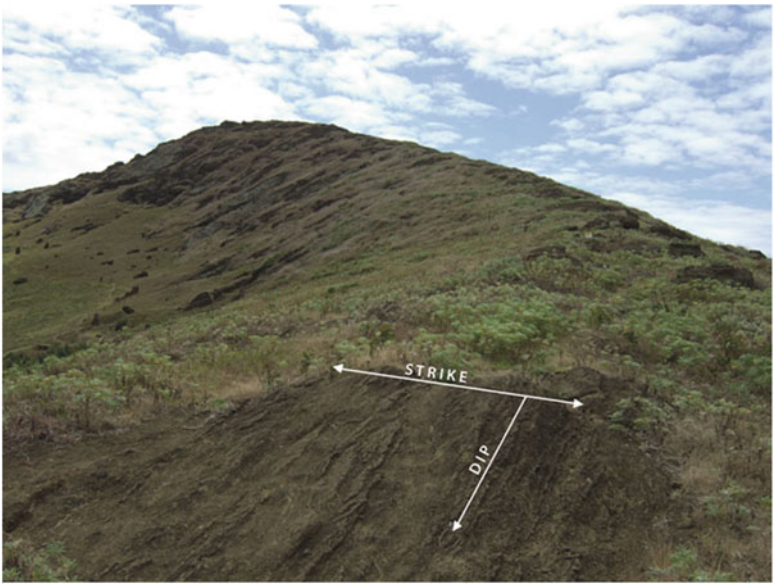

Fig. 9.10 Exposure of palagonite tuff on the inner slope of Rano Raraku

addition, a distinct network of small overflow runnels, superimposed on the major ones, is active in the present day (Fig. 9.12d). The following conclusions can be drawn from these observations: (1) the statue was standing upright for a considerable time; (2) while standing the base was covered; and (3) the length of time for the present prone position was much shorter than that for the upright position. These conclusions are supported by other *moai* that exhibit erosion features that show two opposite runoff directions depending on its history of position (Fig. 9.13a). In a number of cases, the runnels widen towards the base of the statue, and the chin is also affected by deep runnels (Fig. 9.13b–d) which can only be explained if the water was running down from the top of the head of a standing statue.

Another *moai* along road 'E' (X 0667176; Y 6997495) lays broken into several large pieces (Fig. 9.14a). As a result, it has two runoff directions, one of which is opposite to the pattern created when it was in a standing position. On the back of the head the runnels widen in the opposite direction of the present runoff and they continue, as if the statue were intact, on the lower back of a second fragment (Fig. 9.14b, c). The fracture plane at the base of the head is only slightly affected by runoff (Fig. 9.14c). Here again, one can conclude the statue was standing upright for a considerable time. The relatively fresh fracture plane points to a recent event where the head may have broken off at the moment the statue was laid down.

