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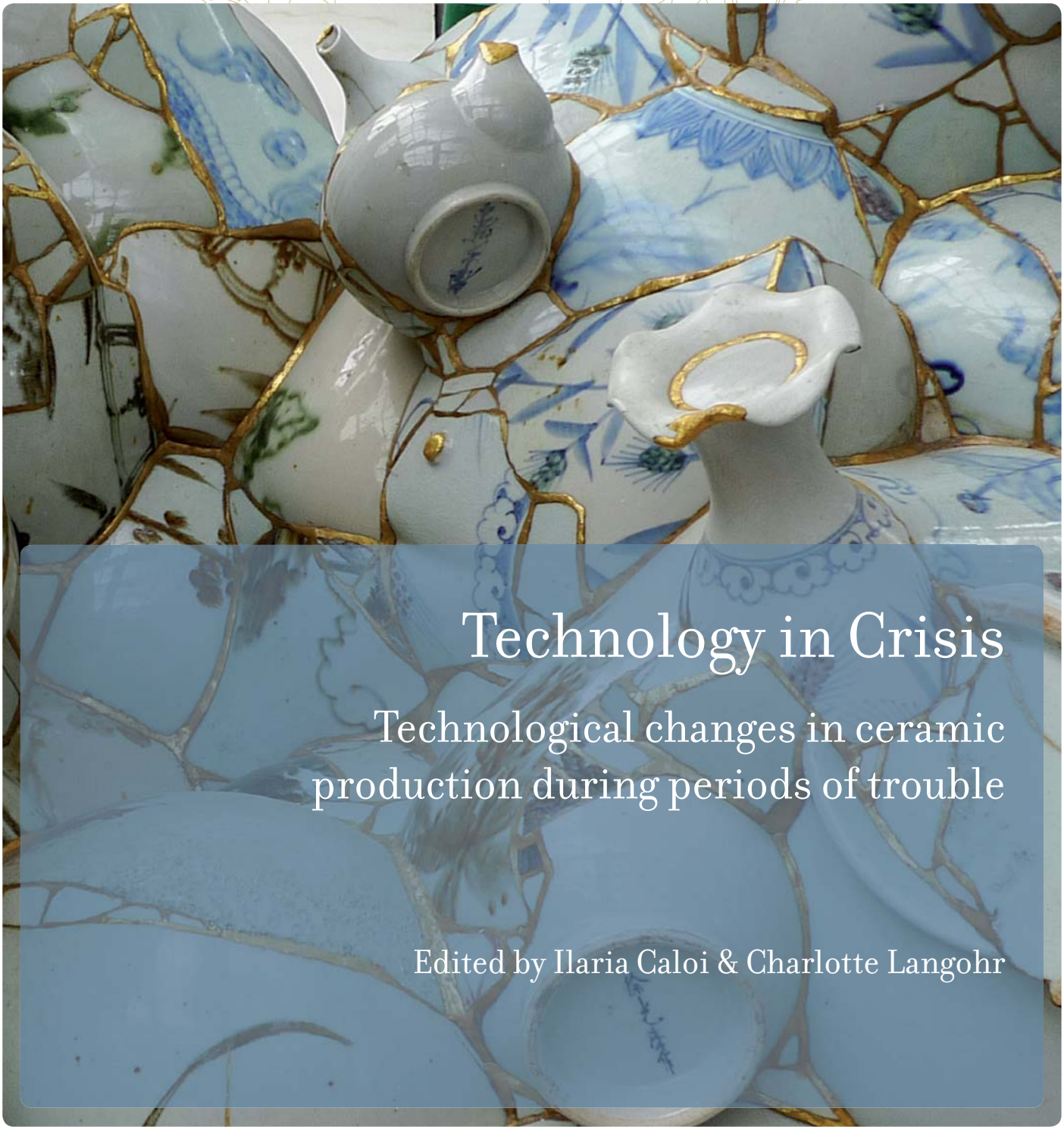

Technology in Crisis

Technological changes in ceramic production during periods of trouble

Edited by Ilaria Caloi & Charlotte Langohr

PUL PRESSES UNIVERSITAIRES DE LOUVAIN

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1. General introduction

Pottery technology is a social product through which it is possible to explore cultural choices (Lemonnier 1993). Technological choices are the outcome of socially understood ways of proceeding (Gosselain 2000; Gosselain & Livingstone Smith 2005). Recent studies have highlighted that **technological change** may result from people who intentionally and persistently choose a new pattern and who desire to achieve specific social goals (Arnold *et alii* 2008). For example, in contemporary multi-ethnic Niger, potters "[…] exploit techniques in order to position themselves socially or economically, and occasionally, build new identities […]" (Gosselain 2008: 78).

In the specific framework of archaeological studies on the **Mediterranean Bronze Age societies**, it has been shown that technical changes in pottery production are best understood when placed in the context of contemporaneous socio-economic developments, and that the conditions and rhythms of these changes are the results of various processes. Among the latter, the adoption of new techniques has been explained in some regions by the growing control of palatial economies on potters' workshops, as part of a general trend driven by the accumulation of wealth (Iamoni 2015; Rutter 2015; see also the concept of 'elite-driven declarative learning' in the adoption of an innovative technology: Knappett 2016).

In the framework of our ARC research project 'A World in Crisis? Archaeological and Epigraphical Perspectives on the Late Bronze Age (13th c. BC) Mediterranean Systems' Collapse: a case study approach' based at UCLouvain (Belgium), we questioned the reliability of archaeological data as **crisis indicators**. Therefore, following the perspective of archaeological and anthropological works that assess pottery technology as a social product, there is an interest to address the social and cultural aspects of *technological change* in pottery production in the specific context of *crisis and period of trouble*. The main goal of such an examination is to detect *whether* and *how* technological choices or changes observed in the archaeological ceramic record may reflect periods of disruption, crisis and/or transformation of social, political, economic, and environmental conditions.

When investigating past societies of the Bronze Age Mediterranean, declines in quality and drops in labour investment in ceramic production (*i.e.* less accuracy in preparing clay, inferior care in forming vases, less interest in decoration, *etc*.) have been interpreted as indices of economic instability and/or political crisis. This is the case in the Intermediate Bronze Age period (*ca.* 2200-2000 BC) in the Southern Levant, a troubled time following the decline of the Early Bronze Age urban era. During this period, previous cities were abandoned and most of the excavated sites correspond to small agricultural villages. There also seems to be a return to simpler hand-made techniques in pottery production for assemblages produced at the household level, and a partial, temporary abandonment of the potter's wheel (Amiran 1969: 80; Gophna 1992: 144-145; see also Ben-Shlomo, this volume). While usually indicative of crisis migrations, invasions or population movements may however lead to contrasting reactions. In some cases, ancient communities may adopt new shapes and techniques, and the spread of these techniques was triggered by such processes. For instance, in Late Cypriot IIC-IIIA Cyprus (*ca.* 1325-1100 BC), pottery assemblages show both new shapes and new manufacturing techniques, including the category of cooking vessels. These significant changes are understood as new ideological aspects that accompanied the Mycenaean immigration on the island (Jung 2017). Alternatively, social groups may choose to cling to traditional manufacturing techniques, in order to maintain and express their group identity despite a new and

more advantageous technological innovation. This was the case on Bronze Age Melos, where local populations seem to have continued producing traditional hand-made pottery in order to demonstrate their identity despite important contacts with, and possibly the arrival of, Minoans who produced wheel-made pottery (Berg 2007; see also Berg, this volume). Finally, elaboration in ceramic shape and decoration, experimentation in clay recipes, and technological change or innovation are often considered to reflect a time of prosperity and flourishing of society. The high-quality Kamares Ware in Crete, the production of which in the Middle Bronze Age matches the acme of the First palaces, is surely an evocative example.

