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Megaliths of the World

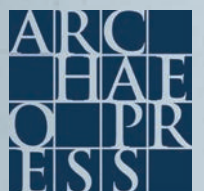
Volume I



edited by

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Luc LAPORTE

From the architectural project to megalithic ruins: a dynamic vision of ‘petrified’ remains

Abstract: Megaliths often appear in the landscape as very large stones, either simply erected pointing towards the sky, resting on the ground, or carefully arranged within larger structures, but always appearing to defy gravity. The size or weight of the stones placed fires contemporary imagination, despite the somewhat rudimentary character that many, even today, implicitly attribute to such ruins. This concept of ‘primitivism’, born in the depths of the history of archaeological research, has long stifled any truly detailed study of megalithic architectures. Beyond their undisputed heritage value, and contrary to their too frequent perception as being petrified for eternity, megaliths have a more dynamic aspect.

Keywords: *megaliths, ruins, architecture*

The title of this international meeting was intended to focus our discourse, within a thematic framework, on the object of study (the megaliths), rather than on a field of study that is, after all, quite different depending on each individual theoretical approach and academic background – whether these are based on technical systems, cultures, history, religions, societies or humanity as a whole. The presence of megalithic ruins in the landscape is what initially motivated interest in this subject. They were, at least partly, composed of very large blocks of stone with, at first glance, a rather rudimentary appearance, although they were moved by humans and then erected towards the sky and/or assembled as part of larger constructions. Scholars later learned to identify the whole structure into which these blocks were set, to recognize the different uses that were made of them, and to reconstruct the various architectural projects that sometimes followed on

from one another in the same place. The consideration of the whole lifetime of the construction will form the guiding thread of this article, creating a dynamic approach to a form of heritage that is too often perceived as frozen for eternity.

1. Very large blocks of stone

Among the very large blocks of stone that contribute to the megalithic structure, many are arranged in such a way as to highlight their individual, unique characteristics: their shape and curvature or their roughness or surface colour, for example. Some, such as those transported by glaciers in the plains of Northern Europe, were used without human modification, whereas many others present totally transformed surfaces. More generally in Europe, there are few examples that do not bear at least some

traces of shaping or extraction (**Fig. 1**). Elsewhere in the world, even greater diversity is observed for structures described as ‘megalithic’ throughout the history of research. Today, the term still covers monolithic troughs and even some statuary elements.

The great maritime expeditions at the end of the 18th century led Captain James Cook as far as the confines of Easter Island, only a few decades before an expeditionary force were sent to Egypt during the French Revolution. The former contributed to the discovery of stone giants which are now very widely incorporated into studies of megaliths, while the latter revealed to scholars of the western world imposing remains that, at the time, were considered to be at the source of civilization. As early as the middle of the 19th century, and well before the discovery of the decorated Upper Palaeolithic caves in Europe, parietal art engraved on the walls of artificial chambers, such as that found at Gavrinis in Morbihan (France), was included in debates on the cognitive capacities of a ‘primitive’ humanity. Towards the end of that century, one of the first syntheses devoted to megaliths throughout the world was entitled *Rude Stones Monuments in All Countries* (Fergusson 1872), a title that clearly referred not only to the coarseness of the building materials but also, implicitly, to the coarseness of the past – or present – populations who built them.

Subsequently, and in addition to an appreciation of the unique nature of each of these particular megalithic expressions, the rejection of such presuppositions was doubtless not totally unrelated to the desire to exclude from this field of study several other forms of architecture, e.g., the sepulchral chamber of certain *Kofun* in Japan during the first half of the 20th century although they too were mainly comprised of large, assembled stones. The term ‘megalith’ cannot be totally dissociated from the historical context in which it first appeared, as early as 1849, at the University of Oxford (Mohen 1989: 42). Yet, almost two centuries later, the term is still used to describe an intuitive reality for most of our peers, leading to perplexity or admiration when they are faced with the apparent simplicity of structures that seem to defy the most elementary laws of gravity. For conversely, this term also carries the seed of a universal ingenuity specific to the human race, the only species capable of leaving a lasting mark on the landscape through such constructions made of inert material, some of which were built as early as prehistory. Any irregularity, any unique characteristic, is thus assessed rather in terms of the necessary economy of means applied with what is judged to be rudimentary technical knowledge.

All these assumptions, be they negative or positive, hardly concur with the necessary rigour of scientific



Fig. 1 – ‘*Pierre close*/Closed stone’ from Charras (Charente-Maritime, France) with a roof slab placed on a monolithic trough perforated by a porthole opening (Photo: J.-S. Pourtaud) (Pourtaud & Olivet 2015).

terminology. Indeed, some colleagues have at times tried to set numerical limits for what is classified as 'a very large block', in terms of weight, for example. But these approaches have always come up against locally observed diversity, for each type of structure concerned. They overlook, for example, the fact that in the famous alignments of Carnac, as in the whole of the Morbihan department (France), more than 80% of the erected stones are little more than a metre high. We now also know that most of the megaliths in the world were erected by populations who mastered metallurgy, and by a few others contemporaneous with the emergence of writing or even, in places, the State (Joussaume 1985; Gallay 2006). Nevertheless, the visual appearance of the very large blocks used in construction, as well as those implanted vertically, is no more or less coarse than those of previous societies. We observe only a greater diversity in the chosen technical solutions.

Refuting the rudimentary character of megalithic constructions, and of the people who built them, is therefore not sufficient to explain how the large stone blocks composing such megalithic structures differ from any other form of masonry. It seems to us that one of the criteria that could be retained is, rather, that aspect that makes each stone unique, and which often leads to the description of the edifice as rudimentary. The preservation, by its inclusion,

of a little of the original character of each individual block is, primarily, a choice. This choice is significant (Scarre 2004). It is independent of a history of techniques, or of either the type of society concerned or its economy. It is a choice between two modes of human action on matter: that of transforming a raw material to obtain a finished product that only the human mind can conceptualize, or that which is more concerned with appropriating a 'natural' entity (or any other form of entity that would be related to this material envelope) and all of its specific singularity (Laporte & Dupont 2019).

We will take just one example. When describing the quarry from which were extracted some of the most imposing blocks erected in the Alentejo (Portugal) during the Neolithic period, Calado (2004) notes how each of them already seems to take shape in the geological outcrop. A similar observation was also made at the Roh-Coh-Coët quarry at Saint-Jean-de-Brévelay (Morbihan, France). It is as if, far beyond any mechanical action, extraction primarily involved revealing what the outcrop intrinsically contained within it (**Fig. 2**). From Nigeria to the Burmese mountains, and on the Polynesian islands and the Caribbean islands, the unique nature of each block is often sufficient to identify the mythical entity attached to it; an entity that does not always need to be expressed by an explicit representation. At most,



Fig. 2 – The extraction of a block sometimes involves no more than revealing the intrinsic character of the outcrop, as in this example of the quarrying of large standing stones of Roh-Coh-Coët (Saint-Jean-de-Beverlay, Morbihan, France), built secondarily as a 'gallery grave' (After Gouézin 2017; photo: L. Laporte).



Fig. 3 – Expression of an entity linked to each block of stone, and human representations: Neolithic and Chalcolithic examples in France. a. Human face sculpted on one of the cover slabs of the ‘passage grave’ of Déhus in Guernsey (United Kingdom) [Photo: C. Scarre (2011)]; b. Pairs of breasts carved on the backstone slab of the ‘gallery grave’ of Prajou-Menhir in Trébeurden (Côtes-d’Armor, France) (Photo: L. Laporte) ; c. ‘Statue-Menhir’ of Saint-Sernin-sur-Rance (Aveyron, France) (© Musée Fenaille - coll. Société des lettres, sciences et arts de l’Aveyron). The idea that ‘passage graves’ could display on their walls a ‘gallery of ancestors’ (Bueno Ramírez *et al.* 2018) would be a specific case in terms of the possible nature of the entity concerned.



Fig. 4 – Expression of an entity attached to each block of stone, and human representations: examples from the Bronze Age in the Altai, China. Standing stones and ‘menhir statue’ on the façades of the funerary monuments of Kaynar no 1 (Hainar) (a) and Karatas 2 no. 1, in Xinjiang (China) (b-c) (Photos: A. Kovalev; Kovalev 2007, 2012).

the appearance on a rough stone of a face, a pair of breasts, a necklace or any other attribute, contributes to its characterization (Figs. 3 and 4). In contrast, the phallic stelae of Sidamo in Ethiopia (Joussaume & Cros 2017) are primarily representations: the similarity to these in the shape of other erected stones, for example in Northern Iran (Stronach & Royce 1981) or in the Tafi Valley in Argentina (Ambrosetti 1897; Bruch 1911), is due only to their own resemblance to the anatomy of the represented organ.