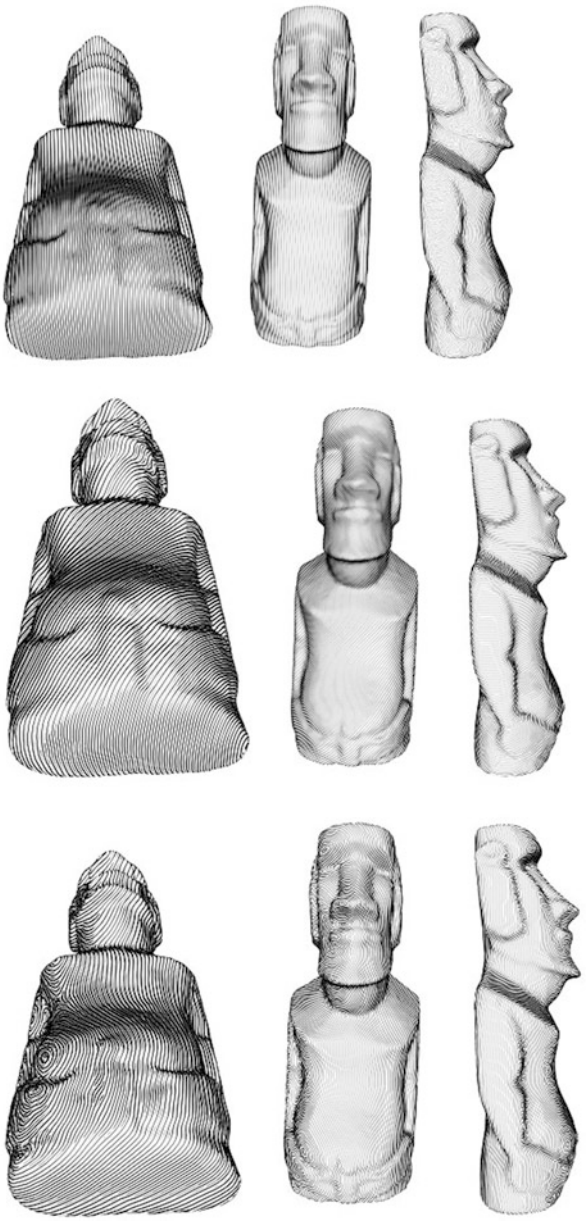

Fig. 9.11 Statues with bedding planes of the tuff running more or less along the *y*-axis

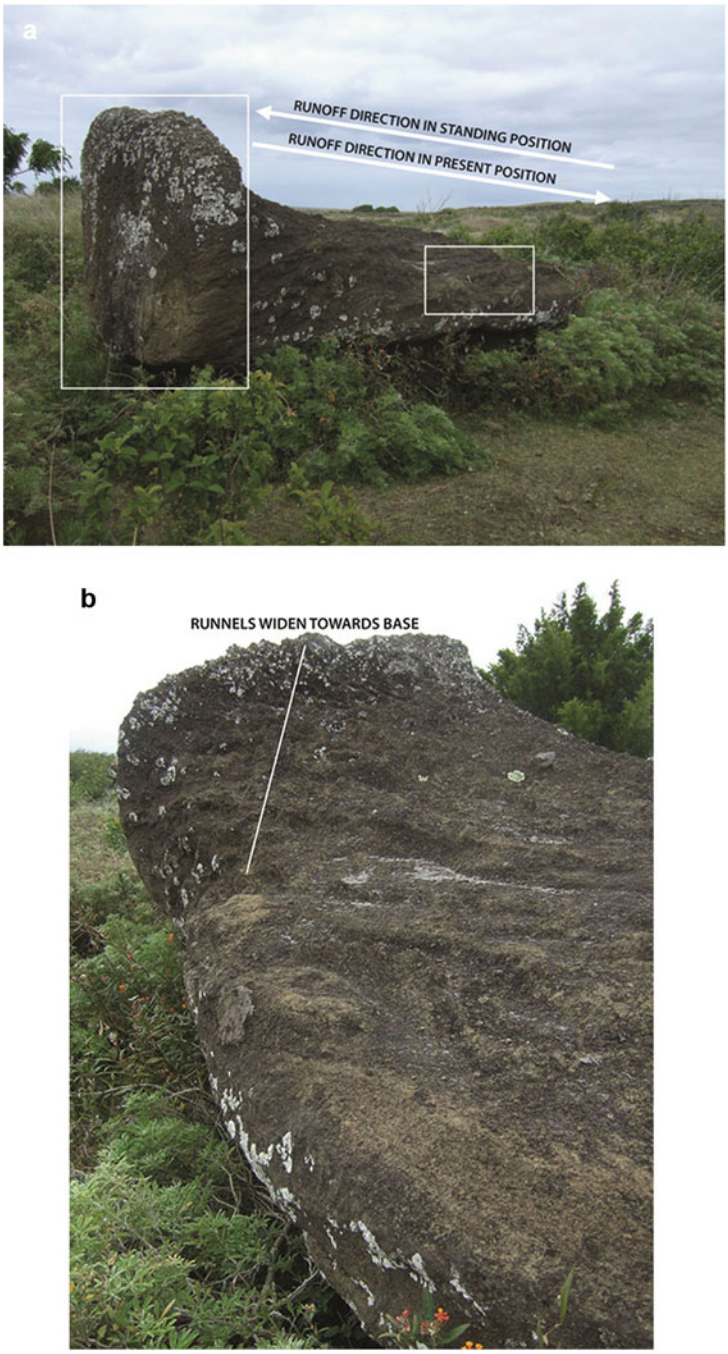

Fig. 9.12 Geomorphologic study of a *moai*. (**a**) Runoff directions are opposite whether in a standing or prone position. (**b**). Runnels widen towards the base; the result of an upright position. (**c**) Runnels affect the base of the statue which was not standing in a pit; the walking stick measures

