



CONSTRUCTING MONUMENTS, PERCEIVING MONUMENTALITY & THE ECONOMICS OF BUILDING

THEORETICAL AND METHODOLOGICAL
APPROACHES TO THE BUILT ENVIRONMENT

edited by

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Constructing monuments, perceiving monumentality: introduction

Ann Brysbaert

1.1 Introduction

In many societies the construction and conspicuous consumption of large monuments are associated with dynamic socio-economic and political processes that these societies underwent and/or instrumentalised. Their construction and maintenance often involves the input of huge amounts of human and material resources. As a result, such monuments form a useful research framework to investigate their associated societies and the underlying processes that generated different levels of construction, varying from household dwellings to these larger-than-needed structures. Monumental constructions may physically remain the same for some time, but certainly not forever.¹ This is often due to the durability of their chosen materials and size, but also because they were made to commemorate and remind, sometimes well beyond their moment of construction.² Therefore, monumentality can be understood as an ‘... ongoing, constantly renegotiated relationship between thing and person, between the monument(s) and the person(s) experiencing the monument’.³ Additionally, the actual meaning that people associate with these may change regularly.⁴ Although these monuments are embedded in their lives, the contexts within which people perceived, assessed, and interacted with them changed over time. These changes of meaning may occur diachronically, geographically, as well as socially. Through social memory practices, places become persistent through time⁵ even when social memory practices change with time;

1 Edensor 2005 and Ingold 2013 describe how buildings can quickly change even their physical appearance and consistency even after the actual construction has been ‘finalised’, if there ever is such a moment. See McFadyen, this volume, for similar arguments on materials still moving after having been placed.

2 Scarre 2011, 9.

3 Osborne 2014, 3.

4 Osborne 2014, 4.

5 Tuan 1977; Löw 2008; Scarre 2011, 10.

this ties in with the passage of time, which can also be seen as the journey humans take through the taskscape of dwelling.⁶ Realising that such shifts may occur forces us to rethink the meaning and the roles that past technologies play in constructing, consuming, and perceiving something monumental. In fact, it is through investigating the processes, the practices of building and crafting, and the conscious site selection for these activities, that allows us to argue convincingly that meaning may already develop while the monument itself is still being created.⁷ As such, meaning-making and -giving may also influence the shaping of the monument in each of its facets: spatially, materially, technologically, socially and diachronically. None of these aspects can be distangled from the other.

Monumentality can be manifested through many different material expressions, in a wide ranges of features, and with the wide multitudes of meanings that these may signal. They come in the forms of temples, palaces, tombs, memorials, military installations, irrigation works, road networks, and many other forms. They do not all emerge from a purely elite-dominated or – sponsored context.⁸ Moreover, the multiple messages encoded in people's interactions with the resources they utilised may express prestige, power (*e.g.* through owning and mobilizing resources), durability and eternity, pride, resistance, boundaries, confusion, conflict, and social stratification with inclusion and exclusion of access. Some of the messages encoded in building or decorating monuments can be made very explicit. A good example to consider is the funerary monument of Heinrich Schliemann made of Pentelic marble, taking up a very prominent place in the First Cemetery at Athens, Greece. The tetrastyle monument is directly influenced by the temple of Nike, the latter built as part of the Periclean building programme of the fifth century B.C.E. on the Athenian Acropolis.⁹ Not only was the intended association with the Nike Temple of interest, but also the sculpted friezes coiling around the base of the temple. These illustrate Schliemann's large-scale excavations undertaken at Troy, Mycenae, and Tiryns, and these friezes illustrate plenty of the fabulous finds which he uncovered in the process of these rather destructive excavations. Such megalomania expressed itself during Schliemann's life as well. This can be seen in the several luxurious decorations and name-giving in his Athenian residence (now the Numismatic Museum of Athens); it was built by one of the most prominent architects of that time in Athens, Ernst Ziller, who also designed his grave. The house, named 'Iliou Melathron'¹⁰ contained rooms named after his son (Agamemnon) and daughter (Andromache). The mosaic floors and painted friezes (in Pompeiian style) in several rooms throughout the house showed off his wealth and the treasures he had uncovered. These likely sparked plenty of conversations with his guests, placing him constantly at the centre of attention.¹¹

Monumentality does not reside purely in oversized and overly decorated features produced from luxurious and exotic materials, but may also be evoked in very different

6 Ingold 1993, 159.

7 See Lefebvre 1991, 80-85.

8 In any case, elites sponsoring and instigating large-scale buildings would not get very far without their builders, labourers, and farmers feeding everyone.

9 Mark 1993; Hurwit 1999.

10 Referring to Troy as Ilium.

11 Korres 1988, 62-64.

ways. The Mona Lisa painting forms a good example of how something that is not impressive in terms of its size greatly outgrew its 'picture frame' by far due to its reputation as the perfect painting of its time (and well beyond).¹² Even better illustrations of this evoked monumentality come from gold and silver coins as well as their depictions. Some of these contain miniature images of rulers (or gods) on the obverse side, linked with often no more than the *pars-pro-toto* of a monumental building on the reverse. This physical connection implied the same monumental character of the ruler who built it and ordered its illustration on his coinage.¹³ The gold and silver likely further emphasized the high degree of wealth associated with 'both sides of the coin' as multiple messages, and may have caused exclusionary usage of the piece itself for certain classes only: in the case of silver coins from Athens, this fact also showed clearly who had access to that silver and how.¹⁴

Similar processes of associations between rulers and the construction of increasingly larger monuments occurred in the more distant past of Greek history as well. The construction of monumental tombs began from approximately the Late Middle Helladic period (1800-1700 B.C.E.) and onwards in the Peloponnese (Greece), specifically in the Argolid, Messenia, and Achaia. Previously, the best known grave types in the Middle Helladic period, specifically in the Argolid, were either simple pit or cist graves, before much larger and richly furnished shaft graves and chamber tombs begin to appear. While both chamber tomb types continued to be produced, the later tholos or beehive tomb was a monumentalisation in stone of the rock-cut and built chamber tombs.¹⁵ Some of the best known examples are located in and around Mycenae. Nine large tholoi were constructed to the west of the citadel of Mycenae, where many more rock-cut and built chamber tomb cemeteries were found. Each grave type, from simple pit and cist, to shaft grave, to rock-cut and built chamber, to the elaborate tholos involved the input of more and more human and material resources.¹⁶

As this 'Architecture of the Dead' gathered momentum around the end of the 14th century B.C.E. and into the 13th, a shift also took place with the 'Architecture of the Living'.¹⁷ The first construction phases of the massive citadels at Mycenae and Tiryns can be dated to the 14th century B.C.E. that fostered a dramatic increase in the number and size of building projects, throughout the 13th century B.C.E. With a total length of over 300 m, the walls encircling the Lower, Middle and Upper Citadel of Tiryns were 7 m thick and likely up to 10 m high. The same went on at Mycenae, while the site of Midea was entirely constructed in the 13th century B.C.E. Similar processes went

12 Brysbaert 2016, 3.

13 For example, the silver tetradrachm coin from Knossos with Zeus (O) and the Knossian labyrinth (R), second to first century B.C.E. (Based at the Alpha Bank Numismatic Collection, Kerkyra): <https://www.ancient.eu/image/3184/>. For a Roman example: silver coin 681, found in the Athenian Agora, in honour of the Divine Augustus (O), depicting a hexastyle temple from Corinth (R): Kroll 1993, 224, pl. 27.

14 The mines at Laureion were operated by wealthy Athenians and the slaves working in the mines were owned by the lessees of the mining rights: Crosby 1950, 204-205.

15 For the best studies on mortuary evidence in MH-LH periods, see the decades-long work by S. Voutsaki, e.g. Voutsaki 1999; Voutsaki *et al.* 2013; the edited volume by Philippa-Touchais *et al.* 2010.

