Tracing Pottery-Making Recipes in the Prehistoric Balkans 6th–4th Millennia BC

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Preface and Acknowledgments

The majority of chapters of this peer-reviewed volume originate from the workshop *Tracing Pottery-Making Recipes in the Prehistoric Balkans, 6th–4th Millennia BC* held in Belgrade between 19-20th September 2014. This event was jointly organised by the Institute of Archaeology, University College London (UCL) and the Institute of Balkan Studies (Serbian Academy of Sciences and Arts) and was generously sponsored by the Institute for Archaeo-Metallurgical Studies (IAMS) at UCL.

The aims of the event were to facilitate communication and exchange among scholars with an active interest in high-temperature ceramic technology during the 6th–4th millennia BC in the Balkans and to investigate the current state of art in the field. This international event brought together archaeologists and archaeomaterials scientists from several countries, including Croatia, Bulgaria, France, Hungary, Greece, Republic of North Macedonia, Romania, Serbia, and the United Kingdom. A diverse range of papers on the technology of Neolithic and Chalcolithic pottery from the Balkans were presented at the two-day meeting, many of which appear as chapters in this volume. Other relevant studies have also been included in order to produce the first dedicated book on the topic of early Balkan ceramic technology.

We thank all of the speakers and discussants for the stimulating atmosphere at the meeting. Many other people were instrumental in providing us with support and encouragement during the production of this volume. We would particularly like to thank Christoph Berthold, Annalisa Costa, Vanessa Forte, Kyle Freund, Maja Gori, Lars Heinze, Arvin Raj Mathur, Roberta Mentesana, Lionello Morandi, Juan Jesús Padilla Fernández, Marco Romeo Pitone, Milica Rajičić, Thilo Rehren, Giulia Russo, Elisa Norina Solera, Michela Spataro, Cynthianne Spitieri, Nenad Tasić, Carmen Ting, Esther Travé Allepuz, Bruno Vindola and Maximilian Zerrer. We are also indebted to Institute of Balkan Studies (Serbian Academy of Sciences and Arts) and to the Rectorate of the University of Belgrade for securing the venue and helping with the organisation. Silvia Amicone would like also to thank the Competence Center Archaeometry Baden-Württemberg and the Excellence Initiative of the Eberhard Karls Universität Tübingen for their support during the preparation of this edited volume.

We would like to dedicate this volume to the memory of one of the participants of the workshop, our dear friend and colleague Ivan Suvandzhiev who sadly passed away.

Participants at the workshop Tracing Pottery-Making Recipes in the Prehistoric Balkans, 6th–4th Millennia BC (picture by Milica Rajičić).

Introduction.
Tracing Pottery-Making Recipes in the Prehistoric Balkans, 6th-4th Millennia BC

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The Neolithic of southeastern Europe was one of the most dynamic periods in European prehistory as it saw the establishment of a fully sedentary settlement system that is reflected in the rise of large tell-settlements, the acceleration of agricultural and herding activities, and significant technological innovations. This period is also marked by rapid developments in pyrotechnology, particularly in pottery and metallurgy production. These processes, which appear to have taken place between c. 6500 and 4000 BC, blend into the Chalcolithic period and are characterised by very high standards of pottery firing and decorative techniques (Bailey 2000: 153-192).

Ceramic assemblages are abundantly preserved and provide a foundation for understanding technological and cultural developments during this time. To date, pottery studies in the Balkans are still dominated by extensive chrono-typological classifications, which are used to differentiate between various archaeological cultures (Childe 1929) that developed in the area and are traditionally equated with social groups, or even ethnic entities, whose distributions are often assumed to correlate with the boundaries of modern countries (e.g. Tsirtsoni 2017). This is explained by the fact that since the late 19th century the culture-historical approach has been the dominant theoretical framework adopted by researchers of the discipline (Maran 2017: 17). This approach to the later prehistory of the Balkans focuses on the chronology of pottery finds and the distribution of related archaeological cultures and is at the core of diffusionist models (e.g. Childe 1929; Garašanin 1954) relegating the Balkans to the role of a bridge between Northern Europe and the Near East, where the latter is regarded as the cradle of major cultural achievements such as the diffusion of farming and the invention of metallurgy. Despite a general decline of this paradigm, local particularities connected to the complex geopolitical situation of the Balkans during the 20th century favoured an exceptionally strong persistence of the notion of 'archaeological culture' in this region that delayed the full response to new theoretical approaches taking form in the second half of the same century (Gori and Ivanova 2017: 3).