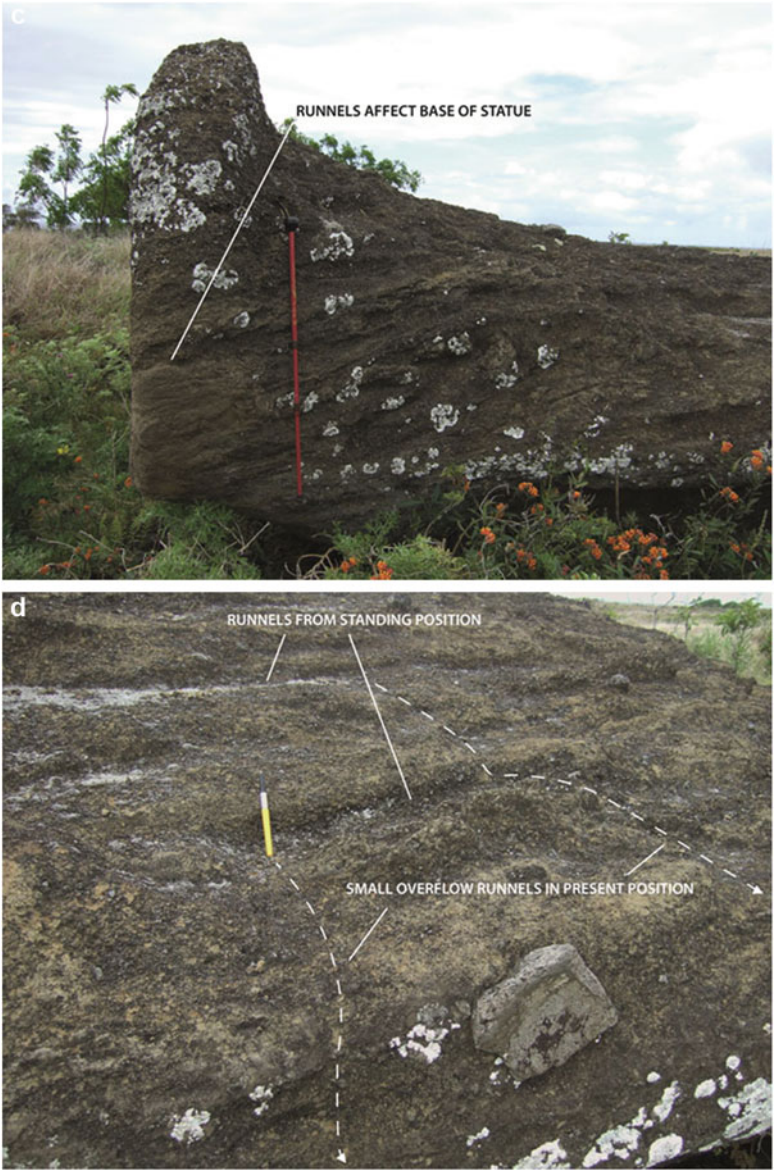

Fig. 9.12 (continued) 1 m. (**d**) Detail of area indicated on (**a**). Small overflow runnels, actively developing in the present-day prone position, are superimposed on a major runnel network developed in the former standing position; the pen is 15 cm long