16 See the work done by Fitzsimons 2011. Also illustrated in Voutsaki *et al.*, this volume, in a nuanced and qualitative way.

17 This shift is discussed in Dabney and Wright 1990.

on beyond the Argolid, more specifically in Boeotia (at Gla and Thebes, likely also at Orchomenos), and in western regions of the Peloponnese: Teichos Dymaion (Achaia), Pylos-Iklaina (Messenia), and in Lakonia (Ayios Vasilios).¹⁸ The largest expansion in monumental construction took place in the second half of the 13th century B.C.E., including the construction of massive still-functioning dams (Tiryns),¹⁹ the large-scale draining of the Lake Copais Basin at Gla,²⁰ and several road network constructions.²¹ Especially the last few decades towards 1200 B.C.E. witnessed some spectacular and simultaneous large construction projects.²² Towards 1200/1190 B.C.E., such construction activities ceased to exist and coincided with the slow-down and the cessation of other craft activities, especially those associated specifically with the palatial elites (writing in Linear B, secondary glass production, ivory carving, and eventually also copper alloy working).

1.1.1 *The process of making*

Of importance to the context of this book is the aspect of making, and the role that 'making' (as a series of processes and social practices) has on the (changing) perceptions of the material culture of monumental architecture in the landscape.²³ We all agree that the Palais du Versailles is monumental in every sense of the word.²⁴ The 'end product' (if there is such a thing) is immensely impressive in size and it is a clear example of conspicuous consumption. However, its production and human creativity are made obvious when considering the available technologies and materials. Since steam engines would only arrive c. 1850 C.E., Versailles evokes even greater awe, especially in terms of manpower, organisational logistics,²⁵ and know-how. Equally interesting is the context in which Mycenaean large-scale and long-term building programmes took place from 1400 to 1200/1190 B.C.E. As Maran has convincingly argued, the Mycenaean citadels and other large-scale building works, which were raised in the Argolid only one or two generations earlier, were not perceived by the post-1200 B.C.E. elites in the same way as under the previous palatial elite groups.²⁶ For example, a post-palatial banquet hall (Building T) of monumental scale was built inside the ruined walls of the most important locale of the earlier palatial elites. This Great Megaron was the seat of the former elite rulership at Tiryns during the Palatial Period.²⁷ Such a locale-usurping act could indicate that the new elites undermined the previously held statements of power by showing its failure (the ruin) so very blatantly. These post-palatial elites subsequently did build a relatively large megaron again, by selecting the same locale and rooting it in known ancestral powerful presence. However, this was now expressed

18 See Simpson and Hagel 2006.

19 Balcer 1974.

20 Simpson and Hagel 2006; but most recently E. Kountouri *et al.* 2012.

21 Lavery 1990; Lavery 1995; Jansen 2002; Iakovidis *et al.* 2003; Simpson and Hagel 2006.

22 Maran 2010 for a useful summary, especially relating to Tiryns.

23 See Ingold's 1993 use of taskscapes; see more below.

24 E.g. Duindam 2003.

25 For example, to prepare the land and divert rivers, to scout for and extract materials, to transport them to the building site, and all coordination and planning needed once construction was ongoing to avoid major physical and financial bottlenecks at the building site.

26 Maran 2009; Maran 2012.

27 Maran 2000.

through different technological, material and social strategies. Such strategies aimed to imprint the location and means of power upon people's perception under the post-palatial regime. It is perhaps interesting to note that very similar activities went on in the context of other social groups at approximately the same time, for example, among the artisans and their re-use of former workshops in the same locale, also at Tiryns.²⁸

Scarre argues that past people perceived the landscape surrounding monuments in a very different way than modern people do.²⁹ Perceptions, thus, tend to be rather subjective, contextualised, and culture-specific since they express a personal viewpoint, and are based on experiences and expectations which vary for each individual.³⁰ Even if the actual item is not physically that impressive,³¹ it is people's perception of monuments, and the relationships between large-scale architecture and humans, that create the perceptions of something that is more than the usual,³² something monumental.

Investigating such large-scale building complexes from technical and human investment viewpoints can be adequately approached by means of combining the *multiple chaînes opératoires* of building and employing architectural energetics. The latter is a very useful and diverse method, which translates construction costs into labour time estimates. The method has been tested out in multiple contexts and is currently drawing a lot of renewed attention.³³ Such well-developed field and its associated statistical techniques are indispensable to our efforts to understand the intense relationship between people and their material surroundings while they were building. Osborne's aversion against architectural energetic studies can be understood if and when such studies do not go beyond producing calculations.³⁴ The same criticism can be levelled at scientific analyses: they are costly and, when not conducted in order to answer archaeological questions, they contribute little more than analytical data. However, combining interpretive processes with econometric or architectural energetics and primary field data offers value to studies on monumental architecture and aspects of monumentality. Additionally, it highlights new facets of the inter-relationships between people and materials, and between the processes of building (large-scale) and their surroundings. As such, the purely mathematical dimension of architectural energetics studies receives its deserved place in a socio-political and economic context where these numerical values also become valuable in plenty of different ways.

28 Brysbaert and Veters 2010; Brysbaert 2014.

29 Scarre 2002; also Brysbaert 2015.

30 Brysbaert 2016, 2-3.

31 See the coins examples earlier in this paper; also Osborne's 2014 Guennol Lioness statue.

32 As traditionally described by Trigger 1990; see also Torras Freixas, this volume.

33 Just to name a few: DeLaine 1997; Abrams and Bolland 1999; Pakkanen 2009. Due to the renewed interest in architectural energetics and labour rates in archaeological and ethnographic contexts several research groups are currently working towards setting up online databases with all labour rates collected in their respective research projects. Within the context of SETinSTONE, see also the work done by D. Turner, this volume, and his previous research in this field. The most recent *International Congress of Classical Archaeology* (Bonn-Cologne, May 2018) hosted many sessions that discussed labour rates and their implications in answering archaeological questions concerning economic issues in the Greek and Roman worlds (<http://www.aiac2018.de/>).

34 Osborne 2014.

1.1.2 Meaning and value

The moment something is given a meaning by someone, it receives a place in that person's life and it becomes of value to that person, whether positive or negative. The papers presented in the volume edited by Papadopoulos and Urton discuss 'value' in four somewhat artificial categories: place value, body value, object value, and number value.³⁵ However, if these categories are connected with artisans' 'communities of practice',³⁶ the obvious overlaps between these become clear immediately. Let us, for example, look at how labour is valued. In architectural energetics studies, as SETinSTONE carries out (see below), labour is taken as a measurable form of energy expenditure that is invested in various phases of the *chaînes opératoires*³⁷ of constructing. In this sense, one could say that labour, as a form of energy or calories expenditure, can be measured in clock-time, which then is calibrated to an astronomical standard,³⁸ often called man-days or person-hours. Because of the fact that the cost of labour is based on inferred behaviour, such cost estimates cannot refer to absolute figures only: each task (some of which we may not be aware of) was executed by individuals with skills and even age, gender or physical condition, unknown to us. But, as Abrams and Bolland also state, there was a real cost in person-days in the construction of a building,³⁹ and this is also the case when this building process is broken up into all of its *known* tasks. The emphasis on '*known*' justifies why usually minimal figures are provided in architectural energetics studies.⁴⁰ Most often, not all the materials of a given construction are preserved and not all tasks performed can be recognized, so minimal numbers are the safest and most justifiable way of approaching the issue. When it comes to monumental constructions that are not fully preserved, their current state of preservation will not diminish the outrageous effect of the total, nor the inferred socio-political powers needed to make it happen. As the materials themselves (*e.g.* multi-tonne blocks often brought from some distance away), and construction techniques (*e.g.* 'Cyclopean' walls at Tiryns) do not usually feature in purely domestic contexts, there is no danger that the full effect intended will be missed through minimal figures. This is especially the case if these figures subsequently are interpreted in their wider socio-political and economic context. That should also take the usual and expected human errors, inefficiencies, and restraints into account. Human beings have physical restraints in what they can do in one day (of about eight or ten hours), whether they are free workers or slaves, and some jobs take more time than others. For example, we can compare the work needed to extract and transport rough boulders, versus well-masoned stones of the same size and weight and whose surfaces need to be worked in various ways before they are transported. In this, it seems logical that the second type of work will take more time, perhaps also more workers, depending on how the work force is organised and can free itself from other duties. Any study, thus, involving the investigation of the socio-technical aspects of building, cannot escape the need to take 'time' and 'workforce composition' into account, since these are completely related to each other in more than one obvious