While considering technological changes in modern and contemporary societies, however, different behaviours or types of relations have also been acknowledged. Indeed, artistic innovation and technological experimentation have often occurred in tandem with social, cultural, and economic crises (Gerhardus 1979). The phenomenon of *Art Nouveau* (1890-1914), for example, which represented a re-evaluation of craftsmanship, claimed to be a reaction of society against the Industrial Revolution. It mirrored a renewed interest in 'minor arts' against specialisation and standardisation of industrial products, although it remained in the end a rather elitist phenomenon (Adriaenssens & Steel 2006: 106). Even in contemporary Athens, artistic innovation occurs as a response to crisis: "the hardships and unemployment of the Greek economic collapse have led to a new wave of innovative graffiti, which is both politically aware and socially accepted - making Athens a new Mecca for street artists"[1].

Keeping these different case studies and explanatory frameworks in mind, we have delineated different questions for exploring pottery production of Bronze Age Mediterranean societies. Does a crisis or troubled period have, above all, a causal and negative effect on pottery technology, leading to a visibly decreased labour investment in production? Moreover, if a period of crisis/trouble is easily recognisable from other archaeological indicators, can we identify related reactions in the ceramic assemblages, which are conveyed by technological changes or new choices? In contrast, can a crisis or a troubled time represent an impulse for searching for something new and stimulating in terms of technological practices? In this sense, we are urged to explore whether and how a situation of unrest, be it political, economic or environmental, can lead people to take the chance of being more creative and thus more competitive, to adopt new technological innovations or to experiment with technological changes in order to react to crisis conditions. Can we, by exploring whether a tangible relationship exists between technological changes in pottery assemblages and reactions against social, political, economic and environmental troubled situations, observe that similar troubled conditions lead to the same reactions in terms of technological changes/choices?

2. The conference

We proposed to address these questions by bringing together experts in charge of the study of pottery at different Mediterranean sites in order to discuss, confront and contextualise their respective assemblages and associated contexts. The international workshop organised by our Aegis research group at UCLouvain[2], on the 18th and 19th of February 2016, tackled the issue of technological changes in Early, Middle and early Late Bronze Age Aegean, but also specifically focused on the 13th c. BC on the Mycenaean mainland, and in the Eastern and Western Mediterranean. The results of this stimulating workshop are presented in this volume, apart from the ethnoarchaeological and comparative approach respectively proposed by Alexandre Livingstone Smith and Ditlef Fredriksen, and the contribution of Simona Todaro, Roberta Mentesana, Peter Day, and Vassilis Kilikoglou on the technological changes observed on Neolithic to Early Minoan I pottery from Phaistos. Their original papers are, however, available as a podcast, as are all other papers[3]. In the course of this introduction, we will briefly summarise these contributions against the theoretical background of the essential questions we sought to address.

1 The Guardian: http://www.theguardian.com/world/gallery/2014/nov/11/contemporary-graffiti-art-on-the-walls-of-athens-in-pictures.

2 As part of the ARC13/18-049 (concerted research action) of the 'Académie Louvain': *'A World in Crisis?' Archaeological and Epigraphical Perspectives on the Late Bronze Age (13th c. BC) Mediterranean Systems' Collapse: a Case Study Approach (2013-2018)* – crisis.minoan-aegis.net (spokesperson: Jan Driessen).

3 https://uclouvain.be/fr/instituts-recherche/incal/colloque-technology-in-crisis.html.

Our objective in discussing various types of data, contexts and approaches, is to reflect on two issues that we feel are particularly important when addressing the question of technological changes in periods of social trouble and crisis: 1. The methodological approaches we have at our disposal to trace such changes, and 2. Matters of scale, both spatial and temporal.

3. Studies on technological changes

For quite some time, technological changes had been mainly considered the results of evolving traditions and practices towards increasing complexity (that is for example specialisation) and thus as choices on the way to more efficient technologies. In evolutionary terms, the *homo economicus* is guided by principles of productivity and security (Brumfield & Earle 1987). In this perspective, potters make technical choices based on criteria that have a technological explanation, such as energy efficiency, economies of scale, least efforts, or utility maximisation. This has often been associated with a macro-scale approach to the history of techniques, and with a 'diffusionist' model pointing at the role of intercultural contacts as a triggering force for cultural change, as well as, in our case, for technological changes.

By way of contrast, more recent research based on ethnographic data, notably carried out at the micro-scale of individuals and communities, has instead emphasised that technological changes are above all the outcome of social processes (Gosselain 2000; 2008; Gosselain & Livingstone Smith 2005). Technological change may "result from individuals intentionally and persistently choosing to follow a new pattern" and "who choose not to follow traditional patterns" (Arnold *et alii* 2008: 59). Conversely, people may know about a new behaviour or technique but choose not to adopt it, as illustrated by some of the present contributions (see Choleva; Berg, this volume). Likewise, Valentine Roux (2013) has observed in a present-day case study in North-West India that the decision to adopt a new technique depends not just on the existence of relationships between different social groups, but on the *nature* of the contacts between communities and the *social conditions* that trigger both individual and social learning. Finally, and most importantly for our discussions, in those instances where new techniques and practices *do* spread, they may follow different trajectories as we will see in some detail below. On this very issue, a recent volume devoted to "human mobility and technological transfer" (Kiriatzi & Knappett 2016) gave special attention to "*technological* perspectives on the processes of human movement", with the aim of understanding how and why technologies propagate, how they are borrowed, appropriated and transmitted, and whether certain technologies move preferentially into particular contexts.

On the whole, and a fortiori in Prehistoric or traditional societies, a close relationship exists between any utilitarian or craft product and its social milieu (Rice 1987: 461), implying that much attention should be given to the social context that encourages or discourages change. This being said, because of the conservative character of pottery production traditions, and especially shaping techniques, and since the contexts of production between distinct social groups are much diversified, technological changes are particularly difficult to trace in the archaeological ceramic record and even more difficult to interpret. In the words of Olivier Gosselain, who advocates for a dynamic approach to both transmission and appropriation processes in potting practices, "there exists an inherent tension […] between a desire to maintain and reproduce the link with those from whom the knowledge was initially acquired, and the unavoidable adjustments imposed by the social and economic contexts within which individuals carry the craft throughout their life trajectory" (Gosselain 2011: 223).