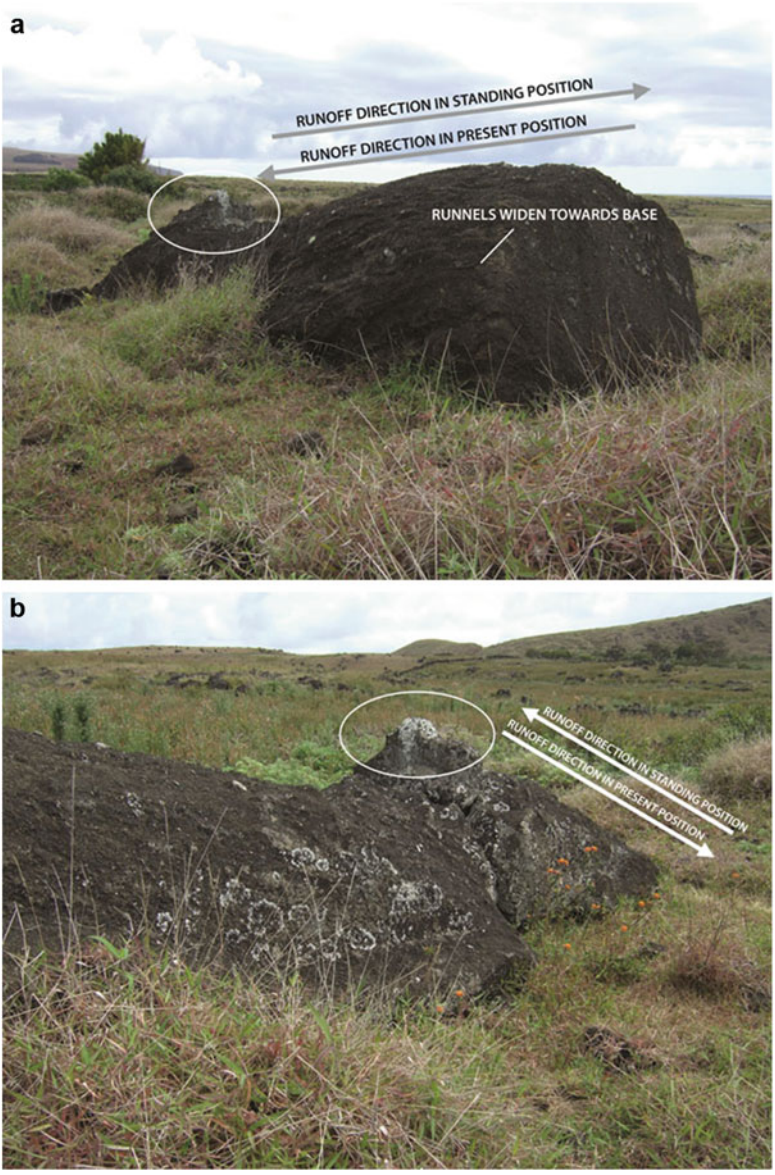

Fig. 9.13 Geomorphologic study of a *moai*. (**a**) The runoff directions are opposite whether in a standing or lying position; runnels widen to the base as a result of a long upright position. (**b**) The head has two opposite runoff directions reflecting the former upright and present position.