35 Papadopoulos and Urton 2012, 3.

36 As understood by Wenger 1998; Wendrich 2012, 2-5.

37 Against a linear understanding of the *chaîne opératoire* concept, Brysbaert 2011.

38 After Ingold 1993, 158-159.

39 Abrams and Bolland 1999, 265.

40 *Contra* assertions by Voutsaki *et al.*, this volume, 175-176.

way. If the time spent on building in a given community is considered together with the social make-up of the labour force and, then is seen in relation to the other members of the community, one can infer important social information about the structure and complexity of this community. The technical and social aspects merge together by such an operation, and time and place are integral components of such discussions. Especially time can only be provided by results produced by quantitative methods such as architectural energetics.

Another way of looking at the value of labour, however, is through the temporality of the taskscape of which the building can be a part, depending on the context. Taskscape is the entire ensemble of mutual interlocking tasks, such as building while also producing food for family and animals, or conducting rituals. It is an array of related activities which are heterogeneous and qualitative,⁴¹ and actually fit well with the concept of cross-craft interaction.⁴² For example, we want to build an accessible and well-drained road to transport building materials from A to B. Farmers in mountainous landscapes know how to cut terraces in order to extend their subsistence capacity if need be. It seems, therefore, logical to involve them in building a mountain road to facilitate the transportation of building materials since that road may also allow their produce to be moved easier. The same farmers also tend to know a thing or two about leading agrarian working oxen, useful again in these construction works. The temporality of a taskscape is very social because in performing tasks and doing things, people also attend to one another. ‘Bodies, places and things are all active agents in the construction of value...’⁴³ Here we do not ask how much it costs but how it feels to do something at that moment in time. According to Ingold, our passage of time is our journey through the taskscape of dwelling, in which tasks carried out by people take their meaning from their position within an ensemble of tasks, done parallel or in series or both, and usually by many people working together.⁴⁴ Ingold touches here on two very important aspects: that, while doing things, we are also social beings, and that of time and temporality. The value of labour is social (and qualitative), and not only an economic (quantitative) action. When we carry out tasks, we participate actively within the passage of time and experience its passing a fast or slow, depending on how we feel about the task. For example, we can perceive a task to be highly exciting because it is something new, we are curious learners, and it is done in a group so we learn from each other. A task can also be utterly boring because it is repetitive, and while we may be very good at it (since we have done it often enough), it feels that the day never passes.

While considering the temporality of the taskscape, I want to stress, however, how important it is that we do not and *should not* value time over temporality. Both the quantitative and qualitative ways of studying labour *in context* – which *necessarily* includes clock-time and a spatial setting – are complementary to each other. This approach identifies a meaningful and contextualised understanding of what it meant for people (now and in the past) to work hard to get things done while attending

41 Ingold 1993, 159.

42 See above. Term coined by McGovern 1989, but has since then been applied to a wide diversity of archaeological contexts.

43 Papadopoulos and Urton 2012, 3.

44 Ingold 1993, 158-159.

to other daily-life tasks (*e.g.* rearing a family, feeding them, maintaining their home, participating in social and religious activities, exploring their surroundings). Therefore, it is imperative that labour be measured also in terms of real clock-time, and for that purpose, architectural energetics studies are and remain a crucial method. They offer the counterpoint to purely qualitative methods that are not anchored in time, and thus do not seem fully contextualised.⁴⁵

Value ascription, which is what we do when we call or perceive of something as ‘monumental’, may differ according to social groups and may be both inclusive and exclusive. For example, the acquisition of exotic goods charged with high intrinsic and symbolic meaning and value may only be possible for a specific elite class. This class may want to attach beauty, rarity, distance, ritual connotations,⁴⁶ technological virtuosity and labour intensity, or any combination of these factors, as exclusionary value ‘constructors’ to the items they acquire. Yet other factors that may construct an object’s or feature’s value are its age and the trajectory it has ‘travelled’ in time and space (*i.e.* an object’s or feature’s rich biography), before it ends up being valued as a new possession.⁴⁷ These items may also be linked to socio-cosmological ideas and ideals, which, again, might only be shared among that peer group.⁴⁸ As such, the intention of the sponsoring group of any monumental undertaking is crucial in our understanding of people’s perception of that monument; but it is not the only factor since it only indicates what the sponsor intended to get out of this. The success of such endeavours also depends on whether and how that intention has been perceived. There are enough modern and past examples to show that resistance against such intentions could run high and may have eventually resulted in boycotting such large-scale demands on human and other investments. A telling example is the planning, initiation and first phases of clearing the ground and the construction of the ‘People’s House’ in Bucharest, Romania. The name of the complex itself is highly ironic considering that the whole construction was literally planned and executed at cost of many people’s already poor housing and lives.⁴⁹ The entire undertaking was never completed because the Ceausescus were taken prisoners and publically executed well before the building could be in use. The political instability, the long-term and overt abuse of resources by both dictators, and their personal ignorance of their socio-political context, cost them their position and lives as people joined forces to resist and end dictatorial abuse.⁵⁰ This example illustrates that power shifts can occur when multiple forces and social groups no longer accept a top down governing system and do not perceive of a structure such as the ‘People’s House’ at all as it was intended by the persons who commissioned it. At the same time, it may show archaeologists the importance of examining how successful rulers achieved the needed social consensus when they wanted things done.⁵¹

45 Abrams and Bolland 1999, 264-265.

46 After Helms 1993.

47 Cf. Appadurai 1986; Weiner 1985; Weiner 1992; see also the re-settling of the Great Megaron at Tiryns: Maran 2009; Maran 2012.

48 Refocus on building locales and materials employed at Tiryns’s Upper citadel: Brysbaert 2015; Maran 2016.

49 Hanganu-Bresch 2003, 15-16.

50 Hanganu-Bresch 2003, 12.

51 Cf. Wolpert 2004.

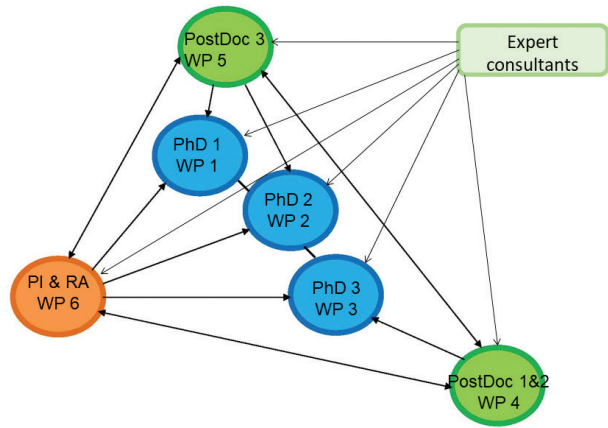


Figure 1.1: SETinSTONE team composition for five years equalling 23.5 person-years of labour input (Graph: A. Brysbaert).