Egyptian obelisks and certain Mayan stelae are monoliths with superior sizes or weights to many of the standing stones erected throughout the world. Each of the elements of the Cyclopean Andean constructions, made with very carefully fitted blocks, as in Mycenaean or Sardinian cities around the Mediterranean, preserves a certain identity (Pozzi 2013). But, from the first glance, they cannot be confused with the arrangement of these same materials in a megalithic structure, where sometimes certain stones (of all sizes) were used as raw materials, but where others retain a roughness, a shape, a colour, and a unique character that distinguishes them from all the others. The individuality of at least some of the very large blocks of stone used for the construction of a megalith, as well as the notion of durability linked to the material of which it is made, is the first point that we wish to stress here.

2. The megalithic ruins

Many of these large boulders appear in the landscape today in a somewhat chaotic form that has often been compared to a natural outcrop, with which they can sometimes be confused (Bradley 1998a). Indeed, random groups of natural blocks forming imposing rocky peaks have been described as megaliths in the archaeological literature, either because of their remarkable astronomical orientation (Volcevskaja 2011), because they served as sanctuaries (Maglova & Stoev 2014), or because they are covered with petroglyphs. We will reserve the term for those material constructions that have been shaped or displaced by humans, which in no way excludes any explicit reference to remarkable natural features in the landscape, as is sometimes the case in the oral traditions of those who built the megaliths

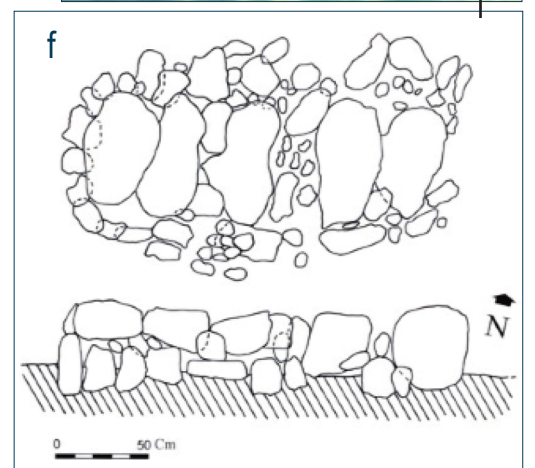
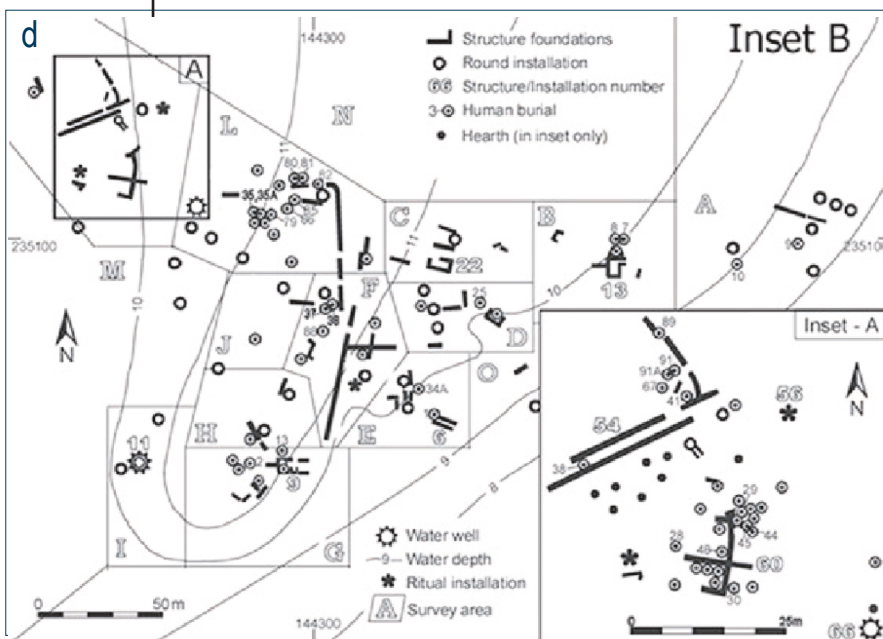
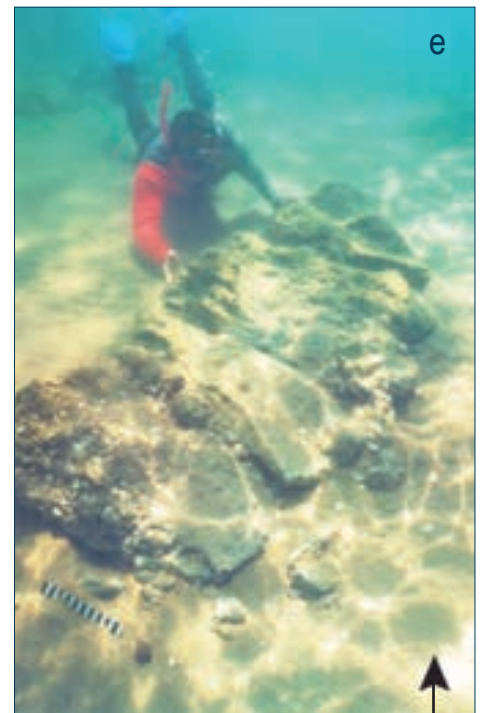
(Tchandeu 2009: 67). In prehistoric times in Europe, some of the slabs that were reused in the walls of sepulchral chambers seem to have been brought from previously sacred places and from outcrops that already bore numerous engravings (Cassen 2009a; Scarre 2015).

The purpose of many archaeological works during the past two centuries was to moving beyond a romantic vision of ruins that appear, at first sight, to be frozen for eternity. We now know that many of these very large blocks were part of much larger constructions. However, could what we see today, and what sometimes also confers all monumentality to the whole structure, have been completely alien to the intentions of builders in the past? This type of questioning still drives some of the most recent research in Europe, on for example the 'portal dolmens' of Ireland and Wales (Cummings & Richard 2014), as well as a number of 'dolmens' in Denmark (Eriksen & Andersen 2016). But there is no longer any question of denying that these are ruins, generally part of a monumental mass of which only the framework of the burial chamber was composed of very large stone slabs. This notion of 'ruin' (Schnapp 2015) also applies to single, isolated stones raised towards the sky, as it is often impossible to determine whether such stones were once part of a larger structure that has now disappeared (Hinguant & Boujot 2009).

In all cases there are at least some perishable materials that may have disappeared (Fig. 5a), including any artificial colours, while the environment into which these stones were inserted has largely been transformed (Fig. 5b). In the Near East, and among the oldest structures of erected stones known to date, are those discovered at Atlit Yam (Fig. 5c-e) off the coast of Israel, in a village attributed to the PPNC (between 7400 and 6000 BC), a site that is now engulfed by the sea to a depth of about 10 m (Galili *et al.* 2020: 452). This is also the case for many Neolithic megaliths on the coast of western France, to the extent that some were even cited by early geologists when they had no other means of dating past fluctuations in sea levels (Boisselier 1893). In the history of research, particularly in Europe, these are thus the ruins that archaeologists first tried to list and describe, sometimes systematically, by comparing them and naming them



Fig. 5 – Megalithic ruins: a. Tombe d'un guerrier Gewada en Éthiopie (Photo: J.-P. Cros) ; b. Site mégalithique partiellement submergé de Er Lannic (Morbihan, France) (Photo: P. Gouézin) ; Submerged megaliths off the coast of Israel. Standing stone circle (c) in the Neolithic settlement site of Atlit-Yam (PPNC), with the location marked by an asterisk on the plan of the archaeological site (d), as well as one of the stone cists (e) excavated at the Neolithic site of Neve-Yam (f) (After Galili *et al.* 2020; plates: I. Grindberg and E. Galili).



differently, that is, by classifying them. To consider that such an intellectual approach is definitively complete would suppose, for example, that we could avail of an accurate map listing the stones erected by humans on this continent which is still not possible.