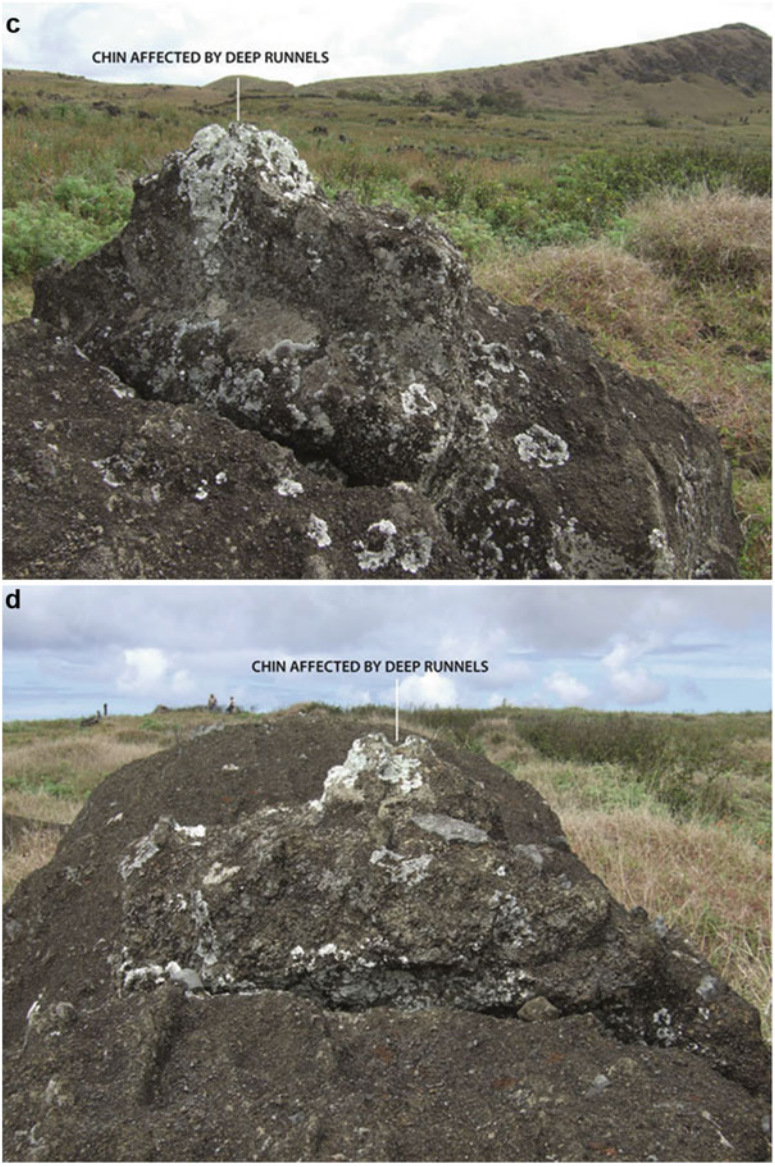

Fig. 9.13 (continued) (**c**, **d**) Details of the head (respectively as seen from the base and from the top of the head) indicated on (**a**) & (**b**). The chin is affected by deep runnels, a phenomenon which can only be explained if the statue was standing upright for a long time

Fig. 9.14 Geomorphologic study of a *moai*. (**a**) The *moai* lays broken in large fragments which have opposite runoff directions different from the unique runoff direction in the upright position. (**b**) Head fragment as seen from the top of the head. Runnels widen in the opposite direction of

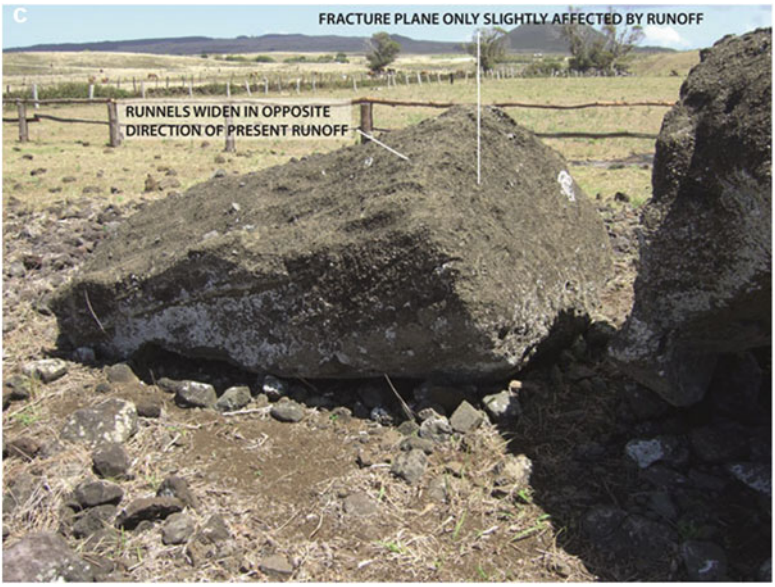

Fig. 9.14 (continued) the present-day runoff and continue along the fragments. Both phenomena are evidence of a long-standing position. (**c**) Head fragment as seen from the side. The fracture plane is only slightly affected by runoff indicating a relatively recent fragmentation that happened when the statue was laid down. However, the segmentation could also have happened after the lay down due to overhang weight or bending

Finally, another *moai* of the road 'E' (X 0659502; Y 6994117) is also broken into large pieces (Fig. 9.15a). It is affected by long runnels which continue over the large and small fragments (Fig. 9.15b) and widen towards the base. Here again, a long-standing position is the most plausible explanation for this runnel pattern.

4.2 Archaeological Consequences

Similar phenomena, as described in the few examples above, are observed on all of the 46 studied statues along the *camino de los moai* and this leads us to the conclusion that they were standing upright for a considerable time.

Fig. 9.15 Geomorphologic study of a *moai*. (**a**) The image is fragmented and has opposite runoff directions whether in a standing or prone position. Runnels continuing over the fragments and widening towards the base is evidence as a result of a long upright position. (**b**) Detail of runnels continuing over connected large and smaller fragments

Six of the *moai* also show runnels ending a few centimetres above their base leaving a narrow unaffected rim. This phenomenon is undoubtedly due to the fact that the statues were erected in shallow pits where the soil protected the statue base region. Pit emplaced statues also tend to a base that is narrower than the rest of the body. On the other hand, statues on which the runnels continue up to the end have very large bases allowing them to stand and remain upright without the support of a pit or another structure (Fig. 9.12a).