The various chapters of this volume, nevertheless, demonstrate that the concept of an 'archaeological culture' in the Balkans remains a robust nomenclature that could be useful for studying interrelations between different material cultures and thereby creating larger syntheses. At the same time, because of the centrality of this concept in the archaeological debate (Roberts and Vander Linden 2011), it is important to be critically engaged with questions about what archaeological cultures are. It is also crucial to reflect on how these complexes of associated traits have emerged and could acquire validity as tools of scientific investigation. In this regard, it is important to observe that although broad regional pottery typologies based on morphology and decoration helped to contribute to an initial understanding of developments in material culture, a more nuanced approach to the knowledge and skills behind pottery production is needed to fully utilise ceramics as a tool for tracing cultural phenomena. This necessity is well stated in various chapters of this volume where the authors, although still relying on the traditional notion of archaeological culture, also emphasise the importance of pottery as a proxy for acquiring useful information about aspects of ancient societies such as economy, identity and social networks. This largely reflects the scope of the present volume, which features contributions aiming to trace meaningful and real connections between pottery and people through the study of ceramic technology.

This interdisciplinary approach to pottery studies has its roots in the pioneering work of Shepard (1956). Her research laid the foundation of the two theoretical trends that dominated the studies of pottery in Anglo-American archaeology from the second half of the last century onwards: Ceramic Ecology and the Functionalistic Approach (Morris 1974; Bishop and Lange 1991; Santacreu 2014). These are part of the broader theoretical development of the so-called 'New Archaeology' (e.g. Binford 1965; Binford 1972; Clarke 1973). More precisely, ceramic ecology focuses on reconstructing the relationship between ceramics and the natural environment (e.g. Matson 1965; 1995; Rye 1981; Kolb 1988; Arnold 1993), while the functionalistic approach underlies the relationship between the vessel's function and the potters' behaviour (e.g. Braun 1983; Rice 1990; Schiffer and Skibo 1987; 1997).

These theories first had an impact on the study of prehistoric pottery in the Balkans during the 1970s as the result of international excavations at Selevac, Opovo (Tringham and Krstić 1990; Tringham *et al.* 1992) and the work of American and English scholars such as Gardner (e.g. 1978), Chapman (1981), and Kaiser (1984; 1990; Kaiser *et al.* 1986). These projects applied, with success and for the first time, new theoretical models to pottery assemblages from this region as part of doctoral research projects. After these important works, the study of ceramic technology in the prehistoric Balkans somehow stalled and did not develop in the same way as it did in other regions such as the neighbouring Aegean, where the study of technology was incorporated into pottery research on a regular basis (e.g. Day 1989; Whitbread 1989; Day *et al.* 1998). This is not surprising, however, if one considers the marginalisation of Balkan archaeology as a component part of broader geopolitical tensions and isolation during the 1990s. Besides, differently from the Balkans, Aegean archaeology served as laboratory for new Anglo-American theoretical approaches that led to the decline of diffusionist models in favour of studies more focused on regional dynamics within the Aegean (Gori and Ivanova 2017: 3). Culture history and diffusionist models remained the dominant paradigm in Balkan archaeology and anti-diffusionist positions entered mostly only in the debates on the autonomous invention of metallurgy (Renfrew 1969; Jovanović and Ottaway 1976; Todorova 1978; Roberts *et al.* 2009; Radivojević *et al.* 2010).

Studies in pottery technology received a boost at the beginning of the 21st century, thanks to the general decline of culture-historical approaches and the opening of this region to other theoretical developments within archaeology. This is well demonstrated for example by the studies of scholars such as Gheorghiu (e.g. Gheorghiu and Nash 2007), Salanova (e.g. Salanova *et al.* 2010; Salanova 2012), Miloglav (e.g. 2012), and Vuković (e.g. 2013; 2015) who started to investigate aspects of ceramic technology such as manufacturing techniques, organisation of production, and specialisation. In addition, ethnographic approaches to Balkan pottery technology and production have also developed in recent decades (e.g. Djordjević 2007; 2014; Carlton 2014). The knowledge of prehistoric pottery manufacture and circulation has also benefitted from the use of material science, with notable projects including those of Kreiter (Kreiter 2010; Kreiter *et al.* 2017), Spataro (2014; 2017), Szakmány *et al.* (2011), and Gajić-Kvaščev (Gajić-Kvaščev *et al.* 2012a; 2012b). These studies and several other on-going projects on pottery technology are demonstrating the enormous potential that this approach has for furthering our understanding of ancient ceramic technology as archaeometric analysis can be used to detect patterns associated with the selection and provenance of raw materials and important aspects related to manufacturing processes such as pyrotechnology.