1.2 SETinSTONE

After the introductory excursion on the themes of the book, I wish to zoom in on various aspects of a case study, as part of the SETinSTONE project (hereafter: SETinSTONE). Based at the Faculty of Archaeology, at Leiden University, SETinSTONE aims to assess if and how monumental building activities in Late Bronze Age (LBA) Greece impacted the political and socio-economic structures of the Mycenaean polities in the period between 1600 and 1100 B.C.E. It also investigates how people responded to changes in these structures, especially around c. 1200 B.C.E., with the demise of palatial Mycenaean civilisation. While many other single factors have been or are being studied,⁵² the extent to which long-term and large-scale building programmes in the Argolid may have contributed to socioeconomic and political changes in LBA Greece remains uncharted terrain.⁵³ SETinSTONE aims to readdress this gap in our knowledge. In architectural energetic terms, approximately 24 years of labour will have been invested (Figure 1.1) into SETinSTONE by 2020 in order to contribute, in various ways, to the role of building and resource (ab)use in the events leading up to the demise of c. 1200 B.C.E.

This research applies a relational approach to monumentality, in which both humans and objects (*i.e.* the monuments) find a place in current archaeological interdisciplinary discourses, together with their surroundings. With very specific questions in mind SETinSTONE was ‘constructed’ to study the following:

52 Disqualifying an earthquake as a cause for the 1200/1190 B.C.E. destruction of Tiryns, see Hinzen *et al.* 2018.

53 Many studies have preceded the work of SETinSTONE, including projects studying climatic changes that may have resulted in crises towards 1200 B.C.E., see e.g. the ongoing work by Weiberg and her team on climate issues; Middleton 2010; Middleton 2012 for more comprehensive causes; Jung 2017 on the role of class conflict; general overviews: Bennet 2013; Kramer-Hajos 2016 for Boeotia, and especially Knapp and Manning 2016. None, however, has factored into the equation the long-term and large-scale building activities in the Argolid that took place in an otherwise predominantly agrarian society.

1. What were the minimum input levels of human and material resources in prolonged building efforts in the regions under study, and what happened to these resources?
2. What subsistence and other activities did people undertake in the region and period under study and what resources did they have at their disposal?
3. *If* prolonged building depleted the existing resources towards the LBA Mycenaean ‘collapse’, how did these local phenomena relate to other regions in the Aegean and East Mediterranean lacking such building activities?

The first two questions touch on the socio-economically and politically organised logistics of the Mycenaean polity hierarchy, present in many regions of late MBA-LBA Mycenaean Greece. These logistics demanded and juxtaposed highly concentrated, long-term and large-scale physical efforts of large segments of the population.⁵⁴ Especially monumental efforts in the Argolid and in Attica are highlighted (Figure 1.2): fortifications in Mycenae, Tiryns and Midea, highly impressive tholos tombs, many large chamber tomb cemeteries, a still working dam at Tiryns, and an extensive road network.⁵⁵ All of these projects consisted of a formidable resource investment, to the extent that Shelmerdine wondered whether the scale of these eventually contributed to the ‘collapse’ of Mycenaean the civilisation.⁵⁶ As this paper focuses specifically on the architectural segment of SETinSTONE, additional questions arise:

1. What role does ‘the act of monumental building’ play in constructing the image of the (ideal) ruler, and other social groups?
2. What role(s) did the required resources in prolonged building play? Were they themselves carriers of multiple values in these constructing activities? How can we discern these roles and values?

While large monumental constructions are a logical choice of focus in order to get an understanding of the resources needed and pooled in this region for these specific periods, denying that other and necessary work went on as well is not possible. The most important tasks are the overall late MBA and LBA agricultural and pastoral activities that formed the heavily relied-on subsistence economy of the region; in turn, this heavily relied on the surrounding landscape and its people. People and their animals needed feeding, irrespective of their other activities, and for some, that was their full-time activity: supporting themselves and their household, perhaps making a little surplus to exchange in a day-to-day barter. Available evidence and information on what sustained people in that region during that period, is collected and assessed by SETinSTONE: changes visible over time, especially relating to the wave of massive building, are explained when and if possible. These embedded activities and practices are a very good example of cross-craft interaction and Ingold’s taskscape. Thus, the spread sheet model concept, used by Abrams and Bolland⁵⁷ in the context of archi-

54 Both the active population, i.e. those at work in construction, for example, or in other industries, and the support population: families, farmers, tool makers: see Brysbaert 2013.

55 Wright 1978; Iakovidis 1983; Küpper 1996; Loader 1998; Simpson and Hagel 2006, among others.

56 Shelmerdine 1997, 566. Also De Fidio 2001, 16, n. 12, n. 49; Galaty and Parkinson 2007, esp. 14-15.

57 Abrams and Bolland 1999, 282-284, figure 9.

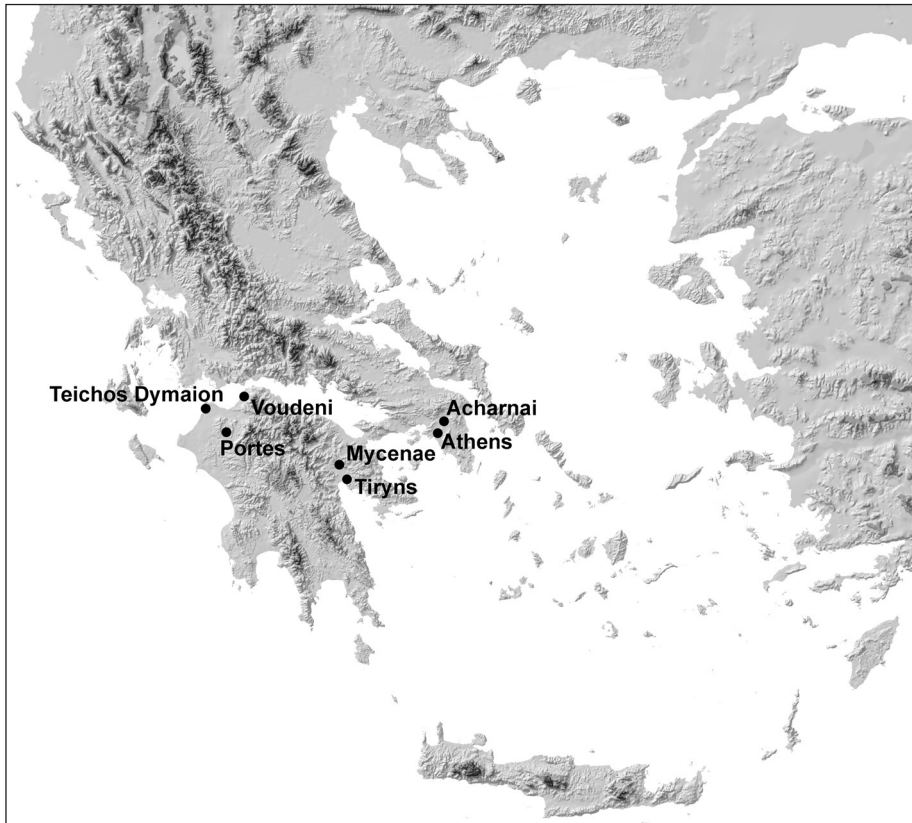


Figure 1.2: Map of Greece indicating the sites on which SETinSTONE is active (Anavasis editions/Hans Birk, adapted by A. Brysbaert).

tectural energetics, can perhaps be expanded here in order to include activities in support of and lateral to the building activities themselves.⁵⁸ Agrarian activities such as crop rearing, animal husbandry, pastoral activities, fishing, crafting (*e.g.* making tools, household dwellings and barns, pottery and other sedentary necessities), all can find a place in such spread sheets or similar workable models. While the spreadsheets tend to have an economic reason for being drawn up, their interpretation provides data to assess the equally needed qualitative values of these embedded labours that formed the backbone of late MBA – LBA Mycenaean societies and polities.

As mentioned earlier, the study of any type of monument, especially giving meaning to the efforts done for these, can only be fully understood when contextualised. This needs to include their surrounding topography and be connected by means of the necessary infrastructure. Questioning how places relate to each other essentially asks about how people move, work and interact with each other in this landscape context. In that sense, stones of megalithic size are not extracted for convenience but

⁵⁸ I see the spreadsheet model as a useful tool to illustrate complex sets of activities and processes that may, in part, be running at the same time, or not, in one or many *chaînes opératoires*. It is, however, the social interpretation of the spreadsheets that become meaningful in the end.