On all isolated statues the detailed observation of the runnel network allows us to detect a second generation of runnels actively developing on the present-day prone position statues that is superimposed on a primary 'dead' generation resulting from the standing position (Fig. 9.12c). In case of broken statues, the older generation of runnels continues over multiple fragments (Figs. 9.14a–c and 9.15a, b) which is evidence corroborating the original upright position. However, in some cases, the younger generation of runnels continues over the break scars created by fragmentation. This observation has some archaeological consequences. The fragmentation of a lot of *moai* of Easter Island is commonly considered as a result of violence. During tribal wars, islanders would have toppled images and destroyed several *ahu*. However, a large part of the fragments of the statues is still found adjacent. Some years ago, we proposed an explanation of this strange situation: perhaps the segmentation occurred sometime after the statues were laid down, but not during the laying down process itself (Cauwe 2011; Fig. 9.14). In this case, the *moai* was surely intact after it was put in a horizontal position, and the breakage occurring later, by stresses created from the overhang or bending. This hypothesis is demonstrated by the continuity on some isolated images of the secondary runnel network covering the fragmented surfaces; impossible circumstances if the *moai* were broken at the moment of their fall.

Other *moai* have the top of their head intact, without major alteration by rainfall-generated erosion. This phenomenon is only possible if the head had a protective cover, such as a *pukao* for example. This case was observed at Ahu Matá Ketu, where a *moai* is laying on the ceremonial terrace of an *ahu*. At the back of the monument, lays an isolated *pukao* which is most possibly the headdress of the *moai* and the top of head is not affected by weathering (Fig. 9.16a, b). This demonstrates that a careful and detailed geomorphological analysis of the *moai* may add considerable evidence to unveil their story.

Fig. 9.16 Ahu Matá Ketu (inland platform). A *moai* is now laying in front of a monument (**a**). Back from the *ahu* lays an isolated *pukao* (**b**). Maybe the *moai* and *pukao* were once together as the head of the statue has no damage due to weathering

5 Some Strange *Ahu* near the Antique Roads

We have seen that there are two different classes of *moai*, one characterised by bevelled eyes and the other by sockets for coral or obsidian inlay. Furthermore, the head for the majority of the statues scattered along the ancient roads (with bevels), as well as the complete ones left in and around Rano Raraku, are a third of the total body height when compared to *moai* on the *ahu* where the head represents only a quarter of the body height. Finally, the width of the bodies of the *moai* from the *ahu* is symmetrical while the road-*moai* often have a large base that stabilises the statue in an upright position without the support of any additional architecture, except small platforms (Heyerdahl et al. 1989), or stone plinths (slabs) (Hamilton 2013).

But there are some exceptions to be found on four *ahu* platforms where the *moai* of road, or Rano Raraku type, with big heads, bevelled eyes, and a large base have been installed. The most impressive site is inland, not too far from La Pérouse Bay [without a number on Englert's map (Englert 1974); probably number 59 in Martinsson's inventory (Martinsson-Wallin 1994)]. The second one is also located inland, not too far from Hanga Poukura (Ahu Matá Ketu; number 230 on Englert's map; number 140 in the Martinsson's inventory). A third one is at Ahu Oroi, closed to the south coast (number 199 of Englert's map; number 116 in the Martinsson's inventory). Finally, a *moai* without eye sockets is associated with Ahu Hanua Nua Mea (centre of the island, at Ava Ranga Uka A Toroke Hau). Confronted with these situations, the first hypothesis is that some *ahu* received statues of the road type that are similar to the last period of manufacture of Rano Raraku statues. In this sense, these four inland platforms would be the most recent statues carved from the quarries although the architecture of these monuments is also out of the ordinary.

Ahu Matá Ketu does not appear to be an actual platform. We can only observe the back wall of a hypothetical platform since there are no traces of a front wall, wings or ramp. Moreover, the current positioning of the boulders in the back wall are precariously balanced on the foundations and a quick observation allows us to see that these blocks could never offer much support (Fig. 9.17). It is beyond doubt that such a fragile and elementary construction would not have supported a large statue of several tonnes. It could be argued that the platform was destroyed and that the statue is now laying in front of these ruins.