There are many other regions of the world where this process has barely begun. To take just one example, the megalithic circles of Senegal and Gambia were, until very recently, presented as small ‘cromlechs’: a now largely obsolete classification which was abandoned when scholars of megalithic research in Europe learned to distinguish between the remains of standing stone circles erected in the open air and those originally implanted along the walls of a funerary chamber (Laporte *et al.* 2011: 305). Although the African megalithic ruins in question are rather similar in appearance to European examples (number of erected stones, size, diameter of the structure, etc.), they are ancient funerary platforms, some of which may have been

covered by a roof, like the many ‘houses of the dead’ built in perishable materials in those regions up to the present day. Megaliths of similar appearance today may thus reflect totally different past realities: in one case, the wall delimiting the empty space of a room where the floor is intended to receive the remains of the deceased; in another, the façade of a small monument built above the tomb (Fig. 6).

Perhaps because these ruins are among the most commonly accessible elements of the archaeological record, the literature concerning them is extremely abundant. On the other hand, the fact that these are ruins is rarely explicitly mentioned within such publications. Example include the geological study of each of the very large blocks of stone integrated into a larger construction, in Europe (Patton 1995; Carrion Mendez *et al.* 2009; etc.) or in Japan (*Tondabayashi-shi Kyōiku i.inkai* 2003, etc.), or studies dealing with intervisibility between megaliths (Laporte *et al.* 2016). The geomorphological study

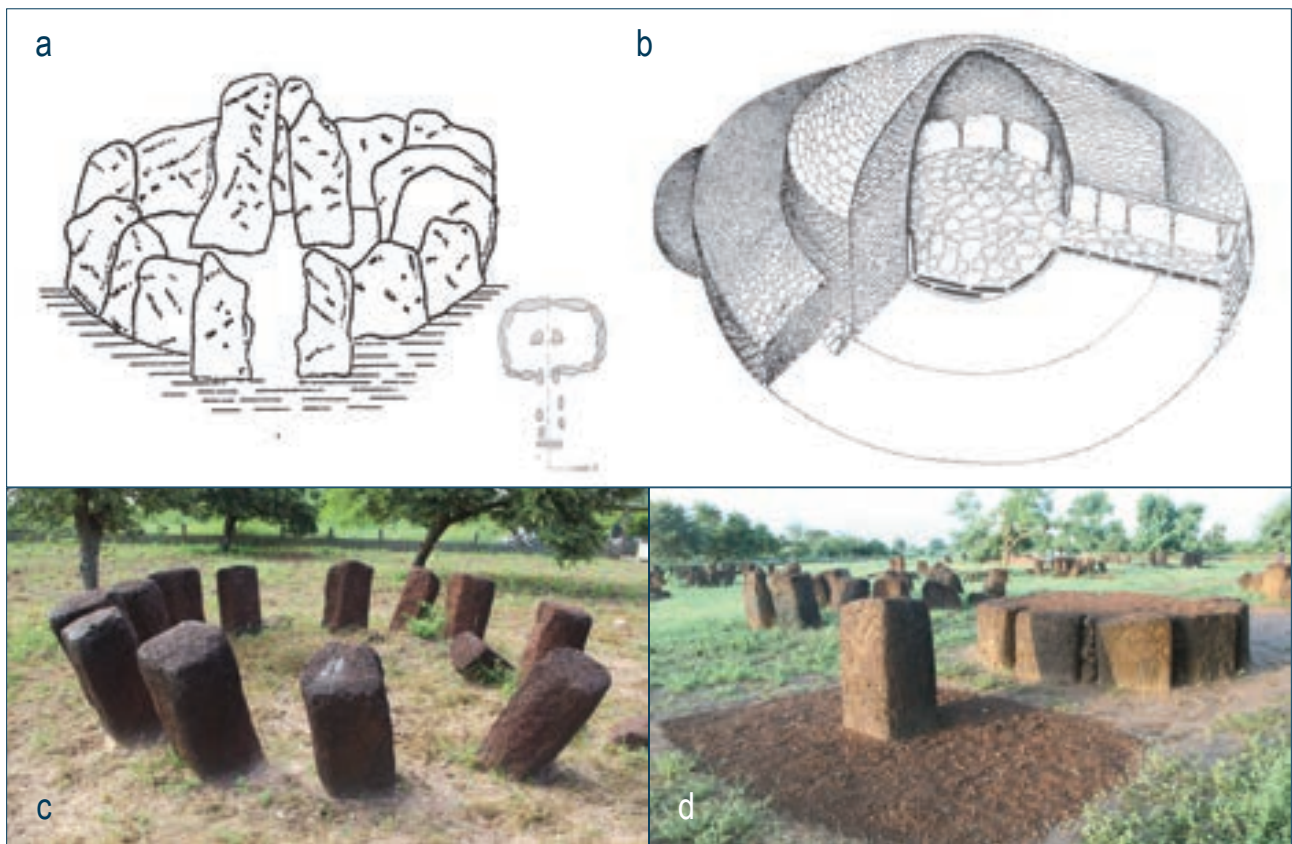


Fig. 6 – Megalithic ruins are sometimes very similar for very different structures. In Europe, among the circles of standing stones (a), the history of research has taught us to distinguish between those initially placed on the periphery of a burial chamber (b). In Africa, similar circles of standing stones (c) can just as well represent the collapse of a burial platform (d) (a, after Laporte *et al.* 2011; b, after Joussaume 1981, 2016; c-d, after Laporte & Bocoum 2019; plates: L. Laporte).

of the traces of erosion visible on the blocks erected in the alignments of Carnac, France, is facilitated by the fact that they were erected in the open air (Sellier 2013). This is also useful for the technological study of each block forming the framework of a funerary chamber when the latter, in ruins, is now devoid of any tumulus mound (Mens 2008). When these blocks are inserted into an imposing monumental mass, many researchers regret not being able to observe each side of a given stone (Cassen *et al.* 2012), approaching them as pieces of movable art (Robin 2010) in studies that could have been carried out very differently had these remains not been preserved within more complete constructions.

To take another example, in the Andean areas of South America, the attention paid to the mediums used in parietal art, whether natural or displaced by humans, remains completely marginal in relation to the discourse developed on the symbolic representations, to the point that the use of the term ‘megalith’ is still an exception there. Elsewhere and, notably, within what appears at first glance to be a scatter of blocks, attention would have been drawn above all to an artificial chamber known to yield abundant movable remains, also likely to reflect the corresponding populations.

3. Uses

The question of the function of megaliths has been present from the earliest writings on the subject in the scientific literature, as well as in many mythological accounts throughout the world. At the turn of the 19th and 20th centuries AD, in Europe, two main types of interpretations tend to emerge. Several groups of very large standing stones were perceived as astronomical observatories, erected by communities who were trying to measure time, which was particularly vital for establishing the agricultural calendar. Other structures composed of very large stones were buried beneath what appeared to be a simple mound, creating an artificial chamber where the presence of many human bones indicated multiple burials. Subsequently, and elsewhere in the world, such a distinction required refining, at the very least.

Here, the term ‘uses’ is preferred to the term ‘functions’, which suggests a prior intention. For example, the use of the Menga dolmen in Andalusia (Spain), for the out-of-sight execution of prisoners during the Spanish Civil War does not imply any prior intention for such a function for this particular place (García Sanjuán & Lozano 2016), but the cartridges collected from the site by archaeologists reflect a use specific to the singular biography of the location (Bradley 1998b). Just by considering a monument to be a memorial place we imply a form of reappropriation by successive generations, which often results in different uses and constantly renewed functions, both for the structure as a whole and for each of its parts (Furholt & Müller 2011: 16). Too often, these monuments, just like the ‘petrified’ megaliths, are perceived as a series of snapshots. The larger (and therefore more likely unexplored) the surviving mound, the more often the various associated megalithic areas are considered contemporaneous with the final stage of the edifice (Laporte 2010).

The material vestiges of their uses enable us to link the megalithic ruins to the past populations who built them. Almost everywhere around the world, megaliths were erected in distinct places, at different times, and by human groups who often did not know each other. The dating of such buildings, made of inert material, initially relied on the analysis of material remains resulting from their immediate use and after their construction (Joussaume 1985). Such reasoning has proved valuable, at least as a first approximation, and more refined chronologies are now possible, providing *ante quem* and *post quem* dates (Schulz-Paulsson 2019) for each stage of transformation undergone by these monuments during their individual histories. The presence of organic material in the form of birch bark interwoven between the base of walls within the Maglehoj Megalithic Chamber in Denmark (Dehn & Hansen 2006: 44) is an exception here (Fig. 7), allowing direct dating of the monument. In some cases, however, later use may have erased all material traces of the monument builders.