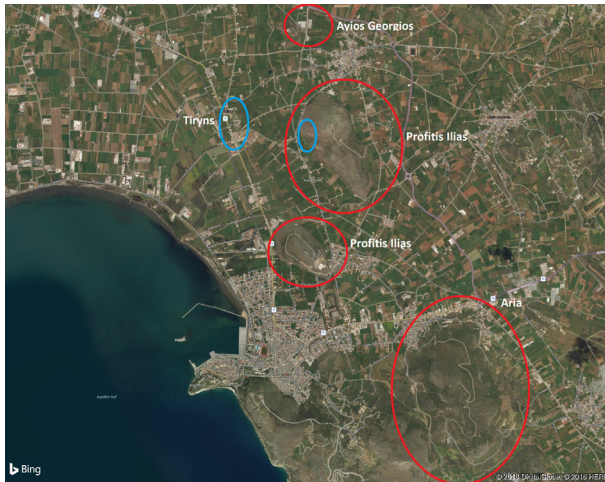


Figure 1.3: Map of the region near Tiryns, indicating (in red) the various red limestone outcrops, the Tiryns citadel (blue large), and the tholos tomb (blue small). (Original image ©2018 Microsoft, satellite view, adapted by A. Brysbaert and I. Vikatou).

for their added value, the latter likely embedded in the landscape from which they were extracted and subsequently in the building in which they were incorporated. Extracting megaliths was purely intentional (by some) and the efforts invested (by others) need to be seen in this context.

A local map (Figure 1.3), indicating quarried areas of several building stones, especially the red limestone near Tiryns, shows several potential extraction spots, none of which have been securely dated by excavations. They indicate the extraction spots mentioned by Varti-Matarangas *et al.* (*i.e.* from the hill of Profitis Ilias and the hill near Profitis Ilias),⁵⁹ but it is unclear which Profitis Ilias hill was meant. Additionally, this red limestone of varying quality seems to crop out in several other locations south, east, and north of Tiryns too; especially noteworthy are the outcrops of Aria, and Ayios Georgios, north of Tiryns. All these outcrops fall within a radius of 1-2 km from the citadel of Tiryns and, therefore, all could be possible quarry candidates. It was, however, recent fieldwork at the Tiryns tholos tomb, dating to the 15th century B.C.E., that suggested a more definitive picture.⁶⁰ Earlier observations made clear that if the red limestone extraction place is located at the large Profitis Ilias hill, it sat just above and around the Tiryns Tholos tomb (Figure 1.4a).

Additionally, a strong level of intervisibility was noted between this tomb and the Tiryns citadel at least from the moment the citadel was being constructed, if not well before that. We should not forget that earlier (monumental) structures dominated the Tiryns citadel outcrop too, for example, the Early Helladic II Rundbau and its

59 Varti-Matarangas *et al.* 2002, 478-481: esp. lithofacies D and E, and referring to several hills including Aria, the hill of Profitis Ilias and the hill adjacent to the latter.

60 There are two tholoi in Tiryns close together and may both date roughly to the same time, see Papadimitriou 2001, 70. The second one has not been published and will, therefore, not be discussed any further. We thank the Eforate of Antiquities of the Argolid for permission to document the Tiryns Tholos, work that was carried out in the spring of 2018, and will be published elsewhere.



Figure 1.4a: The well-preserved Tholos tomb of Tiryns set in the foot of the large Profitis Ilias hill (Photograph: I. Vikatou).



Figure 1.4b: the red limestone employed in the lower courses of the left stomion side (Photograph: A. Brysbaert).

subsequent Tumulus atop the Tiryns outcrop.⁶¹ Maran also ties in to this locale the predecessor of the Great Megaron in Tiryns (former related to Late Helladic III A1/III A2).⁶² The date of this predecessor must be about 100 years after the Tiryns tholos, while the far less impressive Maison du Chef likely dated to the LH I phase. The potentially more monumental remains of the predecessor of the first Megaron, containing painted plaster remains and spreading over two terraces with connecting stairs, dated to LH IIB,⁶³ thus closer in time to the Tiryns tholos. Their location on the outcrop may have provided another intervisible link between the two locales at that time.

But why the emphasis on this intervisibility? In earlier work I expressed the strong possibility that the use and choices of several types of stones at Tiryns were consciously made and went well beyond their pure functionality.⁶⁴ Its conglomerate use, beautifully

61 On the Rundbau: Müller 1930, 86-87. It was destroyed c. 2200 B.C.E. around the same time as the Corridor House at Lerna, just across the bay and visible from the Tiryns outcrop; Maran 2016, 160. A tumulus was built over the Rundbau (in late EH II-EH III and likely still clearly recognisable until at least the Shaft Grave period) and protected the Rundbau structure from immediate decay; Maran 2016, 153, 165-166, 169 who also suggests that the Tiryns Tumulus may have been visible still at the time when the first Megara were constructed. According to him, the Rundbau too was meant to be seen and impress, even from across the Nauplion bay; Maran 2016, 160.

62 Maran 2001, 23.

63 Maran 2001, 24-28.

64 Brysbaert 2015.

illustrated and discussed by Maran,⁶⁵ had already been explained well before, but it provoked me to look at the other stones too, especially in conjunction with the geological paper by Varti-Matarangas *et al.*⁶⁶ It became quickly clear that the red limestone was not of the best quality and yet, it was incorporated, in different phases of the Tiryns citadel walls complex, in large quantities and block size. Its quarries, recognised but unclearly described by the geologists, were all within an easy 1-2 km reach, with the large hill of Profitis Ilias as the geologists' favourite. I am convinced that this can now also be substantiated (but not to the exclusion of other quarry locations of this stone), because of the meaning of this stone, its usage history and locations, and its potential references to its ancestral ownership.

Located on the rocky outcrop of the Tiryns citadel was a clear vertical axis, representing various time scales. This axis was present both materially through its building stones but also symbolically through the reuse of the same location over time, as has already been established.⁶⁷ Not only was the Tiryns citadel outcrop a good vantage point in the entire region – visible overland *and* from the sea⁶⁸ – the rock itself was and remained an important and connected locale. Building on the same spot was no coincidence and done intentionally. It was spatially and temporally connected to a heroic past, and its associated ancestral claim to rulership was made obvious through that material vertical axis and associated social memory practices.⁶⁹ Especially the red limestone fulfils a very useful practical and symbolic function in emphasizing the temporal axis.⁷⁰ But, can the same be said for the use of the conglomerate material which came from near Mycenae, about 15-18 km away?⁷¹ Conglomerate stones at Tiryns with visible working traces on them⁷² do not, in my view, represent a vertical material and symbolic axis of communication and social memory, as the red stone does. Instead, it constructs a spatially horizontal one, a link to Mycenae's presence in the near distance, and to its overlordship which needed to be recognised⁷³ and respected. It does not refer to the depths of the outcrop and its associated past: because it does not have to, and it cannot. Mycenae's domination was a much more recent fact, and was likely associated with the remodelling of the Megara atop the citadel since the 14th century B.C.E. I argued in 2015 that this domination may have even been silently contested by Tirynthians through their well-chosen and intended red stone usage therein. And how to express allegiance to the *real* ruler of Tiryns better than through the same play of stones? I argue here that yet another axis may be recognised, one that can be both spatially and temporally horizontal *and* vertical: its material presence and its symbolic meaning and value. This axis can be recognised in the much earlier usage of the red limestone at the 15th century B.C.E. Tholos tomb at Tiryns (Figure 1.4b). Constructed more or less at the foot of the large Profitis Ilias hill (Figure 1.4a), easy access to this red limestone for the tomb builders and its sponsor was clear. The person buried