For archaeologists, these observations lead to a main point. Considering that technical choices are not only driven by rational choices but by also by specific social trajectories, it is a **matter of context** to understand *how* and *under which conditions* changes in ceramic technological practices occur. Consequently, a possible bias in our analyses depends on the *degree of precision* with which we can approach the social and technological context of production of well-defined cultural groups on the basis of our archaeological data.

This issue forces us to address the **matter of scales** in our inquiry. In a paper by Carl Knappett & Sander van der Leeuw on a developmental approach to ancient innovation, the authors start with the observation that "archaeology is uniquely placed to observe some of the most profound socio-cultural changes in humanity's deep history", being able to "assemble macro-scale data", which eventually bring to light very widespread

changes (Knappett & Van der Leeuw 2014: 65). As they put it, these profound, macro-scale transformations "are ultimately all closely related to micro-scale practices too, as individuals altered their daily routines, making subtle changes, the consequences of which they could hardly have foreseen" (Knappett & Van der Leeuw 2014: 65). Advocating the challenge of articulating these seemingly quite distinct scales they argue for the need of a meso-scale approach to archaeological data, which, in the particular case of pottery traditions and technological change, may mobilise the concept of **communities of practices**. This approach supports that "learning takes place in, and is deeply connected to, specific social settings" (Knappett & Van der Leeuw 2014: 69). In this way, it prompts us to consider the transmission processes and potting practices from a dynamic perspective, but also infers that skill and knowledge acquisition goes along with the development of group identity, since, through the process of learning, one increases his/her integration in a community (Gosselain 2011: 219). Such an approach can eventually help archaeologists to think across different scales, from the micro-scale of potting practices to the macro-scale of cultural evolution.

With this perspective in mind, *i.e.* that promoting a meso-scale approach to archaeological data enables a more comprehensive understanding of the very different trajectories of technological changes in ancient societies, as archaeologists we are invited to pay attention to the *method* used in the various works presented in this volume to outline or characterise ancient *communities of practices*, that is, understanding technical traditions as both individual and social processes.

3.1. Social/political/economic/environmental mutation and technological change

Moving to the contexts of crisis and the questions of social, political, economic or environmental transformations and their impact on pottery production, our main questions in preparing this volume were the following:

- Can technological changes observed in the archaeological ceramic record reflect periods of crisis and/or transformation of social, political, economic, and environmental conditions?
- And are the specific nature and context of these changes indicative for a certain type or degree of social crisis or transformation?

It may be assumed that a period of unrest or social upheaval has an impact on the modes of pottery production and distribution. This could imply a reduction in the production output, a simplification of the typological and/or stylistic repertoire, but also perhaps a decrease in workspace and a change in demand and distribution patterns (Rice 1987: 454), all effects that are more or less detectable in the archaeological record. Significant transformations of technological practices could, however, follow a less straightforward chain of events. Here, we may first draw upon or find inspiration in general models developed in fields outside archaeology, before coming back to the observable data in our various archaeological contexts.

In order to qualify the nature and dynamic process of change in cultural practices, studies by Roux (2010; 2013) and Courty (Roux & Courty 2013) have differentiated change as *continuous* and *discontinuous*. This may be transposed to technological practices so that a technological change can be defined as a continuous and discontinuous process. Confronted with archaeological data and contexts, this distinction may ultimately help us to dissociate different degrees of transformations in social systems and to define how deeply social structures may have been affected by disruptive events.

A **change is said to be continuous** when it concerns one technical trait and when "there is continuous social learning between generations and among peers" in a social group (Roux & Courty 2013: 189). This signals circumstantial events, occurring at the level of middle or short-term history, for example, the borrowing and adoption of a more efficient exogenous instrument within a socially homogenous context.

On the contrary, **a change is discontinuous** when "there is a complete cessation of transmission" (Roux & Courty 2013: 189) and the change concerns the entire technical system. This includes a complete arsenal of techniques, instruments, skills, knowledge and representations. Such a major discontinuity is indicative of deep mutations, which affect the societal structure of a population as well as the long-term history, and which may reasonably be qualified as a '**crisis'**.

In short, in characterising discontinuous change in social and event-based terms, and a complete cessation of transmission in particular, at least two kinds of scenarios may occur. For each situation, we can suggest a corresponding archaeological context of 'crisis', which may be a potential 'activator' of a discontinuous technological change.

In the first scenario, a discontinuous technological change may occur when the transmission units disappear and are replaced. In historical terms, this means that the population is moved in some way, such as in the case of invasion or migration, creating a potential for change.

This is the case, for example, in the Southern Levant at the beginning of the second millennium BC, where ceramic assemblages are characterised by the combined arrival of new forms and the wheel-coiling technique. This appears in the first phases and "is so widely disseminated that it seems to be adopted more or less instantly" (Roux 2013: 320). In this Southern Levantine context, this major discontinuous technological change is explained by the arrival of new groups from the North, who were the main agents for the emergence of new settlements and the construction of monumental buildings.

In the second scenario, the transmission units correspond to social or institutional components that disappear. In this case, the disappearance of these structures, induced by the failure or collapse of a political system, may trigger the emergence of new ones, generating a potential for change (Roux 2010). This is the case on Crete at the end of the Middle Bronze Age, when Middle Minoan III early ceramic production is characterised by poorly manufactured and less accurately decorated vases. Assessing this decline in pottery production Aleydis Van de Moortel (2002) has explained it as a consequence of the political and economic instability after the destruction of the First Minoan palaces (see also Girella 2010).

Assuming that in periods of crisis/unrest/instability the occurrence of a discontinuous technological change is a possibility, we would expect the introduction of new technological lineages, which break with tradition. With the very topic of the present volume in mind, we think that the real challenge for archaeologists is first to properly assess the effective occurrence of a technological change within the ceramic assemblages. This involves an agreement on some empirical methods that have demonstrated their reliability in assessing the *degree* of technological change (*i.e.* it concerns only one technical trait *vs*. it relates to the entire technical system). Only then would we be able to consider and interpret its possible causes, based on the distinction between a technological change connected to *local* historical dynamics – a continuous change – *vs*. that one related to a major historical and/or social change.