The presence – or absence – of human remains in the immediate vicinity of megaliths has often influenced interpretations, although a funerary

function is sometimes confirmed for present-day standing stones devoid of such remains, as among the Toradja in Indonesia or the Gewada in Ethiopia. Conversely, the basements of many religious buildings, such as churches in western Europe, are full of burials or reliquaries. Further, the function

of each individual megalithic block is sometimes inferred a little too quickly from its position within the construction. Thus, for Neolithic megaliths in western France for example, the same line of erected stones will often be interpreted differently depending on whether it stands in the open air or is



Fig. 7 – Difficulties in accurately dating the construction of megalithic remains made of inert matter. a. Birch bark, which can be dated by radiocarbon, inserted between each foundation stone of the walls built between the megalithic blocks forming the burial chamber of the passage tomb of Maglehoj, Denmark; b. On the other hand, it is still very difficult to accurately date each part of the large Neolithic mounds of the Carnac region (France), often presented as an indivisible whole, as they were explored in the 19th and early 20th centuries through mine galleries ; c. In the same way, the period of construction of the alignments of standing stones located at the exit of the village of Willong Khullen (India) (already noted by Hutton in the 1930s) is still very poorly dated although they are claimed by the Naga inhabitants, who still practise slab burials (Photos: L. Laporte).

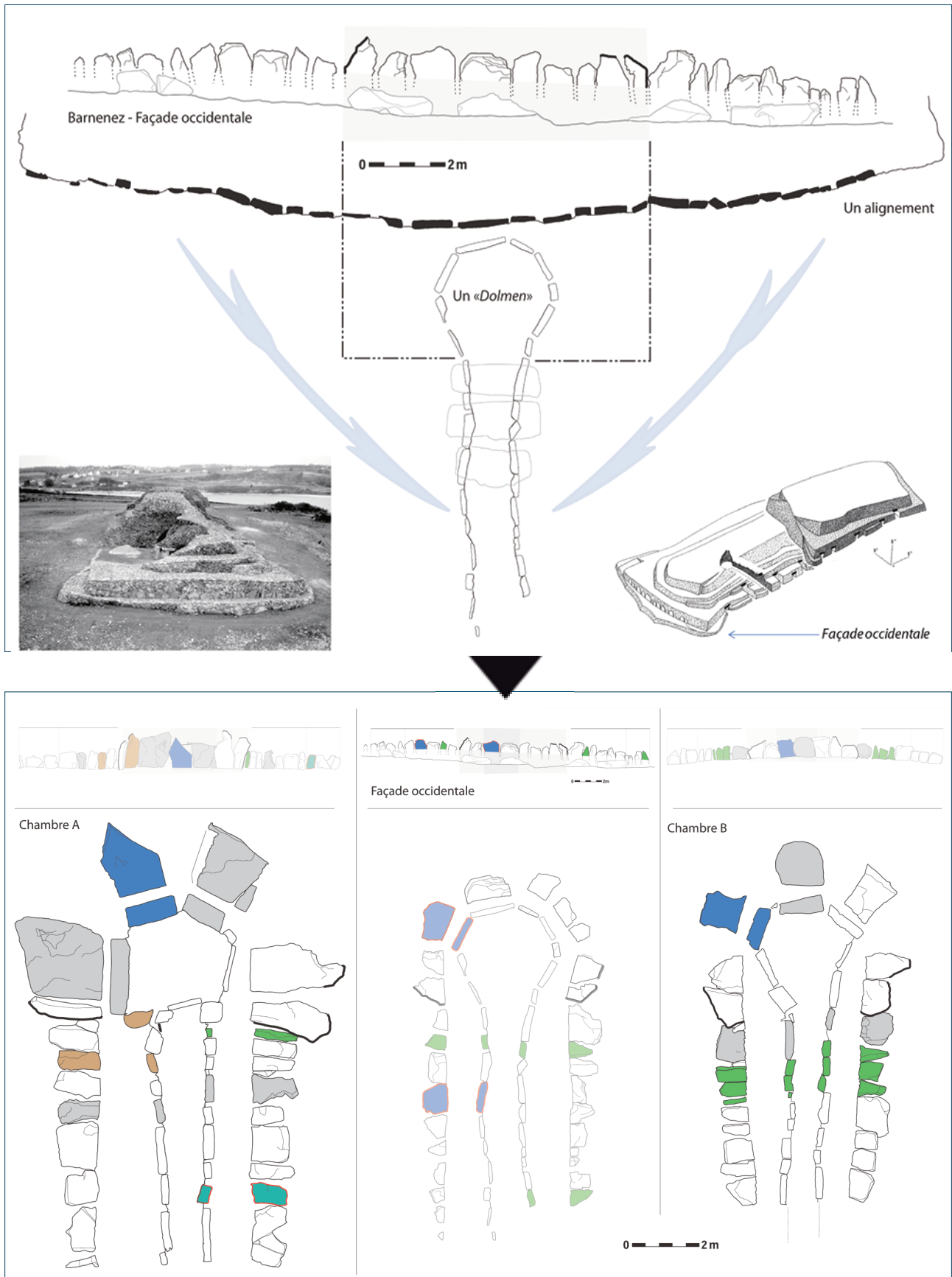


Fig. 8 – Barnenez, Western France: The alignment of blocks erected in the western façade of the Neolithic funerary monument of Barnenez at Plouézoc’h (Finistère, France), exposed to public view as an unrolling of the blocks positioned along the walls of the corridor and the chamber of artificial cavities in the tumulus mound (After Laporte *et al.* 2017; photo Archives of the Laboratoire Archéosciences-UMR 6566).

part of a dry-stone wall supporting the roof of a narrow corridor (Fig. 8). The first would be ascribed only a symbolic function and the second would be considered to have been constructed exclusively as an architectonic support (Laporte 2015a). Conversely, the function attributed by contemporary populations to other, equally megalithic remains sometimes leads to their exclusion from our field of investigation, thereby thwarting the study of a whole range of structures built in a much more distant past.

Among the structures that cannot be interpreted either as astronomical observatories or as burials, the 'merit stones' scattered in a landscape of rice fields cultivated by the Naga people have for a long time, and rightly so, attracted the attention of many foreign observers (Hutton 1929). But here, as for many other populations of Northern India, localized ethnographic studies often highlight the diversity of functions attributed to other stones erected by the same populations (Binodini Devi 2005). Archaeologists of the future will probably have great difficulty in distinguishing these others from those considered as the main case. Some serve as boundary markers. In Japan, several large standing stone blocks are directly associated with the establishment of new plots of land during the 7th century CE, and are never cited in studies of megaliths. However, *'In the pre-modern era, monumentum, refers to any edifice that evokes a specificity of a place and recalls its memory. It can be a landmark [...] that serves to mark a limit. The word has been used in Anglo-Saxon surveying, where monumentation designates boundary marking.'* (Chouquer 2008: 85).

We could even say, in an outrageously caricatural way, that the more significant the function of a megalith in contemporaneous societies, the less it will be ascribed such a function by archaeologists. This is, of course, the case of the abundant 'huancas', honoured at every feast of the dead in the Peruvian and Bolivian Andes, the study of which is so often relegated to the observation of folkloric practice. In Africa, numerous stones erected in sacred woods, accessible only to initiates, represent a form of – sometimes very well-concealed – ostentation (Fig. 9). Somewhat more anecdotally, the function of a seat, or more precisely that of a backrest for

the person seated, has been unduly bestowed on many standing stones, such as those around small circular monuments in Liberia and Sierra Leone (Haselberger 1960), although this function has, indeed, been proven by the permanence of oral traditions for some of the stones erected on the vast platforms of certain *Marae*, in Polynesia, among many other functions (Garanger 1973).



Fig. 9 – A sometimes well-hidden ostentation: when they have real importance for the functioning of contemporary societies, some megaliths are rarely named as such and are sometimes even difficult to access for the layman (A), thus preventing the study of a whole section of those erected in the past from the actualist reference framework. The example shown is in Cameroon with the monoliths of the initiatory society Ngumba, surrounded by raffia mats, having a religious function (after Notué 2009: 47).