65 Maran 2006, 81-83, plate 12.

66 Varti-Matarangas *et al.* 2002.

67 Esp. Maran 2006; Maran 2016; Brysbaert 2015.

68 Maran 2010, 724.

69 Tuan 1977.

70 Brysbaert 2015.

71 See Maran 2006, plate 12 and Brysbaert 2015, figure 8, table 3.

72 Especially markings of the so-called pendulum saw, see now Blackwell 2018.

73 See the exact same dimensions, to the cm, of the megaliths employed at the Great Gate at Tiryns and the Lion Gate at Mycenae, with only the lock difference, befitting of two different 'houses'.

there was certainly of elite descent considering the size and construction of the tomb, one of the earliest of this type in the region. A conglomerate lintel was not employed here yet,⁷⁴ and Mycenae did not have similar ties perhaps to Tiryns at this earlier stage. Very likely, the person buried at Tiryns also possessed the land in which he was buried so he must have possessed the red limestone outcrop too and used it for his tomb.⁷⁵ Is it then too far-fetched that, when the 14-13th century B.C.E. citadel wall builders employed the red limestone, they likely went back to where it was used originally, to get some more? And as they did so, their actions justified the then ruling elites *own* status as rulers, by employing stones owned by Tiryns' ancestral ruler or ruling family, who was buried in this very outcrop. The four pillar bases in the Central Court of the Great Megaron at Tiryns, then, take on a specific meaning in reflecting who was still considered the truly recognised ruler of Tiryns. Yet, they were covered in plaster to avoid any troubles with contemporary powerful neighbours, such as Mycenae. As such, one could argue that the people of Tiryns used the stones to connect to the land over long periods of time, and to show where they belonged, whom they felt allegiance to, and how they wanted to be remembered. The landforms themselves certainly played a role in this connecting as well, and people likely connected to the landscape in many more ways than seeing it just as a place from which to extract resources, which is how we tend to see our surroundings nowadays.⁷⁶

Through various axes of communication and access, the Tirynthians may have accepted overtly its place in the local hierarchy with Mycenae as the main power in the Argolid. Covertly it remained its own boss, backed by its strong past location of the Rundbau and Tumulus,⁷⁷ and through the possessions of their powerful ancestral rulers. These were materially embedded at the heart of the structures of the living, the hearth of the Great Megaron on the Upper Citadel. The Mycenaean, thus, did not only shift their focus from an 'architecture of the dead' to that of the living,⁷⁸ Just as the ancestors of Grave Circle A at Mycenae were incorporated by the 13th century B.C.E. fortification wall into the citadel's power circumference, so did Tiryns enclose its ancestral powers within its Citadel, and as close by as the Great Megaron itself. Another nod to its ancestral power was how the builders played with their materials, although we will never know whether they did so upon command, or by themselves. Either way, identity building and aspects of belonging to that land were clearly expressed through the stones. The entrance to the western staircase has been illustrated already⁷⁹ and recently also the so-called corbelled shrine entrance, just inside the Main Entrance and north of the Great Gate, was recognised to have exactly the same stone colour decoration too (Figure 1.5). Both entrances also face east and were part of the last large remodelling phase of the citadel walls. These decorative effects must have caught the

74 In contrast to the contemporary tholoi near Mycenae.

75 See for a similar argument for the chamber tombs and landholdings at Mycenae: Shelton 2003, 35.

76 Cf. Scarre 2011, 11-13.

77 Maran 2016, 168-169 does not see a direct architectural marking of the EH Rundbau in the 14-13th century B.C.E. Mycenaean Palatial citadel constructions while, to me, it is obvious through the very specifically chosen use of stone, see Brysbaert 2015. While new traditions of social memory may have been created, according to Maran 2016, 168-169, they do not exclude earlier ones but actually tie in with these, a fact he does recognise for the next period connection to Building T.

78 As mentioned earlier in this paper and emphasized by Dabney and Wright 1990; see also Fitzsimons 2011.

79 Brysbaert 2015, 83, figure 9.

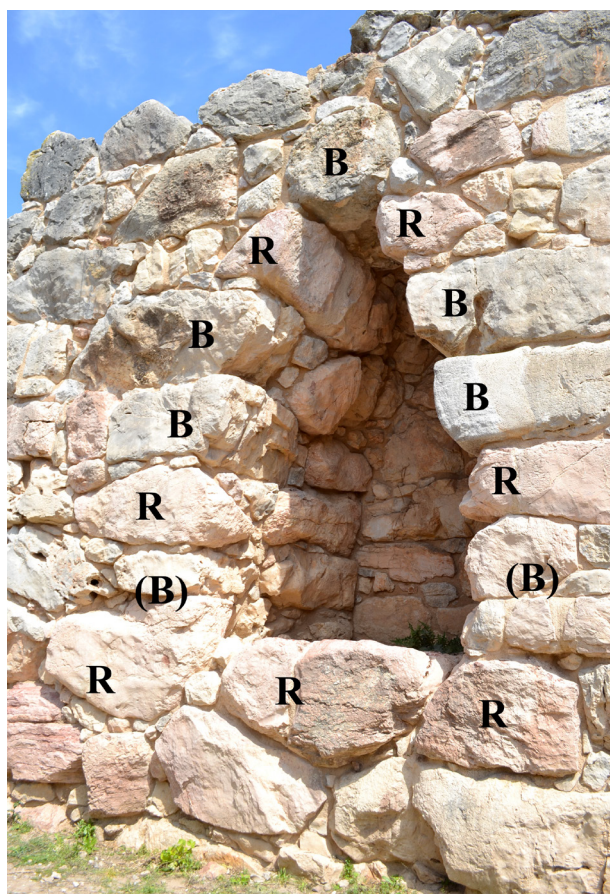


Figure 1.5: Decorative coloured stone arrangement at the Tiryns citadel shrine, just inside the Main Entrance and north of the Great Gate (See Papadimitriou 2001, 27, figure 19 (small niche east of nbr 50 on figure 19)) (Photograph: A. Brysbaert).

eyes of new visitors, and since at least two places with stone colour-play have now been recognised, this leaves the argument of ‘pure coincidence’ well out of the picture and assigns initiative to the builders themselves.

Building and remodelling the Tiryns citadel and its constituent parts over several centuries involved the incorporation of different stones. These drew in, materially and symbolically, the different parts of the ruler’s political realm and its people, through them being builders or/and being inhabitants of the land which provided its required food supplies. As such, building at this scale may have either cemented the existing relationships with the local lords on which they could rely to supply work forces,⁸⁰ or it may have consolidated their strong bonds with their ancestral rulership and past, or both. Using local stones rather than stones from Mycenae also likely consolidated not just their alliance to Mycenae, but also their own social identities. The latter involved the interaction between ruling families *and* builders and with each other, possibly through yearly feasts to renew alliances,⁸¹ through employing local human and stone resources, and possibly their animals too. A complex

80 As expressed in Brysbaert 2015.

81 Wright 2004; see also archaeologist’s habits of organising a ‘glenti’ at the end of an excavation season for all parties as a way to thank everyone’s efforts and to forge next year’s renewed potential for such efforts together.

web of alliances and social group interactions at play at LBA Tiryns became materialised through the stones, which were collected and worked by those that belonged to the land from which the stones originated too. Thus, researching the construction of monuments and how monumentality may have been perceived ultimately builds a much richer image of people's taskscapes. The papers in this volume illustrate this as richly as one can interpret the taskscape itself.