Despite the examples given above, the study of ceramic technology continues to occupy a marginal role in Balkan prehistory, and the various chapters of this volume bring together for the first time the multiple strands of current research on Neolithic and Chalcolithic pottery from this region. It reflects a field of study that is still largely dependent on culture-history models, but is nonetheless open to various theoretical and methodological approaches that emphasise the importance of studying ceramic technology and its function. A focus on ceramics and their relation to the environment is reflected in various contributions of this volume. Chapter 2 (Djordjević), for example, brings attention to the importance of experimental and ethnographic studies within research on pottery technology. She emphasises the importance of carrying out ethnographic research and archaeological experiments at a local level, namely in the same region once inhabited by past communities. In the Balkans, environmental conditions have not changed drastically since the Neolithic. Therefore, through ethnographic studies and archaeological experiments in the region, it is possible to formulate relevant models of the varied and interconnected ways in which past communities engaged with local resources that have the potential of disclosing histories of interactions among people and materials across different landscapes. Very importantly, this contribution demonstrates the urgency to protect the knowledge of traditional ceramic technologies as part of the intangible cultural heritage of Europe, a concern that also frames chapter 1 (Carlton). His contribution focuses on the tradition of calcite tempering in the contemporary domestic pottery production of the central and western Balkans with in-depth considerations about the environment, but also the function of the vessels manufactured by the interviewed potters.

Functionalistic approaches are echoed in the contributions by Vuković as well as Miloglav and Balen that suggest different perspectives to this topic. Chapter 12 (Vuković) discusses the tracing of pottery function through technology by focusing on the study of their performance characteristics. In doing so, Vuković investigates formal properties and morphology of Neolithic pots from Serbia, reaching meaningful conclusions that shed light on the shift in everyday-life between semi-sedentary and fully sedentary societies that accompanies the transition from the Early to Late Neolithic. On the other hand, chapter 6 (Miloglav and Balen) investigates the function of vessels through the application of organic residue analysis. The latter has so far seen only limited use in the study of ancient pottery from the Balkans and the chapter demonstrates its potential, especially when combined with other lines of evidence provided by use wear analysis and contextual information.

At the core of this volume are also post-processual perspectives that emphasise technology as a reflection of social relations and cultural values, leading to the development of social anthropology of technology (e.g. Lemmonier 1986; 1992; Pfaffenberger 1988; 1992; Schlanger and Sinclair 1990; van der Leeuw 1993; Dobres and Hoffman 1994 and 1999; Stark 1998; Roux 2010), an approach that owes much to the pioneering work of archaeologists like Leroi-Gourhan (1964; 1965) and Lechtman (1977; 1984). Among these theoretical frameworks it is important to mention the widely adopted concepts of *chaîne opératoire* (e.g. Gourhan 1964; Roux 2017) and 'technological choices' (van der Leeuw 1993; Lemmonier 1993; Sillar and Tite 2000). These approaches resonate at different levels in the various contributions of this book. Chapter 8 (Salanova) for example examines technology as an expression of identity, through an approach that combines qualitative and quantitative analyses with a technological assessment of pottery from Kovačevo (6200-5600 BC, Bulgaria). The results of this work show that it is possible to distinguish different aspects of identity through the study of ceramics and thereby establish the base for a renewed debate on the earliest pottery production and agrarian development in the Balkans.

Chapter 3 (Georgieva) addresses themes such as the organisation of production and specialisation, focussing on pottery assemblages from Kodjadermen–Gumelniţa–Karanovo VI and Krivodol–Sălcuţa–Bubanj Hum Ia cultures (Bulgaria, second half of the 5th millennium BC) in order to investigate the social transformation taking place between the Early and Late Eneolithic in this region. Chapter 10 (Ştefan) focuses on similar problems through the application of the *chaîne opératoire* to the pottery production at the Chalcolithic site of Radovanu (4800-4600 BC). This is achieved by combining macroscopic and microscopic observation, thus shedding new light on the technological traditions and connected cultural aspects of this important site.