A number of authors (Gallay 2011; Jeunesse 2018; Renfrew 1974; Wunderlich 2017; etc.) prefer to emphasize the social role attributed to the organization of the energies required for the construction of the edifice, which is then interpreted differently in terms of competition or even coercion, or assistance and emulation, according to broader starting assumptions. The transport of very heavy slabs of stone by means of human traction has often been presented as an indirect measure of the capacity of a human group to mobilize sufficient effort for a task that is not strictly necessary for its subsistence (Laporte 2019). A careful interpretation of the entire architectural structure, rather than only the part indicated by the presence of megalithic ruins, can also inform us about the human societies that built the structure and then, over time, frequented and sometimes destroyed it (Laporte *et al.* 2020).

4. Materializations

As soon as archaeological excavations go beyond the megalithic ruins themselves, they bring to light other remains, other structures, other architectures that are not in any way ancillary. More generally still, taking account of changes in the landscape sometimes also helps to better define what is specific to the monumentalization of each particular place. An entire network then takes shape, always moving in space, changing continually over time, and linking points that are sometimes very far apart. The sequence of the different operations that take place as the construction of a site progresses is a good example of this. Nevertheless, we prefer the term ‘materializations’ over ‘constructions’, which seems more ambiguous. The latter, for example, can just as easily refer to exclusively intellectual or symbolic constructions such as some natural scatters of sacred blocks as mentioned above. For the purposes of this article, it thus seems preferable to limit the discussion to structures that result from material construction.

Some very large blocks were unquestionably raised towards the sky in the exact place from which they were extracted (Cummings & Richards 2016: 53), but most were transported, involving diverse technical knowledge. Sometimes, this transportation

is the only human action, for example, when a block is placed over a burial site (**Fig. 10**). Many materials other than stone were used, at least during construction, justifying the title *Les charpentiers de la pierre* (*The Carpenters of Stone*) in one of several works by Joussaume (2013) devoted to megaliths around the world. This is another of the ambiguities surrounding the use of the term ‘megaliths’ in scientific literature, especially when they are considered to be just one form of monument among many others (Gronenborg 2006). It thus seems legitimate to broaden these studies by including other types of structures, such as other architectures with similar forms – at least when they were built by the same populations in the same place and at the same time but with different techniques. For there can be no megalith without the presence of a very large stone.

The quarries from which many of these large blocks of stone were extracted have been widely studied. In contemporary traditional societies, as in societies from a much more remote past, these quarries are rarely more than a few kilometres away from the site where the stones were erected. The stones may be simple blocks found at the bottom of a slope, as is the case for some of the blocks moved above the slab burials of Hwasun in Korea (Gon Gy 1981) or may be cut from an outcrop of basaltic prisms already naturally raised towards the sky, as at the ‘pillar sites’ of Tanzania (Grillo & Hildebrand 2013) or extracted from actual quarries, as is also very common (Zangato 1999). The study of the operational chains involved allows a reconstruction of all the techniques used. In Madagascar (Joussaume & Raharijaona 1985), the use of fire to detach large limestone slabs from the substrate is well documented, whereas in Senegal, for slightly earlier periods, the exploitation of laterite crusts seems to have led, at times, to the genuine mechanization of extraction (Laporte *et al.* 2012). The extraction processes used for Ramiriqui stelae in Colombia (Lleras Perez 1989) seem much better understood than any other aspect of these rather poorly-dated megaliths.

In the Mandara Mountains in Cameroon, the oral traditions of the Mafa report transport of up to 50 km, five centuries earlier, of stones erected as phallic forms during the re-foundation of a village

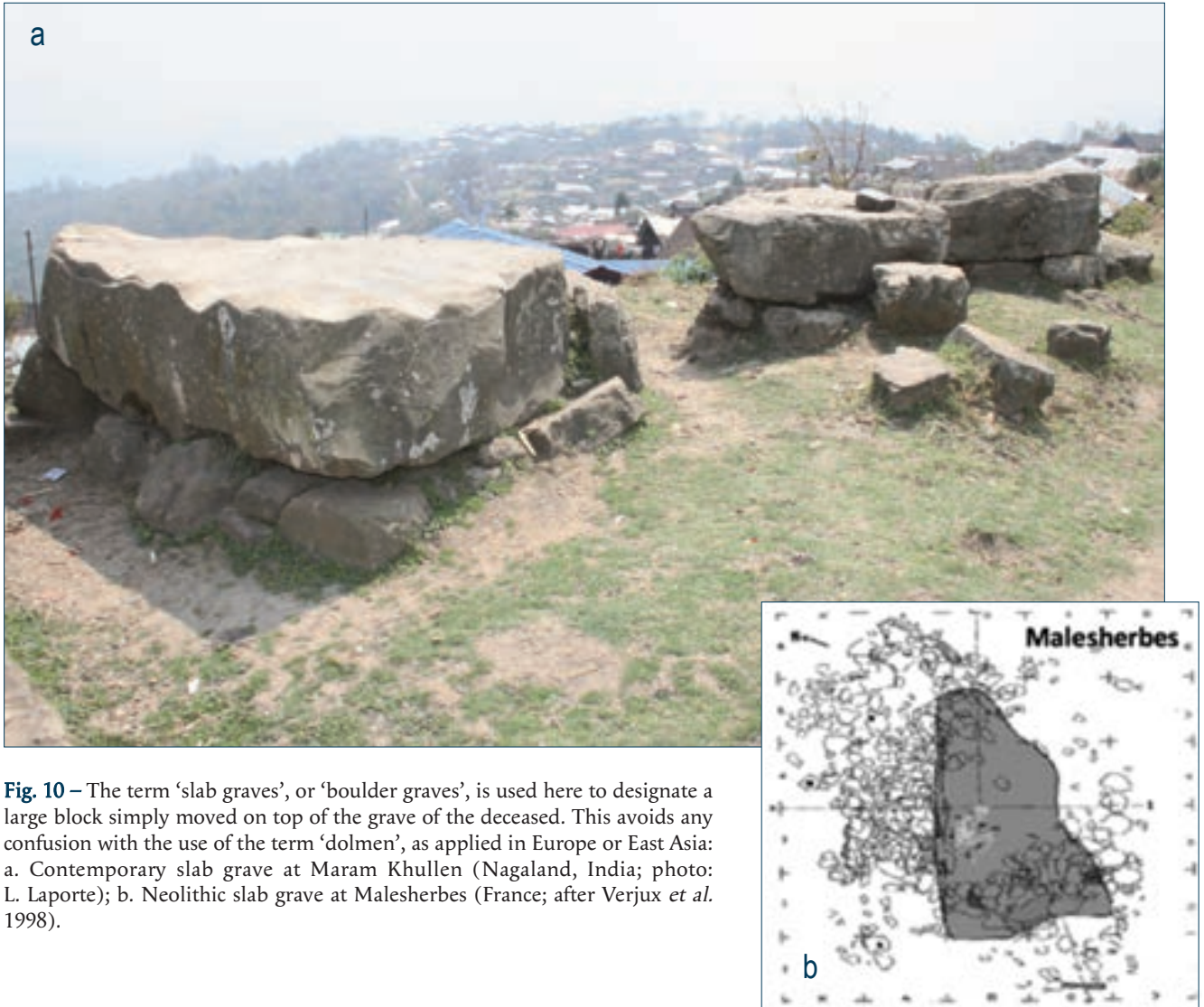


Fig. 10 – The term ‘slab graves’, or ‘boulder graves’, is used here to designate a large block simply moved on top of the grave of the deceased. This avoids any confusion with the use of the term ‘dolmen’, as applied in Europe or East Asia: a. Contemporary slab grave at Maram Khullen (Nagaland, India; photo: L. Laporte); b. Neolithic slab grave at Malesherbes (France; after Verjux *et al.* 1998).

(Tchandeu 2009: 68). This distance extends up to 100 km for what are sometimes much more imposing blocks moved by the Khasi communities of northeast India (Mitri 2016). As regards prehistoric Europe, ‘bluestone’ quarries in Wales (United Kingdom) initially provided the necessary materials for local monuments, before one was moved nearly 200 km away to Stonehenge and to the centre of a larger circle of standing stones (Parker Pearson *et al.* 2019). Transport by water is indeed demonstrated for the Neolithic, for example by the geological nature of several standing stones on some Breton islands (Cassen 2011). For much more recent periods, in Micronesia, the chemical study of rock composition has allowed the precise identification of each of the quarries distributed around the periphery of the small island of Pohnpei, where

the city of Nan Madol is located (McCoy & Athens 2012).