To that end, the consideration of local contextual data combined with a fine-tuned stratigraphic resolution as well as issues of scales considering intra- and interregional comparisons is crucial. This is precisely what the different contributors to this volume have endeavoured to achieve. The main result of these varied efforts, related to disparate case studies, is that a *discontinuous technological change* can properly be recognised and addressed in the case of the adoption of the potter's wheel in Central Greece during the Early Bronze Age (hereafter EBA) (Choleva, this volume). The introduction of the potter's wheel first implied the use of the wheel in combination with the hand-building technique, known as the wheel-fashioning technique. In Central Greece the introduction of this new technique between late EBA II and early EBA III occurred in a time of trouble and change for the Aegean communities. New exchanges and networks did increase the circulation of people, objects, technologies, and ideas throughout the Aegean (Choleva, this volume). It is worth mentioning that, on Crete, the potter's wheel was introduced later, in the early Middle Bronze Age (Middle Minoan IB phase, *i.e*. 19th c. BC), a time that corresponds to the emergence of the First Minoan Palaces (Knappett 1999). In the case of Crete, the wheel-fashioning technique also constituted a *discontinuous technological change* but one following different trajectories. According to recent studies, in North/North-East Crete, this technique went on to be used until the Late Bronze Age, *resisting* the introduction of new technological innovations (Jeffra 2013; Knappett 2016: 101). On the contrary, in Southern Crete, especially at Phaistos (Caloi 2011) and neighbouring sites (*i.e.* Haghia Triada and Kommos: see Baldacci 2013; Van de Moortel 2006), the use of the wheel-fashioning technique did not prevent the introduction of a new technological change in MM IIA (*ca.* 18th c. BC), when the wheel-throwing technique was adopted for the production of specific shapes (*e.g.* standardised conical cups in Fine Plain Ware)

and wares, like the Polychrome on buff-reserved surface Ware (Caloi 2011: 93-96, fig. 8). The adoption of the wheel-throwing technique, which is a new technical system that entails the *exclusive* use of the potter's wheel to throw from a mass of clay, exemplifies another *discontinuous technological change*. It appears that a new group of potters arrived at Phaistos along with a technological innovation in MM IIA, when the settlement was significantly re-organised, as the monumentalisation of the First Palace demonstrates (Caloi 2018; forthcoming). In this *transitional phase,* together with the new group of potters using this innovative technique, local potters continued to use the traditional wheel-fashioning technique to produce the well-known Kamares Ware (Caloi 2018).

3.2. Broadening the horizon

Broadening our horizon of research to contemporary times, *i.e*. 20th c. AD America, historical literature has suggested that crisis periods are also periods of significant innovation. Two scholars in economics (Joel Mokyr and Naomi Lamoreaux) have documented the rise of important innovations like the incandescent light, the steam turbine, and the transformer precisely during the Long Depression. Economic historian Alexandre Field even recognises the 1930s as the "most technologically progressive" decade of the 20th c. AD[4]. Current research on the economic and social crisis in the United States has shown that in the last years "American innovation has shifted and become more geographically concentrated. Places like Silicon Valley have seen a steady increase in innovation while older, industrial centres have declined significantly or stagnated"[5]. And maybe more significant, in terms of actors, Alexandre Field points that the innovation in America "has grown increasingly dependent on non-resident, foreign inventors", concluding that "anything that might slow the immigration or inflow of foreign inventors – or redirect their inventions and patents – would undoubtedly damage the rate of American innovation." These observations are somewhat provocative because of their obvious anachronistic component. However, they prompt us to address the following question, highly relevant for our main issue: if discontinuous technological change is a phenomenon that breaks with tradition, may we hypothesise that this process is more easily or even mainly initiated or activated by people who are not rooted in one community's traditions? By people who do not know the traditional lineages of the community within which they integrate, such as foreigners?

3.3. What do we mean by foreigners in Ancient times?

By foreigners in Ancient times, we consider people coming from *abroad*, such as immigrants, refugees, invaders, but also captives. This first type of 'foreigners' is discussed in the papers by Maria Choleva, Ina Berg and Artemis Georgiou, in this volume, where the authors illustrate different cases of adoption/rejection of a new technique imported from *abroad*, attempting to explain local reactions to the technological innovation. The difficulty of identifying involuntary relocation of social groups, or captive potters, on the basis of archaeological material has recently been addressed, using the Italo-Mycenaean pottery from Southern Italy as a case study (Lis 2018). In broader terms, however, and in close consideration of the nature of our archaeological records, a 'foreigner' can correspond to a specific social component with distinct cultural traits living *inside* a broader community, but in a marginal way that can be inferred from the identification of distinctive social practices (Lis 2016). Finally, and most importantly, 'foreigners' may also be a specific part of a community that did not experience the aforementioned transmission units (in pottery technological terms, these could be paste recipes or shaping techniques) due to various reasons that may be social, political, or economic. These 'foreigners' are best exemplified in the present volume by the agents of change in cooking pot production within the EM IIA community at Mochlos (Crete), discussed by Brogan, Kaiser & Nodarou.

The context of the Eastern Mediterranean in the 13th c. BC offers the best ground for the study of this specific issue of 'foreignness' (see especially Lis; Georgiou; Ben-Shlomo; Bettelli, Borgna & Levi, this volume). In a general atmosphere of increasing socio-political unrest, against a backdrop of long-standing and long-distance

4 (http://www.creativeclass.com/_v3/creative_class/2009/07/page/2/)
5 (http://www.creativeclass.com/_v3/creative_class/2009/07/18/innovation-and-economic-crises/)

contacts of different sorts, this century saw the rise of a complex phenomenon, which progressively prompted the reconfiguration of different networks and the movements of social groups. In this particular context, distinguishing locally and non-locally produced ceramic objects in the archaeological record remains a continuing source of debate. In many instances, a given foreign tradition may be imported to area X, may be imitated locally by area X potters, or a group of foreign potters may newly reside in area X and produce their native styles and tradition, all along with the continuation of local practices. Being one of the first to address these questions in the framework of pottery analysis, Prudence Rice asserted that "imitation, innovation, elaboration, material entanglement or syncretism all play roles in these circumstances, but they are difficult to isolate archaeologically" (Rice 1987: 468). She also argued that "there is always a lag between the occurrence of an event and the time when its impact is fully felt, in various alterations to the accustomed pattern", which made her conclude "that it is thus virtually impossible to correlate ceramic changes one-to-one with significant political, economic, or religious events in a culture".-

The efforts which emerged from the broad range of studies and approaches represented by the different contributors in this volume allows an elaboration on these different issues but also a determination of their limits, challenging Rice's somewhat pessimistic conclusion.

4. Summary of the contributions

This book comprises the written versions of ten papers delivered at the invited international workshop '***TIC: Technology in Crisis. Technological changes in ceramic production during periods of trouble***' organised in February 2016. The order of the contributions follows different topics and issues:

1. **Technological changes in periods of trouble and mutation: comparative and ethnoarchaeological approach**: Valentine Roux & Simone Gabbriellini
2. **Technological changes in periods of trouble and mutation: Early, Middle and early Late Bronze Age *Aegean:*** Maria Choleva; Thomas M. Brogan, Luke Kaiser & Eleni Nodarou; Ina Berg
3. **Technological changes in periods of trouble and mutation: 13th c. BC Mediterranean:**
    a. **Mainland Greece:** Elina Kardamaki & Konstantina Kaza-Papageorgiou; Bartłomiej Lis; Salvatore Vitale;
    b. **Eastern Mediterranean:** Artemis Georgiou; David Ben-Shlomo
    c. **Western Mediterranean:** Marco Bettelli, Elisabetta Borgna & Sara Levi.