Another aspect, we cannot explain about Ahu Matá Ketu is the complete disappearance of the front wall. If it was present near the base of the toppled *moai* it would have protected part of the structure and prevented stone scavenging. Moreover, it is impossible to imagine the destruction of all of the front wall before the toppling of the *moai*, as it would collapse during that effort. An incomplete *ahu* and an abnormal type of statue suggest that maybe Ahu Matá Ketu is an incomplete structure or even something like a sham! Furthermore, the prone *moai* covers a grave. This is not an exceptional occurrence as elsewhere around the island, there are tombs below some prone *moai* at several *ahu.* For example, there are present at

Fig. 9.17 The back wall of Ahu Matá Ketu

Ahu te Niu (Cauwe 2011: 71–72), Ahu Tahira (Vinapu; Mulloy 1961: 95–115), Ahu Hanga Poukura and Ahu te Peu (Smith 1961: 189–194).

A similar situation occurred with the *ahu* in the vicinity of La Pérouse Bay. On the basalt block cairn which covers the ramp of the monument, the islanders had excavated two burial pits covered by a pair of *moai* of the road type. Once again, the two statues seem too big for the platform, and there are no traces of pedestals for them. Moreover, their position is abnormal. They are located on the top of the cairn, and not within or beneath it (Fig. 9.18). If these images came from the *ahu*, the Rapanui moved them away from the ahu platform, then built the cairn, and finally, they moved the *moai* and placed them above the cairn. This hypothesis proposes a very complicated series of events. A simpler one (Ockham's razor!) is to accept the proposition that the Rapanui scavenged two *moai* from along an ancient road (the monument is near the 'Northern Image Road' of Routledge, the 'Road A' of Hunt & Lipo) and used them as a roof for two burial vaults dug through the ramp of the old platform.

Ahu Oroi is along the 'Southern image Road' of Routledge ('Road E' of Hunt & Lipo). In fact, this monument is a natural outcrop of basalt with some partial walls constructed on top of it. It is an opportunistic monument with a platform for large erected images. Once more, the *moai* has bevelled eyes and covers several burial vaults.

Finally, the complete *moai* lying face down on the ground on the ramp of Ahu Hanua Nua Mea is only damaged by the environmental elements of wind, sun, rain, marine spray, and lichen growth. Because of its location on the *ahu* ramp, it appears to be in process of installation and part of this process would have been the carving of the eye sockets. The traditional explanation for the absence of eye sockets would

Fig. 9.18 An inland *ahu* near La Pérouse Bay. Two large *moai* are laying on the top of the closing cairn and covering two graves. Despite the big size of the statues no traces of a pedestal were found on these monuments. Actually, the association between the platform and the images is maybe recent, with the placement intended to close the two tombs dug through the ramp of the *ahu*

be that the process of installation was suddenly interrupted, and the context of the statue provides some support for this interpretation.

Nevertheless, there is an argument that can be made against the idea of carving of the sockets after the moving of the statues were completed. The evidence is the elongation and narrowness of the head of most of *moai* without eyes, and the greater width of the head of most statues on *ahu* [see the categories established by Van Tilburg (1994: 22–23)]. It seems that the operation is also sculpturally unrealistic since the head of many *moai* without eye sockets is too narrow to be transformed into a wider one. But the discussion is of secondary importance for our case of study. Indeed, it has been established that the *moai* of Ahu Hanua Nua Mea was upright before it was deposited face down on the ground; a circumstance that does not work with the hypothesis of an unfinished statue that was never used. If we summarise the facts, the image of Ahu Hanua Nua Mea was upright before its horizontal deposit; it is today laid down on top of the stone covering the level of the *ahu* (Fig. 9.19). For this last reason, we can propose the provisional conclusion that the statue found today lying down at Ahu Hanua Nua Mea was never erected on the altar. It was first standing elsewhere, and moved later to its current horizontal position after the use of Ahu Hanua Nua Mea had ended. This explains its position above the sealing layer of basalt stones placed over the monument.

Fig. 9.19 The *moai* of Ahu Hanua Nua Mea is lying down on top of the sealing level of the *ahu* and is not partially buried as is usual

6 Discussion

The new geoarchaeological approach to understanding the use-history of the *moai* scattered along the roads asks that several observations must be considered before an interpretation.