1.3 The construction labour of this book

This book is the fruit of labour investment that spans about two years. It is the result of the first SETinSTONE workshop (9-10 December 2016)⁸² and, after discussions between some of the participants of the workshop, the idea formed to bring more people together with common interests in these themes. The EAA session in Maastricht (2-5 September 2017)⁸³ brought together papers on several Mediterranean and other regions together, showing how widespread this strand of research extends. The recently held 19th AIAC 2018 conference at Bonn-Cologne (21-27 May 2018) proves this point amply. Finally, I also would like to draw attention to a volume which is about to appear⁸⁴ but to which I had no access prior to writing this introduction. I would imagine from its title that its papers will be very complementary indeed with the ones in the present volume. Architectural energetics and labour cost studies, and the archaeology of ancient economies (of building) certainly are back in fashion. Whether this is a good trend remains to be seen, because it would be all too easy⁸⁵ to produce databases and clouds full of labour ratios and costs linked to materials. The essential question remains: what do we want to achieve with the labour of collecting these data? Does it serve a larger goal? One would hope so, considering it also did in the past, as many of the papers in this volume illustrate well.

For convenience's sake, the papers in this volume have been grouped under three subtitles even though most papers fall under more than one. The volume varies widely in regional and chronological focus and forms a useful manual to studying both the acts of building and the constructions themselves across cultural contexts. A range of theoretical and practical methods are discussed, and several papers illustrate that these are applicable to both small or large architectural expressions, making these useful for scholars investigating urban, architectural, landscape and human and other resources in archaeological and historical contexts. The ultimate goal of this book is to place architectural studies, in which people's interactions with each other and material resources are the key, at the intersection of and embedded in both landscape studies and material culture studies, where it belongs.

After this introduction, Chris Scarre's paper on *Mounds and monumentality in Neolithic Europe* illustrates how widespread and diverse in form and size these features

82 Full programme: http://setinstone.eu/wp-content/uploads/2016/11/SETinSTONE_workshop_I_program.pdf

83 Session 272: Construction economies of the past. New approaches to their societal, political and long-term impact. Comparing archaeology across regions and periods, organized by A. Brysbaert and A. Gutierrez Garcia-M.

84 McCurdy and Abrams, in press.

85 As J. Osborne 2014 already alluded to, but plenty of papers, even in this volume, contradict these fears.

are in the archaeological record of many places, depending on their cultural settings. By their very nature, mounds can fulfill a variety of objectives: they impress and commemorate but they can also serve to cover things, such as the remains of the dead. In forming an act of closure, they may protect the living from the powerful and dangerous things that are buried with the deceased and also mark the end of active mortuary deposition. Mounds do not only cover, but also raise; their elevation can be both practical and symbolic. Mounds can thus provide a platform for special rituals. In focusing especially on the prehistoric burial mounds of western Europe, Scarre's paper explores the symbolism of the mound, the visibility of the mound within its broader landscape, and the materials and processes involved in their construction.

In her paper, Kalliopi Efkleidou discusses issues relating to the experience of Mycenaean monumental architecture which have, so far not been widely or extensively discussed when compared to building techniques per se, and how monumentality relates to status-building. Through examples drawn from the Late Bronze Age sites of Mycenae and Tiryns in Greece, she focuses on the mechanisms through which architecture can relate and communicate specific views on the existing, the imagined, or the desired social order. In exploring their design, construction, and aspects of people's experiential engagement with these monuments, she demonstrates that architecture was strategically used as a medium for socio-political display and the negotiation of group identities. But this was not only for the elites themselves. Efkleidou, in fact, illustrates how the architecture's permanent character allowed it to function as a long-term and perpetual medium for the members of all communities to display, affirm, and negotiate their place in the existing social order, something that resonates very well with the active role of artisans seen in building at Tiryns, for example.

Lesley McFadyen's paper focuses on the Neolithic unchambered long barrows in south Britain. She postulates that materials and forms shift through time, that they are immanent in unfolding practices, and that the materials themselves allowed for specific kinds of shape shifting. As such, it is the form that follows from materials rather than vice versa. In studying architecture that one cannot re-enter, she investigates how the form emerges through the process of construction, and the effects of that practice on those participating in the building activities. She encourages us, archaeologists, to consider the kinds of body dynamics and politics involved in a more dependent building practice, what she calls an 'unequal architecture'. These practices were of short duration, the architecture was physically inaccessible and it lacked a stable form. The combination of these characteristics meant that inequality could not be repeatedly played out through an engagement with an architectural object. Through these observations, McFadyen asks how one should understand social relationships negotiated on such inner terms?

Of the papers with practical methodological approaches to studying architecture, Yannick Boswinkel investigates the usefulness of surveying sites for architecture where stretches of walls are below two meters or where the majority of the remains comprise individual building blocks out of context. This approach is in contrast to the traditional way of surveying the ruinous architecture of monumental structures, or nearly complete buildings. A team of the *'Ancient Cities of Boeotia Project'* has been documenting the architectural remains from Hyettos, Haliartos, and Koroneia, where a large variety of architectural remains were found. Some of these formed just a heap

of rubble, but occasionally monumental *in situ* structures or foundations were also encountered. Most of the documented Koroneia material consisted of generic material in the form of both roughly hewn and well-dressed stone blocks. Boswinkel's research focused on trying to identify the specific structures or specific zones of the city from which these blocks derived, in order to understand to what degree his highly detailed approach could aid in identifying structures of potentially monumental size. His paper shows the usefulness of such a survey and a detailed approach for this kind of material, since it helps to determine whether monumental structures can be recognized in its individual pieces, or only by the sum of its parts.

Jari Pakkanen presents a wide range of practical applications of several 3D techniques currently employed and the millimetre-precise recording of architectural remains, both on land and under water. As the developer of the use of intense reflectorless total station drawing method, he shows how, over time, one can move away from stone-by-stone documentation of the entire monument, to a much faster combined method whereby the minor loss of precision outweighs by far the speed reached by 3D photogrammetry. For large complexes, drone photography can shorten the time needed in the field. Full 3D documentation of existing features allows for more precise reconstructions and subsequent analyses of the architecture. Moreover, these techniques are very time- and cost-effective. Previously inexperienced students can be trained through short field courses to a professional standard, making the methods and their employment well within the reach of most project's budgets. The examples given, Kyllene harbour, Pleuron reservoir, and Naxos shipsheds (Sicily), are complex case studies. Nevertheless, his years of practical field experience demonstrate the flexibility in approaching the issue, all through successfully documented case-studies.

Elisavet Sioumpara's paper presents an overview of the Mycenaean Acropolis remains, some of the least known on the Rock in the heart of Athens. She outlines what has been preserved and in revealing these fragments in detail, she explains the equally complex excavation and research history of these remains. This is especially valuable, since the focus of most Acropolis research sits squarely with the better known and more visible Periclean building programme of the fifth century B.C.E. However, since Archaic and later builders took the Mycenaean remains into account during their building activities, the importance of the earlier remains are clear. Although the PhD by S. Iakovidis provided the major documentation of the Athenian Acropolis Mycenaean remains, 3D scanning has also been carried out. Yet, the Mycenaean remains were never the focus of further study. As part of the SETinSTONE project, the combined method of reflectorless total station with 3D photogrammetry is described in detail to show how the methods are useful, not only for the labour cost studies for SETinSTONE, but also for future studies on the Rock.

The paper by Sofia Voutsaki, Youp van den Beld and Yannick de Raaff aims to reconstruct the labour input in the tombs from the cemetery of Ayios Vasilios in southern Greece. On the bases of these analyses, they reconstruct changing social and kin relations in the Early Mycenaean period (1700-1450 B.C.E.) there. They argue that the initiation of building projects is an important component in the transformation of reciprocal, segmentary, kin-based social networks into asymmetrical, centralized and competitive political entities. Starting with a healthy critique on specific aspects of architectural energetics methods, they suggest and apply a more qualitative method

to several of the graves of the Ayios Vasilios cemetery. Their method accounts for the division of labour and the circulation of resources that undergo radical change in this period and are expressed in these mortuary practices. The tombs show substantial labour input used for the quarrying, transporting and rough working of different types of stone. In studying variation in the size and construction of the tombs and their associated labour input, they aim to understand better the social strategies of distinction or conformity, exclusion or inclusion. It is generally accepted that changes in grave types are part and parcel of the transformation of the mainland societies, with the emergence of social asymmetries and political hierarchies.