In the present-day ethnographic case study discussed by **Roux & Gabbriellini,** the authors deal with a period of transition in firing techniques witnessed by potters working in the town of Pachapdra in Rajasthan, North-West India, where until 1987 the pottery production was in the hands of potters belonging to two different communities, the Muslims and the Hindus. Until that date, the vessels produced, and the technical systems deployed distinctly distinguished these two communities: the Muslims were specialised in producing only culinary vessels using open single-hearth triangular firing structures, while the Hindus only produced storage vessels using open multiple-hearth circular firings. The change in the town of Pachapdra occurred in 1987 when the production was reduced to one shape (a water storage vessel), now manufactured by both communities. On that occasion, the firing structures adopted by the two communities changed. In analysing the variability in the adoption of firing structures, the authors highlight two different patterns: in one case there is a statistical correlation between the kinship and diffusion networks, that means a strong relationship between the advice and kinship networks; on the other hand, kinship ties did not favour the adoption of the kiln. They conclude that, in anthropological terms, periods of transition and disorder "are characterised by the introduction of new traits inside communities in which both the ties between the individuals and the various inventors' strategies generate **a variability** in the adoption process with, as a consequence, a strong spatial and temporal variability in cultural traits that does not correspond to the population structure".

Tackling the issues of technological changes in the framework of the **Early, Middle and early Late Bronze Age Aegean**, on the **Mainland**, **Choleva** first addresses two opposing responses to the adoption of a new

technological innovation, *i.e.* the potter's wheel, in Eastern and Central Greece between late EBA II and EBA III. The potter's wheel was imported from Western Anatolia as a technical system implying the use of the wheel-fashioning technique to produce specific classes of pottery derived from Anatolia (*i.e*. the Lefkandi I/Kastri group). At Lefkandi, on Euboea (Eastern Greece), the local communities appropriated the use of the potter's wheel as a new technical system in late EBA II and continued to use it in the successive EBA III phase as a resistant craft practice of Anatolian origin. On the contrary, at late EBA II Pefkakia, in Magnesia (Central Greece), the local communities rejected the new technological innovation and maintained their traditional *habitus* in forming practices, *i.e.* the hand-building technique, but adopted the morpho-stylistic features of the new Western Anatolian pottery. Only in EBA III, was the new technical system also transmitted to Pefkakia through the adoption of a new pottery assemblage, which was inspired by the same Anatolian traditions and habits. Since the use of the new technical system was restricted to the manufacture of vessels of Anatolian origin and never those of Helladic traditions, through this practice, one could recognise a strong social and cultural identity, indicative of potters who were trained in the Western Anatolian technological tradition. As indicated by Choleva, the potters at Lefkandi "negotiated their place in the new Helladic socio-cultural milieu by maintaining their Western Anatolian craft behaviours", while at Pefkakia local potters appropriated the new tool in a successive phase as part of a rooted tradition. Within a historical framework of changes, redefinitions and profound transformations, Choleva suggests that the distinct technical identity underlying the wheel-fashioned pottery was transformed into the means for preserving long-lived cultural meanings and for negotiating social identities.

On **Crete**, **Brogan, Kaiser & Nodarou** deal with the first phases of use, *i.e.* EM I-EM IIA, of the Prepalatial cemetery located on the island of Mochlos, North-Eastern Crete, showing that changes observed in pottery production and consumption can be associated with other significant changes in the local settlement and cemetery. The most significant change from EM I to EM IIA involves the disappearance of locally produced vases and the adoption of new shapes for cooking vessels (dishes and tripod cooking pots), produced in a new fabric by potters working in the region of Gournia and Priniatikos Pyrgos, in the Mirabello Gulf. This change in cooking habits, usually associated with women's role in the households, has been explained by the authors as the result of new marriages between the local population and groups from the Mirabello Gulf, in a period of intensification of exchanges between Mochlos and this part of Crete. If this fascinating hypothesis is correct, the 'foreigners' are an integrated part of the Mochlos community, epitomised by women importing to Mochlos their own cooking pots and habits. In attempting to define the type of technological change that occurred in EM IIA Mochlos, this could exemplify a *discontinuous change*, where the transmission units embodied by a social component of the community disappear and are replaced by the emergence of new ones.

In the **Cyclades**, **Berg** tackles the change in pottery production at Phylakopi, on the Aegean island of Melos, at the time of the arrival of Minoans, to understand how the cultural change occurred on the island and whether it affected the indigenous ceramic production. She clearly indicates that at Phylakopi the change was *continuous* and gradual, as the rebuilding of the town in Late Cycladic I (henceforth LC I) did not alter the trajectory of ceramic change. She states: "The rise of Minoan pottery had already been set in motion in the Middle Cycladic period with Cretan imports and the local production of Minoanising handleless cups but gathered greater speed in LC I as Minoan imports decreased and local production of an ever-wider range of Minoanising shapes filled the gap". It is only the pottery forming techniques that can express the conflict in the society of Phylakopi in LC I, where a clear separation existed between a 'traditional production', which utilises hand-made techniques to produce Cycladic shapes with Cycladic surface treatments and motifs, and a 'Minoanising production', which imitates Minoan shapes, uses the potter's wheel and decorates the vessels with Minoan-style designs. The author points that this separation in Melian society clearly expresses a conflict between those who wanted to align themselves with the Minoan culture, which was probably perceived as culturally superior, and those who preferred to continue their own traditional practices and habits.

In both the cases discussed by Choleva and Berg, the introduction of a new technological innovation into a foreign socio-cultural context produced tensions within the indigenous population. The analysis of the forming techniques in use has helped us to understand the conflict existing within the local communities who chose to adopt or reject the new technique. Both at EBA II Lekfkandi and at LC I Phylakopi, the adoption of the new technological innovations can be interpreted as a tool to negotiate a socio-cultural identity that finds its roots *abroad*, in a foreign place. At Lefkandi, this social identity is represented by the technical identity of a practice

that finds its origin in Western Anatolia, while at Phylakopi is embodied by the adoption of a forming technique (the wheel-throwing technique), which is the prerogative of the Minoan culture of Crete.

Turning to the 13th c. BC and the significant disruptions that lead to the collapse of the Aegean civilisations at the transition between the 13th and 12th c. BC – the central topic of our UCLouvain-ARC research project –, the issue of changes in pottery production within this context is approached from different geographical perspectives and various scales of analysis.