For transport by land, when the slab weighs only a few tonnes, the use of ‘stretchers’ is sometimes sufficient, these being carried by a few dozen people who take turns regularly (Ethiopia, Nagas – e.g., Cros *et al.* 2018: Fig. 1). In this case too, the application of a pole system, where large logs are pulled across the ground, can be hypothesized when the distance to be covered is only a few hundred metres and the route is marked by broken blocks, as is the case for at least some of the megaliths of Senegal and Gambia (Laporte *et al.*, forthcoming). The addition of hydromorphic silt, which is very slippery when wet, can help to limit friction, as can the addition of small river pebbles, like those used



Fig. 11 – The hypothesis of transport on wooden logs is generally advanced for the heaviest slabs used in the construction of Neolithic megaliths in Europe, but many other techniques are also possible. a. Experimental archaeology carried out at Bougon under the leadership of J.-P. Mohen in the 1970s (Photo: P.-R. Giot); b. Traditional games in Spanish Basque country which consist in pulling a heavy stone over a surface of river pebbles, illustrated here by a photograph taken by I. Ojanguren at Eibar in 1940; c. Despite the discovery of a wooden yoke in early Neolithic levels at La Draga in Catalonia, the use of animal traction is rarely put forward, as animals are considered more difficult to coordinate than a large number of people. The image of multiple pairs of oxen pulling a cart on which the obelisk that Mussolini wanted to offer to his capital city lies demonstrates at least that it is materially possible (After Baini 1987).

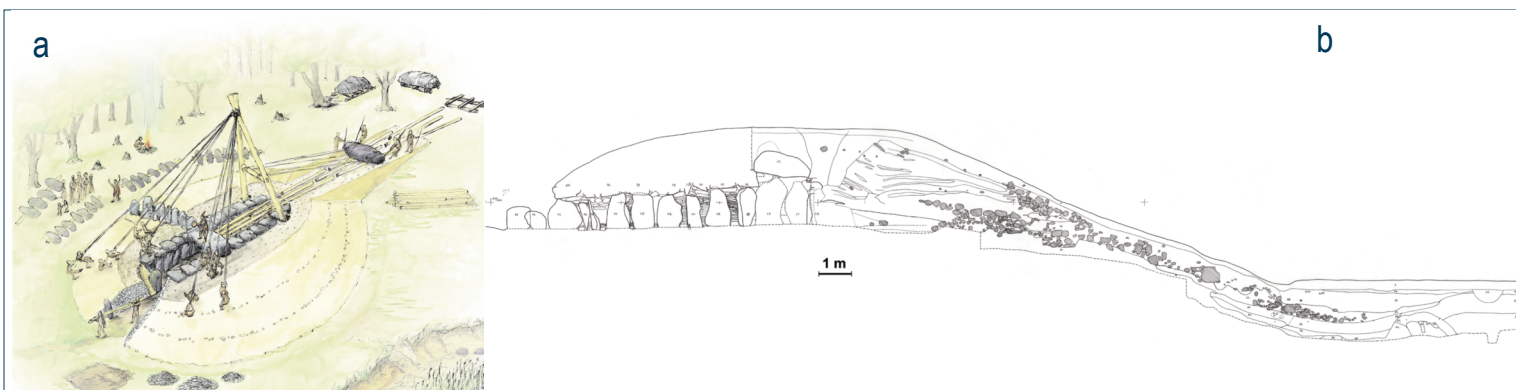


Fig. 12 – Ramp constructed for placing the cover slabs of the passage tomb at Klekkendejoj (b), then sealed under the upper levels of the tumulus mound, and proposed reconstruction at Birkehoj (a), Denmark (After Dehn 2016).

even today for traditional games in the Spanish Basque Country (Fig. 11). For slightly larger blocks, the use of sledges, widely represented in the frescoes of ancient Egypt, is also attested in contemporaneous populations, for example in northeast India or Indonesia (Hutton 1929; Perry 1918). Others may have been moved on wooden logs, akin to the way large boats are moved on the beach. This hypothesis has probably given rise to the greatest number of experiments in Europe, leading to the proposal of multiple variations (Poissonnier 1996).

It would be naïve to imagine that such undertakings would not have required the prior construction of roads, highways, or bridges. In England, a wide avenue connects Stonehenge to the banks on which the Sarsen blocks used for its construction were probably offloaded (Allen *et al.* 2016). For much more recent periods, wooden embankment structures in Japan may also have been used for this purpose in the Motodaka Necropolis (Tottori, Bunkachō 2012), while rails carved into the rock helped to transport stones extracted from quarries next to the Nara Necropolis (Nespoulous 2003). Traditional leverage and handling techniques are not well documented (and rarely illustrated) by early 20th century ethnographic associations. The sledge technique is often cited, but there are many other theoretically conceivable techniques that would have left no material traces (Adam 1977). We will note here only the discovery of a ramp, sealed in the tumulus mound of the prehistoric monument of Klekkendehoj in Denmark (Fig. 12), leading to the top of the walls of the megalithic chamber, and potentially used to slide the cover slabs into their elevated position (Dhen 2009).

In addition to wood mentioned above, other types of materials that contributed to the materialization of the whole structure, include – depending on the context – the use of dry-stone or raw earth constructions, as well as the addition of considerable masses of fill. It would be wrong to overlook the contribution of the study of such structures to our knowledge of megaliths (Fig. 13). As with large blocks of stone, this is primarily a question of examining provisioning strategies and quarries, which are sometimes no less distant from the edifice than those for stone (Laporte 2013). In Europe, in the west of France during the second half of the

5th millennium BC, the hollows of the lateral quarries carved out on each side of elongated tumulus constructions greatly contributed to the monumentalization of the site, enhancing the elevated structures. These could perhaps represent the clay quarries dug along the mud walls of large trapezoidal houses built by the first farmers of the region a few hundred years earlier (Laporte *et al.* 2018). It is difficult to understand the entire sequence if certain types of materials are excluded from the analysis, and the construction techniques of these features are often less well documented than for the megalithic ruins themselves. The detailed excavation of the Takamatsuzuka Kofun, at Asuka (Nara) in Japan, has made it possible to identify the imprint of the wooden tools used to compact the sediments while new fill was added (Bunkachō 2008).

It is true that in terms of survival, these alternative materials can hardly rival those parts of the structure constructed with very large blocks of stone, and the notion of increased durability linked to the latter is patently obvious in the landscape. Several megaliths mark out the paths taken by nomadic peoples, or traders, and were formerly interpreted as the only enduring landmarks in the territories they crossed. This was the case, for example, for the dolmens built at the end of the Neolithic in Languedoc (province of southern France) by the 'shepherds of the plateaus' dear to Arnal (1963), for the standing stones erected in the Levant and in the Arabian Peninsula (Stelekis 1961; Steimer-Herbet 2011), and as far as the Mongolian plains during the Bronze Age (Magail 2003). For more sedentary groups, the Tyssen polygons drawn by Renfrew (1983) to explain the territorial location of megaliths on the Isle of Arran in Scotland may also be worth applying to the island of Bioko in the Gulf of Guinea, where groups of standing stones are found in each valley (Olisly 2007).

In the Solomon Islands, in Melanesia, the construction of megaliths – perhaps as early as the 9th century AD – appears to precede the appearance of large, trade circuits involving goods with very high added value, such as the Kula (Bickler 2006). This is the converse of models currently advanced to explain Neolithic megalithism in the Gulf of Morbihan (France), in Europe, on the basis of

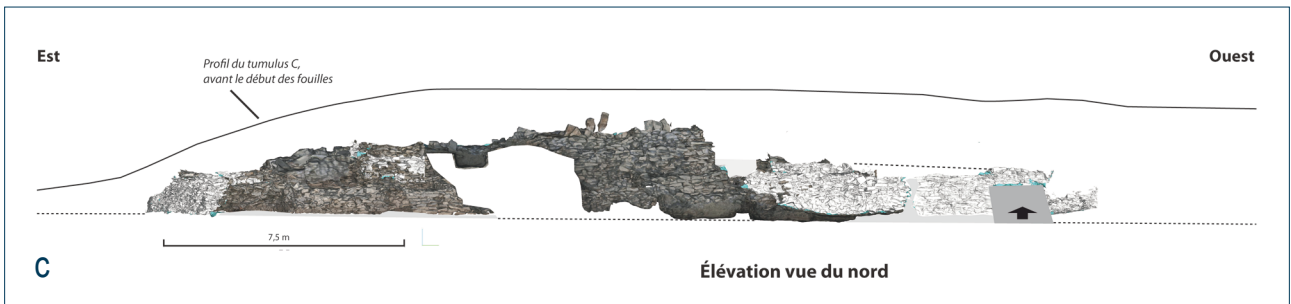


Fig. 13 – Standing stones (a) at the end of sloping surface (b), made during construction (c), then covered at the western end by a tumulus mound (d) which also contains two megalithic chambers with an access corridor (Tumulus C from Péré to Prissé-la-Charrière, Deux-Sèvres, France). The study of the Neolithic construction reveals the existence of multiple technical structures, built in drystone and hitherto totally overlooked, which can sometimes be described using a vocabulary borrowed from classical architecture (After Laporte *et al.* 2014; photos: L. Laporte & Ballonet.com).

general anthropological models however developed in this very distant region of the world (Godelier 2009). Clearly, none of these architectures can be approached without regard for their specific cultural contexts. Only a better understanding of the constraints and, indeed, the degrees of freedom, imposed on those who materialized the entire structure makes it possible to attempt to reconstruct the nature of their project.