The anthropology of technology also emphasises the socially organised nature of learning and the transmission of knowledge, topics at the core of archaeological research on material culture (Stark *et al.* 2008). Within archaeology, social learning and cultural transmission recently developed in two major directions. These lie on one hand in the development of 'situated learning theory' (Lave and Wenger 1991; Wenger 1998) and the related notion of 'communities of practice' (e.g. Sassman and Rudolphi 2001; Eckert 2008; 2012; Huntely 2008) and on the other hand on neo-Darwinian approaches such as the 'dual-inheritance theory' (e.g. Cavalli-Sforza and Feldman 1981; Boyd and Richerson 1985; Mesoudi and O'Brien 2008; Shennan 2008). In Chapter 7 (Mirković-Marić and Amicone), communities of practice of pottery-making are investigated through the technological studies of materials from the Late Neolithic phases (5200-4800 BC) of the archaeological sites of Gradište-Idjoš, Kremenjak-Čoka, Akača-Novo Miloševo (Serbia). These contexts are characterised by pottery assemblages marked by two different material cultures (Vinča and Tisza), and this study attempts to determine if these stylistic groups correspond with two technological traditions that reflect different communities of practice within pottery manufacturing.

Together with the aforementioned Chapter 10, Mirković-Marić and Amicone's contribution thus presents another major theme at the core of this volume: the application of natural science-based approaches to the study of material culture. These often permit a degree of resolution that cannot be obtained with macroscopic analyses and thus have the potential for better understanding ancient technology (e.g. Rice 1987; Whitbread 1995; Evershed 2008; Tite 2008; Quinn 2009; 2013; Torrence *et al.* 2015; Hunt 2016). Our volume therefore aims to promote a dialogue between archaeologists and natural scientists. Often, archaeologists are not informed about the growing possibilities of scientific analysis, and natural scientists tend to be more focused on developing new methods rather than integrating their studies with the research questions of archaeologists (Sommer *et al.* 2019; Martinón-Torres and Killick 2015)

The application of archaeometry to the study of raw material procurement and processing is also exemplified by Chapters 11 (Szakmány *et al.*) and 4 (de Groot). The former is a study providing archaeometric data on ceramics from the Late Neolithic site of Hódmezővásárhely-Gorzsa (4846-4495 cal BC) with the aim of assessing the composition and technological characteristics of ceramics. The latter by de Groot investigates the relationship between pottery types and clay preparation methods in the first pottery assemblages in southeastern Europe and western Anatolia by focusing on the Early Neolithic ceramic assemblages of Džuljunica-Smărdeš in NE Bulgaria (*c.* 6200-5900 BC). Ceramic petrography and multivariate statistics are combined to compare patterns in the similarities of typological elements of pottery assemblages and thereby also between clay preparation methods and clay recipes.

Finally, materials science approaches are discussed in chapters 5 (Kreiter *et al.*) and 9 (Saridaki *et al.*) that emphasise themes such as technological continuity and change. In particular, Chapter 5 aims to trace the ceramic technology of major vessel forms at the Neolithic site of Balatonszárszó-Kis-erdei-dűlő (*c.* 5350–4900 BC), with a focus on choices in raw materials and tempers to assess the changes in technological practices through the different chronological horizons of the site. Chapter 9 investigates four Neolithic settlements in Pieria (northern Greece) and covers almost the whole span of the Neolithic period in the region, from the earliest phases to the early Late Neolithic (6700/6500 - 5000/4900 BC). This work combines diachronic and synchronic approaches, comparing pottery from different phases of each site with pottery from within a single phase.

Concluding Remarks

The variety of approaches, perspectives, and themes presented in this volume successfully capture the diversity of present-day Balkan pottery studies. This volume will hopefully serve as a reference for those interested in the production and technology of prehistoric and later ceramics. In addition, it offers insights on the past and present inhabitants of this rich and diverse region that is becoming a new laboratory for the burgeoning field of pottery technology. By gathering these different contributions, this volume ultimately attempts to compare varying perspectives that aim to trace pottery-making recipes. These embody aspects of human behaviour that are key to understanding people and their cultural traditions (O'Brien *et al.* 2010). Processes of adoption and transfer of technology and ideas are crucial concerns for present-day archaeology. Archaeological material cultures represent phenomena that have emerged through mechanisms of cultural transmission and specific learning activities. A technological approach to the study of pottery has the potential to shed new light on mechanisms governing the diffusion of ideas that catalyse the formation of shared material cultures. This could facilitate the establishment of broader generalisations and the investigation of networks among social groups that share common ideologies regarding the production and appearance of objects and their co-occurrence.

The volume is primarily intended for scholars working on Balkan archaeology, but will also be of interest to those working on archaeological theory and pottery more generally, as it offers strong archaeological correlates and case studies of theoretical concepts that have undergone increasing re-assessment in recent years. These include technological change, innovation, social boundaries, and cultural transmission. In addition, given such a wide-ranging exploration of theoretical issues cross-cutting single research fields, this volume will also appeal to academics working in cognate disciplines such as archaeometry and anthropology.

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