On **mainland Greece**, **Kardamaki & Kaza-Papageorgiou** first present the major pottery workshop that operated at Kontopigado in Attica from the late 14th c. BC until the abandonment of the settlement in the early 12th c. BC, *i.e.* during the Late Helladic (hereafter LH) IIIA2 to LH IIIC Early phases. This industrial installation at Kontopigado is generally linked with the expansion of the Acropolis by that time and the economic organisation of its periphery. There is evidence for two destructions at the site during the later phases of its occupation, precisely at the moment of the collapse of the Mycenaean palaces. The analysis of the pottery assemblages attempts to assess how these disruptive events may have influenced the course of the local production and how this reconstructed local scenario does or does not differ from other regional chains of events, in particular in the North-Eastern Peloponnese. The general development of pottery traditions at Kontopigado is described as continuous between LH IIIA2 and LH IIIC Early. There is evidence for the introduction of new forms and surface treatments, and an increased demand for wheel-made cooking pottery, but these are rather explained by the 'performative aspect' of production, probably suggesting influences from other regions, while the typo-stylistic features of the ceramic repertoire remain on the whole closely connected to the previous trends. The most serious change – the almost complete disappearance of the industrial vases produced at the site –, which appears in the LH IIIC Early deposits, indicates the interruption of some of the specific production activities of the Kontopigado workshops. Kardamaki & Kaza-Papageorgiou conclude that this change is better understood as a local phenomenon and that pottery production in the region of Athens was otherwise not significantly affected by the brutal political and social disruptions that shattered the LH IIIB2 Mycenaean societies, embodied by the destructions of the palaces in the Argolid and Thebes. Contextualising their main observations at the interregional scale, they highlight how a general continuity in pottery traditions at the turn of the century is observed for other Mycenaean regions as well. That the new economic and social environment after the 'crisis' favoured such a continuity may not be totally unconnected, they suggest, to the fact that the base of organisation of the earlier Mycenaean pottery workshops was not entirely dependent on the palatial system.

Lis tackles the specific and debated topic of 'Hand-made Burnished Ware' in 13th c. BC mainland Greece, a ceramic tradition related to the Subapennine culture in Southern Italy. He highlights how a common heading for hand-made traditions that are, in reality, quite diverse prevent our better and nuanced understanding of the origin and significance of these different groups. Paying close attention to all kinds of hand-made pottery, Lis demonstrates how this major technological change in pottery traditions at the end of the Late Bronze Age is *not* a uniform phenomenon but is tied to different social and economic developments. While its appearance can be quite confidently ascribed to the arrival of relatively small groups of people originating from the Southern Italian Peninsula, other pottery groups most likely result from economic stress and problems with the supply of standard Mycenaean products holding similar functions. Factors like fluctuations in the demand for cooking pottery and disruptions to established exchange networks are pinpointed to explain the interruption in the manufacture of wheel-made cooking pottery by certain workshops on the Mainland, at *different* moments of the advanced or end of the Late Bronze Age. As such, Lis is able to identify *local stories* concerning hand-made pottery, that do not, perhaps, reflect a well-defined and uniform period of trouble, but do definitely indicate *episodes* of trouble.

Vitale examines whether the technological choices in potting practices at the settlement of Mitrou (East Lokris, Central Greece) could be a significant reflection of this troubled period. His method includes the comparison of Mitrou's LH IIIB1 and LH IIIB2 Late ceramic assemblages (mature and final Palatial period) with two previous significant horizons at the site, *i.e.* LH IIA and LH IIIA2 Early (early and final Prepalatial period). The evidence shows a shift from elaborate manufacturing methods in the Prepalatial period towards less labour-intensive methods in the Palatial period. Vitale suggests that this essential transformation in pottery production corresponds to the change of status of Mitrou from an independent settlement in East Lokris to a site dominated by a nearby

palatial polity: possibly Orchomenos, and then Thebes. Significant differences also emerge between the LH IIIB1 and the LH IIIB2 assemblages, the latter characterised by an important simplification of potting practices, affecting different stages of the *chaîne opératoire*. In addition, while LH IIIB1 ceramics largely conform to the so-called Mycenaean *koine*, LH IIIB2 Late pottery shows the development of regionalism. These data reflect different socio-economic and political conditions between LH IIIB1 and LH IIIB2 Late. Vitale scrutinizes the possible factors and contextual background for the important reduction in labour in pottery production at LH IIIB2 Mitrou and for the simultaneous introduction of local preferences in the repertoire. One explanation is the growing competition between Thebes and Orchomenos over the rich agricultural Copaic Basin, a situation that leads to the hostile environment at the origin of the destruction of Gla and the general regional destabilisation. In this case, such regional political upheavals are considered to accelerate a decreasing quality in pottery manufacturing at the local scale, while regionalism probably resulted from a drop in trade networks, and then in cultural interactions, due to more insecure conditions. However, Vitale argues that these two phenomena did not involve any cessation of technological transmission in the pottery manufacturing process at Mitrou, but rather continuity.

These three case studies converge towards the identification of *continuous* changes in Mycenaean mainland pottery productions systems at the close of the 13th c. BC. As **Vitale** puts it for Mitrou, these works have shown how "a holistic approach to ceramic analysis can help in capturing periods of transition, defined as socio-political and economic transformations, but it does not provide valuable data to isolate moments of crisis and/or disruption". He also underlines that this contrasts with other forms of transmitted technological knowledge, such as the use of writing and the ability to build monumental architectural complexes, which have demonstrated *discontinuous* change at the transition of the 13th and 12th c. BC on the Mycenaean mainland.

In the **Eastern Mediterranean**, the aforementioned questions are addressed from a Cypriot and a Southern Levantine perspective.

Georgiou focuses on the transitional phase between the 13th and the 12th c. BC on **Cyprus**, investigating the temporal introduction of the potter's wheel and the dynamic processes by which it was established. Following the words of Georgiou, this transformative period on the island "saw the establishment of wheel-made finewares that principally draw on Aegean prototypes and the gradual abandonment of two Late Cypriot hand-made wares, the Base-ring and White Slip Wares". Although the wheel-made finewares were attested on Cyprus since the early 17th c. BC, the production of Cypriot finewares continued to largely defy the convenience afforded by this technique for at least four centuries. This persistence of hand-made manufacture went hand-in-hand with local wares, *i.e.* the Base-ring and White Slip Wares. The acceleration in the Cypriote production of wheel-made finewares at the end of the 13th c. BC can be explained in the contextual situation of this transformative period. First, Georgiou states that the collapse of the Mycenaean political authorities and the consequent void created by the absence of Mycenaean imports can be considered one of the reasons for the intensification (not the introduction) of the local production of Aegean-style wheel-made finewares. Second, the numerous Aegean immigrants established on the island have certainly stimulated the Cypriot ceramic production of wheel-made finewares. Finally, the establishment of wheel technologies was mainly enhanced by the increasingly urban environment of the Cypriot polities in the post-crisis era during the late 13th-early 12th c. BC. She concludes: "The Cypriot case epitomises how periods of crisis do not necessarily lead to the decay and instability of crafts, considering that amidst an otherwise critical period for the entire Mediterranean, the Cypriot ceramic industry was transformed to endorse wheel-made technology to a hitherto unprecedented extent".