Daniel Turner's paper focuses on preindustrial logistics of construction and the potential for a comparative method. The former relies on accurate measurements of the construction and defendable rates at which the work likely proceeded. Selecting rates from previous studies, such as ethnographic reports, historical sources, or experimental replication, whether within the same region and time period or not, is often obstructed by their scattered occurrence within the literature. If present, these figures are often secondarily cited, and left hardly commented on or unexplained. Turner asserts that future labour studies would benefit from a quick-reference guide of task rates in order to avoid perpetuating this weakness. He sets this in motion by developing such a reference for manual earthmoving. Task rates are combined with the dimensions of a built feature, and the volume of earth is considered from material procurement, transportation, construction, and elaboration characteristics, and includes variables for region, technology, and source. Prehistoric rates cannot be easily recovered, but in employing convincing ranges in manual labour efficiency, predictions remain possible when based on analogous rates from experimental archaeology, ethnography, and history. Turner illustrates this through case studies from the UK, USA, and Ireland. Key in comparative work is the question of acceptable labour ranges based on the used tools and materials, and he states the need to carry out such work for stone, wood and other materials, as well as for transport means and construction techniques.

Maria Torras Freixa's paper on the ancient city of Teotihuacan (0-650 C.E.), re-evaluates the context in which the city achieved its monumentality and the political and socio-economical processes that triggered the large-scale building projects. The city's centre was dominated by three monumental temple pyramids: the Moon Pyramid, the Sun Pyramid and the Ciudadela with the Feathered Serpent Pyramid. Until recently, these were considered to belong to the earliest building stages (0-200 C.E.). However, only the Moon pyramid was started that early and was very modest in size, while all three became monumental in a very short period, between 200-250 C.E., which implied a huge contemporary labour input. In employing building sequences, size, techniques, materials, decoration, orientation of the pyramids, their location within the settlement, and their dedication caches, Torras Freixa shows the existence of an urban master plan initiated in the Tzacualli phase (0-150 C.E.). This plan was reconfigured in the Miccaotli phase (150-200 C.E.), and monumentalized in the Early Tlamimilolpa phase (200-250 C.E.). The changes in orientation and the introduction of human sacrifice show an increase in authority coupled with the emergence of new symbolic discourses. In that sense, rethinking monumentality in Teotihuacan is a first step to understand political and socio-economic issues in the city's configuration.

Janet DeLaine's paper investigates the role of economic factors in the exercise of choice in Roman construction at Ostia in the Roman heartland, where construction often involved materials from further afield and complex technologies. Like for Rome itself, Ostia seemed to have been built up mostly of permanent materials and on a grand scale. Through employing architectural energetics, she assesses the levels of counter-economic choices made at Ostia as deliberate expressions of conspicuous consumption, and the power to command workforces to execute such work. Her case studies (the Mausoleum of Cartilius Poplicola; the Horrea in via degli Aurighi), and three peristyle colonnades of different types (the Horrea of Hortensius, the palaestra of the Baths of Neptune, and the *porticus post scaenam* of the theatre), all focus on the differential use of materials and construction techniques. Through these analyses, DeLaine considers several cost-affecting factors. The results regarding the transport for local materials, labour for the production of construction elements, and their putting in place are combined in the latter two examples together with the requirements for special equipment (*e.g.* lifting machines). Her conclusions highlight the tension between strategies for minimising construction expenses and the requirements of the patron's self-presentation.

Moving to the provinces, Anna Gutiérrez Garcia-M. and Maria Serena Vinci discuss the dual nature of the Roman town of Tarraco (Tarragona, Spain): as colony and capital of the largest Roman province in the western Mediterranean. In the Early Imperial Age, Tarraco experienced intense building activities that radically modified its architecture and urban layout. From the Augustan period, the landscape of the town was modelled to a degree of monumentality commensurate with its political status. Two public areas developed: one as the centre of the Republican and Augustan colony, and one where the architectural complex of the Provincial Forum was erected. The large temple presiding over the latter became the symbol of sacredness of the imperial power and a means for the political representation of the local elites. These two areas are ideal case-studies for the dynamics that revolve around the setting up of large-scale building programmes and the complex economic construction system. By looking into the abundant archaeological record (architectural remains, the El Mèdol quarry, remarkable quarry marks on blocks), the authors aim to better understand the organisation of the building industry. They identify the impact that it had on the overall economy of the town while contextualizing it within its geographical and socio-political environment.

Cathalin Recko's paper illustrates methods for measuring and calculating the required materials used in the Temple of Isis (Pompeii, Italy). A detailed presentation of the operational chain of brickwork is presented in this paper. While contributing to research on labour as an indicator for the economic value of ancient construction, Recko's paper also focuses on the potential of comparing this data in different settings. Estimating labour costs based on pre-industrial sources led to approaches to quantifying and valuating ancient construction. However, the underlying mathematical principles of calculating form, size, and the amount of materials on which to base architectural comparisons for buildings with different functions, are limited. Recko presents different options and levels of precision in the mathematical methods, keeping in mind different perspectives and research questions. Questioning which public building or building type would require the most labour, skill, and time has the

strongest potential to give valuable insights into a city's building economy. As such, she aptly illustrates what the Temple of Isis can tell us about the Pompeian brick industry in context. Economic factors, the design itself, together with the ideological and the socio-cultural background of the builder and the city itself all influenced the choices of building materials.

Finally, Jacopo Bonetto and Catharina Previato's paper reconsiders the city walls of the Latin colony of Aquileia, Italy. As one of the best preserved architectural complexes, dating to the earliest phase of the colony founded by the Romans, the city soon became the most important and the richest of Northern Italy. The defensive walls, provided with gates and towers and almost entirely made of fired bricks, were 3 kilometres long and encircled 40 hectares. Through data collected during recent archaeological excavations and by experimental analyses, the authors analysed the different steps of the construction processes of these city walls. In quantifying the amount of building materials employed, the time and the means of their supply and production, the number of workers involved, and the time required by the building activities, their aim is to define the socio-economic impact of the construction processes. Subsequently, they analyse these results in view of the historical context in which these activities took place, during the Roman conquest of Northern Italy. Additionally, they also test the overall strengths and weaknesses of quantitative analyses on ancient buildings.

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CONSTRUCTING MONUMENTS, PERCEIVING MONUMENTALITY & THE ECONOMICS OF BUILDING

In many societies monuments are associated with dynamic socio-economic and political processes that these societies underwent and/or instrumentalised. Due to the often large human and other resources input involved in their construction and maintenance, such constructions form an useful research target in order to investigate both their associated societies as well as the underlying processes that generated differential construction levels. Monumental constructions may physically remain the same for some time but certainly not forever. The actual meaning, too, that people associate with these may change regularly due to changing contexts in which people perceived, assessed, and interacted with such constructions.

These changes of meaning may occur diachronically, geographically but also socially. Realising that such shifts may occur forces us to rethink the meaning and the roles that past technologies may play in constructing, consuming and perceiving something monumental. In fact, it is through investigating the processes, the practices of building and crafting, and selecting the specific locales in which these activities took place, that

we can argue convincingly that meaning may already become formulated while the form itself is still being created. As such, meaning-making and -giving may also influence the shaping of the monument in each of its facets: spatially, materially, technologically, socially and diachronically.

The volume varies widely in regional and chronological focus and forms a useful manual to studying both the acts of building and the constructions themselves across cultural contexts. A range of theoretical and practical methods are discussed, and papers illustrate that these are applicable to both small or large architectural expressions, making it useful for scholars investigating urban, architectural, landscape and human resources in archaeological and historical contexts. The ultimate goal of this book is to place architectural studies, in which people's interactions with each other and material resources are key, at the crossing of both landscape studies and material culture studies, where it belongs.

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