5. Architectural projects

Any technical action is generally guided by a previously developed 'conceptual project'. Gaining access to at least some of the aspects that define the nature of this conceptual project, as well as its implementation methods, provides information on immaterial aspects of the life of the human groups in question, many of which have disappeared forever. This notion of a conceptual project is used by prehistorians, through the analysis of operational chains, as well as by archaeologists and historians studying much more recent buildings. We will use this term, which we do not need to reinvent, whatever the period in question. For the funerary megalithic monuments of Neolithic Europe, the formal demonstration that their plan was materialized on the ground prior to any construction is, in fact, quite recent: at the Pey-de-Fontaine in Vendée (France), the plan was marked by regularly spaced white stones at the base of the outer walls (Joussaume 1999). Many other 'details', on the other hand, have been attributed to rudimentary technical knowledge (Laporte 2016).

Thus, for a long time, many studies ascribed a limited degree of elaboration to these architectural projects, due to the persistence of a certain 'primitivism' which, against all expectations, was difficult to discard, even until very recently. We saw above, for example, that the apparently coarse character of each block often resulted from the deliberate choice to preserve the unique character of each stone by limiting mechanical action on the material, rather than being due to a necessary economy of means. Such observations also apply to our way of perceiving the whole structure, to which we sometimes add tenacious 'evolutionist' presuppositions. So many writings on megaliths

resemble a 'palaeontology' of these architectures with, for example, an access corridor that purportedly to lengthened over time, much as the fins of a mammal might adapt to marine environments (Laporte 2012: Fig. 10). Exactly what the study of megaliths gained from its traditional anchorage in prehistoric archaeology, and from what appeared to be fruitful conceptual transfers from the natural sciences, becomes a little more questionable when we consider the fact that products of the human mind can never be organized in a totally linear fashion over time.

Of course, the way we consider each of these architectural projects depends very closely on cultural factors specific to each human group, in a given place and at a given time. The verticalization of a very large stone (Cassen 2009b) cannot, for example, be interpreted in the same way everywhere. For some nomadic peoples of the Mongolian plains, it refers to a conception of space and time centred on the central axis of the yurt around which the world moves, and which cannot be universal (Parker Pearson & Richards 1994). In the same way, other authors have shown how surfaces that appear to us to be frozen come to life in the eyes of certain observers when they change their viewpoint (Ferando 2016). What applies to the helical representations engraved on deer stones (Fig. 14), will be perceived in a similar way for certain stone statues in the Marquesas, albeit in other forms. In Europe and for much earlier periods, we have demonstrated that certain irregularities systematically present among the very first stone funerary monuments already owed much to the use of real effects that were at least optical corrections, if not perspective (Figs. 15 and 16). These basic principles were later used again for the anamorphosis of the columns of the Parthenon in Greece (Laporte 2015b).

Previously, Le Roux (1997) has highlighted a similar aspect present in the standing stone alignments at Carnac, in Morbihan, France, which Sellier (1991) attributes rather to the geomorphological nature of the substratum. In any case, the very organization of these alignments, which barricade so many tributary valleys towards the present-day Gulf of Morbihan, sometimes over more than 10 km, is barely perceptible to us today other than through

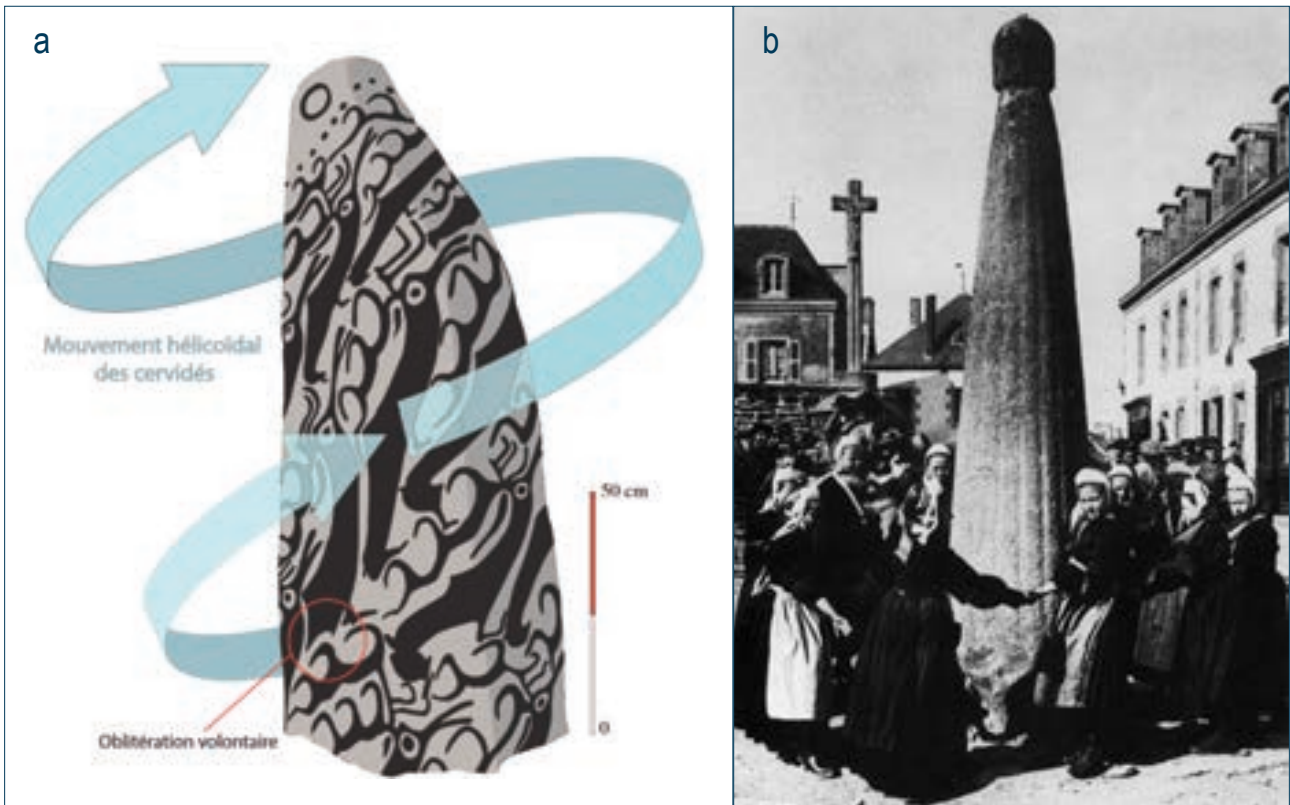


Fig. 14 – The ‘petrified’ surface – in our eyes – of a monolith sometimes becomes animated by the movement conveyed on it by the observer. a. Helical movement of representations on deer stones in the Mongolian plains (After Magail 2008); b. Breton dances around an Iron Age stele in Finistère in France, on a 1900 postcard (After Mohen 1989: 22; Coll. Abbaye de la Source; photo: J.-L. Charmet).

the use of cartographic techniques, or aerial photography, to which Neolithic populations clearly did not have access. What was this curious way of perceiving space that allowed them to materialize a structure that escapes any tangible visualization in the field? For this particular case such questions on the very nature of the architectural project converge with modes of representation of space and time that may, perhaps, have elements in common with those of the diverse human groups who materialized so many geoglyphs on the ground, such as the White Horse during the Iron Age in England.