Ben-Shlomo proposes to scrutinize and compare the changes observed among the local pottery traditions and the imported wares in the **Southern Levant** during the Late Bronze Age period (16th-13th c. BC). Locally produced pottery in this region is characterised by an important continuity in technology, typology and styles throughout the period. The imports are characterised by more changes. The ceramic vessels imported from Mycenaean Greece, especially during the 14th c. and the first half of the 13th c. BC (*i.e.* LH IIIA2-IIIB1 pottery), came from the Argolid, while during the latter part of the 13th c. BC there is a shift towards Mycenaean-style wares produced in and imported from Cyprus but also other Aegean areas. At the turn of the century, Mycenaean-style imports towards Levantine sites abruptly stopped. In the 12th c. BC, no substantial disruptions nor changes affected the local repertoires, except the appearance of *locally produced* Aegean-style pottery in the southern coastal plains of Israel. While this tradition is generally associated with the arrival of a new ethnic group, the Philistines, Ben

Shlomo demonstrates how this introduction of new forms and styles again did not involve any significant changes in the local production techniques. On the whole, the author observes that the crisis period of the 13th-12th c. BC transition in Eastern Mediterranean was not accompanied by any discontinuity in potting practices in the Southern Levant, but a tangible breakdown of the maritime trade exchange system. According to Ben-Shlomo, the absence of a centralised palatial economy in Southern Levant during the Bronze Age potentially favoured the very traditional nature of pottery production, in such a manner that technical methods remained particularly stable and possibly much less susceptible to drastic change in case of an economic or political crisis.

In the **Western Mediterranean**, the challenging task of providing a thorough and comprehensive overview on the 'crisis years' from a ceramic perspective in the Late Bronze Age Italian Peninsula, in particular between the late 13th and the first half of the 12th c. BC, has been remarkably taken up by **Bettelli, Borgna & Levi**. While radical changes occurred in settlement patterns and cultural practices in the Italian Peninsula towards the end of the Late Bronze Age (*ca*. 1200-1150 BC) pottery assemblages are not indicative of such a discontinuity in modes of production. Assessing and comparing the major typo-stylistic and technical developments of pottery assemblages within three distinct regional *facies* – the Terramare in the Po Plain, the Castellieri in the Northern Adriatic, and the Subapennine region of the Southern Tyrrhenian and Aeolian Islands – in close consideration to a broader range of archaeological data, Bettelli, Borgna & Levi attempt to address different hypotheses for explaining the potentially various factors that triggered the cultural discontinuity attested in the different Italian regions in the first half of the 12th c. BC. In doing so, they demonstrate how the interpretation of the adoption of foreign stylistic and technological components in potting practices requires the evaluation of a complex set of socio-economic, political, environmental and geographical variables, including the position of some cultural groups at the crossroad of many cultural systems. In particular, the locally produced Italo-Mycenaean pottery in Southern Italy, which contrasts with the local ceramic traditions by its use of fine fabrics, wheel-thrown or wheel-fashioned techniques, and firing in double-chambered kilns, is better explained in the framework of the intense and long-term relations of this region with the Aegean (the establishment and then gradual assimilation of Aegean potters) rather than in the specific context of the troubled conditions that characterised the end of the Late Bronze Age. Indeed, addressing the contrasting responses of the studied regions to possibly comparable critical circumstances in the early 12th c. BC, Bettelli, Borgna & Levi warn us against "automatically correlating transformations in ceramic technology to phases of a more general cultural discontinuity". Again, the historical and social context is crucial. Their case studies show that important technological innovations in ceramic production were more successfully adopted "within those communities that had a more stable and well-rooted relationship with their territory […] overcoming the crisis years that typify other regions of the Mediterranean and remaining essentially unharmed". Like for 13th c. BC Cyprus and Southern Levant, these archaeological contexts demonstrate how periods of crisis do not necessarily lead to the decline or destabilisation of certain crafts production activities, but on the contrary, evidence significant growths.

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References

- Adriaenssens & Steel 2006 = W. Adriaenssens & R. Steel, *La dynastie Wolfers, De l'Art Nouveau à l'Art déco*, Anvers (2006).
- Amiran 1969 = R. Amiran, *Ancient Pottery of the Holy Land*, New Brunswick, N.J. (1969).
- Arnold 1998 = D.E. Arnold, *Ceramic Theory and Cultural process*, Cambridge (1998).
- Arnold *et alii* 2008 = D.E. Arnold, J.H. Wilson & A.L. Nieves, Why was the potter's wheel rejected? Social choice and technological change in Ticul, Yucatan, Mexico, in *Pottery Economics in Mesoamerica,* edited by C.A. Pool & G.J. Bey, Tucson, AZ (2008), 59-87.
- Baldacci 2013 = G. Baldacci, *Haghia Triada (Creta) nel periodo protopalaziale: la ceramica degli scavi 1977-2011 dall'area* dell'insediamento, Unpublished PhD Dissertation, Università Ca' Foscari Venezia (2013).
- Berg 2007 = I. Berg, Meaning in the making: the potter's wheel at Phylakopi, Melos (Greece), *JAS* 26 (2007), 234-252.
- Brumfield & Earle 1987 = E.M. Brumfield & T.K. Earle (eds), *Specialization, Exchange and Complex Societies*, Cambridge (1987).
- Caloi 2011 = I. Caloi, Le innovazioni tecnologiche nella Messarà: dal wheel-fashioning al wheel-throwing, in *Kretes Minoidos. Tradizione e identità minoica tra produzione artigianale, pratiche cerimoniali e memoria del passato*, edited by F. Carinci, N. Cucuzza, P. Militello & O. Palio (Studi di Archeologia Cretese 10), Padua (2011), 87-102.
- Caloi 2018 = I. Caloi, Il MM II a Festòs: spunti di riflessione e prospettive di ricerca', in *Rhadamanthys. Studi di archeologia minoica in onore di Filippo Carinci per il suo 70° compleanno*, edited by G. Baldacci & I. Caloi (BAR-IS 2884), Oxford (2018), 17-28.
- Caloi forthcoming = I. Caloi, Breaking with tradition? Some observations on wheel-thrown vases from Protopalatial Phaistos, in *Craft and People. Agents of Skilled Labour in the Archaeological Record*, edited by C. Hayward, C.M. Uckelmann & B. Roberts, London.
- Gophna 1992 = R. Gophna, The Intermediate Bronze Age, in *The Archaeology of Ancient Israel*, edited by A. Ben-Tor, Tel Aviv (1992), 126-158.
- Gerhardus 1979 = M. Gerhardus, *Symbolism and Art Nouveau: Sense of Impending Crisis, Refinement of Sensibility, and Life Reborn in Beauty*, Oxford (1979).
- Girella 2010 = L. Girella, A view of MM IIIA at Phaistos: pottery production and consumption at the beginning of Neopalatial period, *Aegean Archaeology* 9 (2010), 49-89.
- Gosselain 2000 = O.P. Gosselain, Materialising identities: an African perspective, *Journal of Archaeological Methods and Theory* 7 (2000), 187-217.
- Gosselain 2008 = O.P. Gosselain, Thoughts and adjustments in the potter's backyard, in *Breaking the Mould: Challenging the Past through the Pottery*, edited by I. Berg (BAR-IS 1861), Oxford (2008), 67-79.
- Gosselain 2011 = O.P. Gosselain, Fine if I do, fine if I don't. Dynamics of technical knowledge in Sub-Saharan Africa, in *Investigating Archaeological Cultures: Material Culture, Variability, and Transmission*, edited by W. Roberts & M. Vander Linden, Berlin (2011), 211-227.
- Gosselain & Livingstone Smith 2005 = O.P. Gosselain & A. Livingstone Smith, The Source clay selection and processing practices in Sub-Saharan Africa, in *Pottery Manufacturing Processes: Reconstruction and Interpretation*, edited by D. Bosquet & R. Martineau (BAR-IS 983), Oxford (2005), 33-47.
- Iamoni 2015 = M. Iamoni, Pottery production during the third and second millennium B.C. in Western Syria. The development of ceramic technology as a result of the rise of Qatna as a regional capital, in *The Transmission of Technical Knowledge in the Production of Ancient Mediterranean Pottery*, edited by W. Gauß, G. Klebinder-Gauß & C. von Rüden (ÖJh Sonderschriften 54), Vienna (2015), 183-206.
- Jeffra 2013 = C. Jeffra, A reexamination of early wheel potting in Crete, *BSA* 108 (2013), 31-49.
- Jung 2017 = R. Jung, Cooking vessels from Late Bronze Age Cyprus: Local traditions, western and eastern innovations, in *From Cooking Vessels to Cultural Practices in the Late Bronze Age Aegean,* edited by J. Hruby & D. Trusty, Oxford & Philadelphia, PA (2017), 127-145.
- Kiriatzi & Knappett 2016 = E. Kiriatzi & C. Knappett (eds), *Human Mobility and Technological Transfer in the Prehistoric Mediterranean*, Cambridge (2016).