1. It seems evident that all these statues were upright for a long time (several decades minimum). This fact is evidenced by the formation of a first network of runnels produced by rainwater runoff.
2. The absence of damage to most *moai* indicates they never fell from a vertical position by accident during their transportation.
3. The analysis of the base of these *moai* indicates they were carved for emplacement in an upright position. A majority of the statues have a large base, sufficient to keep them in a vertical position on the ground without the help of any supportive architecture such as pedestals. On the other statues with a smaller base, the runnels stop systematically a few centimetres above the base, indicating these *moai* were slightly buried below the surface and were supported by a platform or plinth.
4. At some point in time, the *moai* were laid down into a prone position on the ground with care. Indeed, 93% of them are intact and the broken ones do not exhibit a scattering of their fragments. From this moment onward, a secondary network of runnels, reflecting the new horizontal position, started to form and is still active today.
5. The laying down of the statues was premeditated since 62% of them are augmented with chocking stones or positioned on pavements or on older structures.

There is some information that give clues about the chronology of these events. The *moai* along the roads belong are of the same form as the ones erected around, or inside, Rano Raraku. Therefore, there is a high probability that the statues set up on the slopes of Rano Raraku are late in time. One of them (Statue 263) has on his stomach an engraving of a ship from the eighteenth century. The engraving could be more recent than the *moai* itself, but when the petroglyph was discovered by the Norwegian expedition in 1955, it was on a fresh statue, without significant alteration by weathering. Henceforth, statue and drawing likely belong to the same period.

In addition, at the end of the eighteenth century, William Wale speaks about one erected *moai* in the south-eastern sector of the island, but at the middle of the next century, no statues were still upright on the island except those on the slopes of Rano Raraku. As well, *moai* were erected vertically along the roads before the end of the use of the quarries (middle of the seventeenth century?). Some decades later, before the end of the eighteenth century and after the visit of Wale, the islanders completed the lowering process. The operation was finished no later than the middle of the nineteenth century.

Taking all these facts and their chronological framework into account, it is difficult to accept a simple story of *moai* abandonment along the ancient roads during statue transport. We argue that abandonment is not an appropriate inference because the form of these *moai*, their context, and natural alteration support their upright positioning. Accidental breakage or violence and defacement must also be rejected because of the good conservation state of a majority of statue and by the premeditated lowering of the *moai*.

The shape of the *moai* base also brings into question other reconstructions of statue transport and modification. Lipo et al. (2012) recently proposed that a larger base would facilitate the moving of the *moai* since a large base would be adapted for 'walking statues'. When the images reached their destination and were in place in front of an *ahu*, islanders re-carved the base region and sculpted the eye sockets (Lipo et al. 2012). This hypothesis neglects two facts. First, the size of the *moai* found on the road is different from those positioned on the platforms, not only with regard to the type of base but also because the proportions of the head and the height are different. If the statues along the roads were destined to *ahu*, then it was necessary not only to re-carve the base and the eyes as proposed by these scholars, but also the whole body. Why would the islanders move a lot of large statues that only approximated the finished product desired for *ahu* platforms? If the hypothesis of Lipo, Hunt and Rapu is correct, it would mean that late in the period of *moai* carving the Rapanui people changed their conception of an ideal type of *moai*.

7 Conclusion

Setting aside the hypothesis of *moai* abandoned during their transportation and looking at the evidence with care allows for a more meaningful interpretation. It appears that the Rapanui built procession roads (see Routledge 1919: 196–197),

which were lined with tall *moai* and which led to Rano Raraku at a time when the quarries were a source of sacred images. Perhaps, the islanders considered Rano Raraku itself as a sacred site, and the tuff as sacred material too. This is not without parallel in Polynesia as the sacred character of nephrite (*pounamu*) documented in New Zealand (Brailsford 1996; Chambonnière and Maine 2017; Robley 1840), and processional roads have been reported from the Hakaui valley on Nuku Hiva in the Marquesas (Radiguet 1929). During the eighteenth century, the Rapanui started to lay down the statues, exactly at the same time and in the same way as the was done to the images on the ceremonial platforms (Cauwe 2011; see also Chap. 15 in this volume)—in both cases with due caution.

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