Attempting to restore at least a small part of the nature of each of these architectural projects is therefore a very perilous undertaking. It proved particularly difficult, for example, to link the extension of oviparous myths along the entire

seafloor of East Asia, as far as India, with the distribution area of the megaliths, in the way this term is generally used for this region of the world (Komoto 2003). Such attempts, at least, draw our attention to the fact that the construction of these megaliths is sometimes also related to the history of religions. In Japan, the use of very large natural blocks, which were placed above the burials of a few deceased individuals, seems to have occurred at about the same time as the emergence of Shintoism on the island, in around the 3rd century AD (Nespoulous 2007). Throughout the world, we cannot ignore the fact that many contemporaneous human groups who built megaliths in the recent past were ‘animistic’, regardless of the diversity of beliefs and practices that this term encompasses (Descola 2005, 2010; Lézy & Chouquer 2006⁽¹⁾). We

(1) Some of these debates curiously refer to those we already pointed out concerning the history of research on megaliths. Lézy & Chouquer (2006), after their reading of Descola (2005), state that: “Better known, the ‘primitive’ remains nevertheless ‘primitive’ in that it has not been able to pose itself on the horizon of western thought, which remains ‘modern’ as plants remain ‘modest’ and animals remain ‘humble.’”

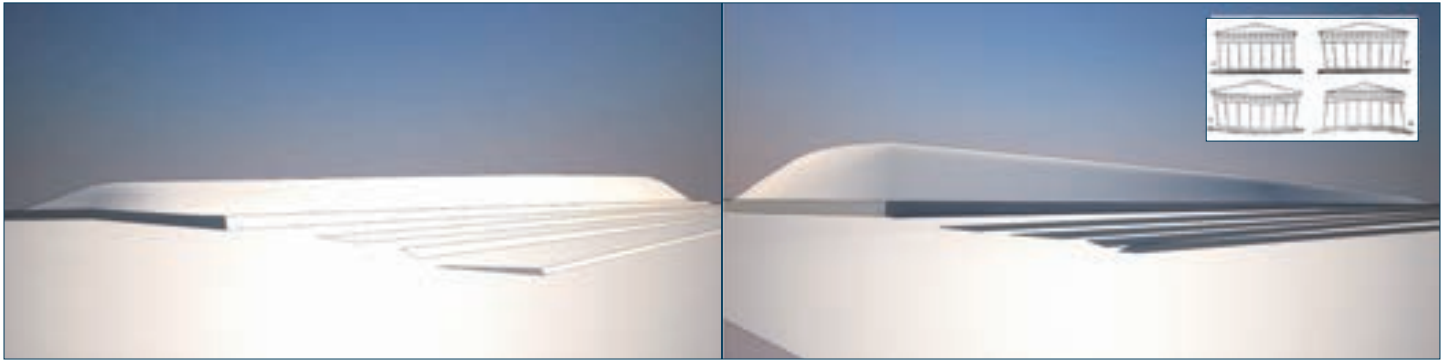


Fig. 15 – Optical correction effects, intrinsic to the architectural design of this Neolithic monument, induce a distortion of space for observers moving around Tumulus C of Péré (Prissé-la-Charrière, Deux-Sèvres, France), following similar principles to those described by Choisy (1899) in his *Histoire de l'architecture* (classique).

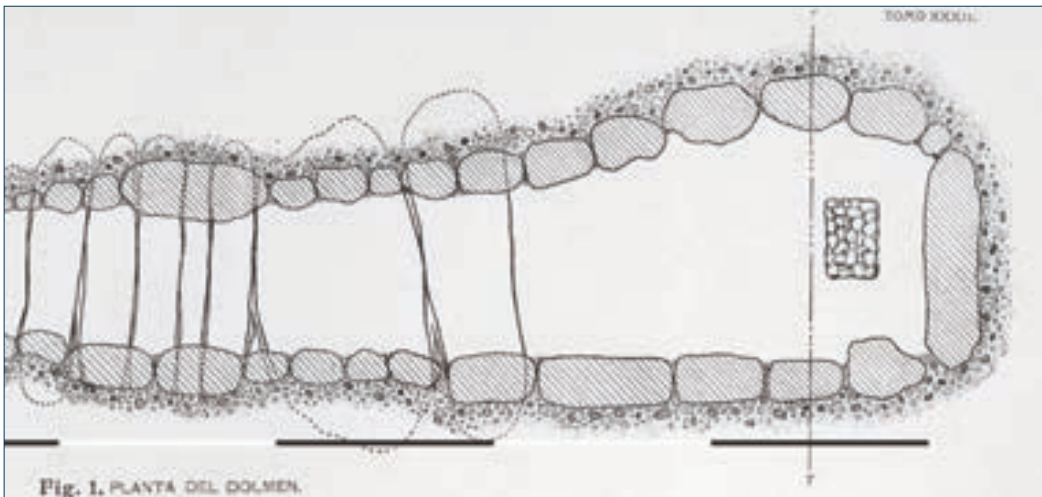


Fig. 16 – Photos published by Obermaier (1924) from the entrance and the back of the megalithic chamber of the Soto dolmen (Huelva, Spain). The vanishing lines of obliquely arranged orthostats in the south wall induce optical effects.

should, however, avoid making such general statements, especially for past populations whose beliefs have disappeared forever.

Other widely emphasized social factors, such as the political organization of the human groups in question, must of course also be considered. However, it seems to us that they must first be evaluated within large regional sequences, as part of historical processes that are, unfortunately, not always well established for peoples without writing, and often described through ethnographic comparisons. To offer just one example, should we systematically interpret as structural elements (of universal value) a few recurring social traits observed among very different contemporaneous peoples who erect megaliths from India and Southeast Asia through Indonesia and the Philippines to the most isolated islands of the Pacific? Such island environments are so often presented as laboratories isolated from the rest of the world and as juxtaposed, instantaneous snapshots, sometimes arbitrarily ordered based on an evolutionary logic of the social body. Is it not likely that some of these large-scale recurrences may also have resulted from quite recent movements of populations – one of the last human explorations of hitherto unknown lands?

Would it not, thus, be somewhat premature to try to compare them with apparently similar traits in terms of the social organization of human groups building megaliths on other continents, also with debatable chronologies (cf. e.g., Joussaume 2018 vs. Gallay 2018, for the case of the Konso in Ethiopia). For the archaeologist confronted solely with the material remains of multiple past moments, it is not so much the form that the megalithic ruins take, but the supposed nature of the architectural project that allows such comparisons. In the absence of oral traditions, it might not have been possible to establish a link between long funerary mounds spiked with standing stone slabs, and the *ahu* laid at the end of a much more recently constructed, wide platform in the Polynesian Marae (Emory 1933; Solsvick & Wallin 2010; Valentin & Molle 2016). The same is true of the wooden statues in Hawaii or the stone figures in Rapa Nui, which overlie Cyclopean type constructions (Fig. 17). We began this article by citing the erroneous reasoning

which, in the history of research, first led to the inclusion of the Easter Island stone giants in a number of studies on megaliths, only to find other examples which are, in our opinion, much more substantiated, and which fully justify consideration, at least on a local and more indirect basis.

6. Conclusions

The study of megaliths came into being in the curiosity cabinet of scholars who often practised a form of comparativism which seems outrageous to us today. It developed in the context of colonial Europe, notably through diffusionist theories with widely questioned foundations. Over the past fifty years, the multiplication of regionalist approaches has highlighted the singular aspects of megalith builders in time and space, for example through their material cultures or their sepulchral practices. However, this carries the risk of seeing only one of these 'collections of butterflies', at the sources of the natural sciences. For several present-day authors, megaliths are only one form of monument among many others, built at different times and almost everywhere on the surface of the Earth. Others see them rather as a field of investigation to corroborate some theory of general anthropology. The disarray present at the end of



Fig. 17 – Another example where monolithic megaliths and statuary are found side by side, in San Agustín (Colombia), albeit in the form of a largely restored structure (Photo: L. Laporte).

a research cycle together with the enthusiasm generated by a burgeoning revival will probably inspire new avenues of study – but these remain to be collectively invented. Through this article we wish only to underline what is so singular about these megaliths, and to illustrate some of the sometimes-overlooked richness of studies carried

out on all continents over the past few decades, or in some cases the past hundred years. What emerges is a plea for a detailed study of these architectures.

Translated from French
by Louise Byrne