- Knappett 1999 = C. Knappett, Tradition and innovation in pottery forming technology: wheel-throwing at Middle Minoan Knossòs, *BSA* 94 (1999), 101-129.
- Knappett 2016 = C. Knappett, Resisting innovation? Learning, cultural evolution and the potter's wheel in the Mediterranean Bronze Age, in *Cultural Phylogenetics. Concepts and Applications in Archaeology*, edited by L. Mendoza Straffon (Interdisciplinary Evolution Research 4), Heidelberg (2016), 97-111.
- Knappett & Van der Leeuw 2014 = C. Knappett & S.E. Van der Leeuw, A developmental approach to ancient innovation: the potter's wheel in the Bronze Age East Mediterranean, *Pragmatics and Cognition* 22 (2014), 64-92.
- Lemonnier 1993 = P. Lemonnier, *Technological choices: transformation in material culture since the Neolithic*, London (1993).
- Lis 2016 = B. Lis, A foreign potter in the Pylian kingdom? A reanalysis of the ceramic assemblage of Room 60 in the Palace of Nestor at Pylos, *Hesperia* 85.3 (2016), 491-536.
- Lis 2018 = B. Lis, Potters in captivity? An alternative explanation for the Italo-Mycenaean pottery of the 13th century BCE, in *An Archaeology of Forced Migration. Crisis-induced Mobility and the Collapse of the 13th c. BCE Eastern Mediterranean. Contextualising the Intentional Destruction of Objects in the Bronze Age Aegean and Cyprus*, edited by J. Driessen (Aegis 15), Louvain-la-Neuve (2018), 261-271.
- Rice 1987 = P.M. Rice, *Pottery Analysis: A Sourcebook*, Chicago, IL & London (1987).
- Roux 2010 = V. Roux, Technological innovations and developmental trajectories: social factors as evolutionary forces, in *Innovation in Cultural Systems. Contributions from Evolutionary Anthropology*, edited by M.J. O'Brien & S.J. Shennan, Cambridge (2010), 217-234.
- Roux 2013 = V. Roux, Spreading of innovative technical traits and cumulative technical evolution: continuity or discontinuity, *Journal of Archaeological Method and Theory* 20 (2013), 312-330.
- Roux & Courty 2013 = V. Roux & M.-A. Courty, Introduction to discontinuities and continuities: theories, methods and proxies for a historical and sociological approach to evolution of past societies, *Journal of Archaeological Method and Theory* 20.2 (2013), 187-193.
- Rutter 2015 = J.B. Rutter, Ceramic technology in rapid transition. The evidence from settlement deposits of the Shaft Grave era at Tsoungiza (Corinthia), in *The Transmission of Technical Knowledge in the Production of Ancient Mediterranean Pottery*, edited by W. Gauß, G. Klebinder- Gauß & C. von Rüden (ÖJh Sonderschriften 54), Vienna (2015), 207-224.
- Van de Moortel 2002 = A. Van de Moortel, Pottery as a barometer of economic change: from the Protopalatial to the Neopalatial society in Central Crete, in *Labyrinth Revisited. Rethinking Minoan Archaeology*, edited by Y. Hamilakis, Oxford (2002), 189-210.
- Van de Moortel 2006 = A. Van de Moortel, Middle Minoan IA and protopalatial pottery, in *Kommos V. The Monumental Buildings at Kommos*, edited by J. Shaw & M.C. Shaw, Princeton, NJ (2006), 264-377.

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The book

This volume comprises the proceedings of a workshop with the same title which took place in February 2016 at UCLouvain (Louvain-la-Neuve, Belgium). It was organised within the framework of the ARC13/18-049 (concerted research action) "A World in Crisis?". This workshop questioned the reliability of pottery as crisis indicator within the archaeological data set. More particularly, following the perspective of archaeological and anthropological research that assesses pottery technology as a social product, there is an interest in addressing the social and cultural aspects of *technological change* in pottery production in the specific context of *crisis and period of trouble*. The main goal of our examination was to detect *whether* and *how* technological choices or changes observed in the archaeological ceramic record may reflect periods of transition, disruption, crisis or change pertaining to social, political, economic and environmental conditions. We proposed to address these questions by bringing together experts in charge of the study of pottery at different Bronze Age Mediterranean sites in order to discuss, confront and contextualise their respective assemblages and associated contexts. This two-day workshop emphasised that the majority of our case studies allow the identification of *continuous* changes in pottery production systems, i.e. changes that do not evidence any clear cessation of transmission in potting practices. These are interpreted as indicators of periods of transition, of socio-political and economic transformation, rather than moments of crisis or disruption. On the contrary, *discontinuous* changes in pottery production systems have been observed in those contexts where new paste recipes and/or innovative forming techniques were introduced by *foreigners* and adopted by local people. Finally, the contributions also highlighted that our observations needed to be replaced in a broader contextual framework, especially in the case of the Late Bronze Age (13th-12th c. BC) Mediterranean systems' collapse. Indeed, several archaeological contexts here examined have demonstrated a relative continuity of ceramic traditions at the 13th-12th c. BC transition, while other forms of transmitted technological knowledge had abruptly stopped.

The authors

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The series AEGIS (Aegean Interdisciplinary Studies) attempts to make the results of new archaeological research on Aegean and especially Minoan societies available to the scientific and wider public at a rapid pace. Monographs, PhD dissertations, proceedings of scientific meetings and excavation reports complete each other to offer a general view of this time frame which is of primary importance to understand the ancient world and its historical, political, symbolical and social sequences.

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