**Review of: Borgia, V. & Cristiani, E. (eds.) (2018). Palaeolithic Italy. Advanced studies on early human adaptations in the Apennine Peninsula. Leiden: Sidestone Press.** Paperback, 428 p., 103 figs. ISBN 978-90-8890-583-4. Online: https://www.sidestone.com/books/palaeolithic-italy

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The edited volume Palaeolithic Italy: Advanced studies on early human adaptations in the Apennine Peninsula is the published output of the 2015 symposium "*Out of Italy: Advances in Italian Palaeolithic*", which took place at University of Cambridge's McDonald Institute for Archaeological Research. Its aim is to provide an up-to-date overview of current research in Italy, showing the breadth and depth of current investigations addressing a wide range of research questions. The volume consists of a preface by Graeme Barker and an introduction by the editors Valentina Borgia and Emanuela Cristiani, followed by 17 papers, and concluding with an afterword by Carlo Peretto. The papers are organised chronologically, covering the Lower Palaeolithic (papers 1, 2), Middle Palaeolithic (papers 3-6), the Middle-Upper Palaeolithic transition (papers 7-9), the Upper Palaeolithic (papers 10-15) and finishing with the Pleistocene-Holocene transition (papers 16, 17). Several authors provide useful reviews, either as a background section or as the main purpose, covering more or less the entirety of the peninsula (e.g. papers 3, 4, 17), while others review regional evidence (e.g. papers 8, 12).

The introduction highlights the significance of Italy to wider Palaeolithic research questions, including the timing and nature of the first occupations, variation in human behaviour, the disappearance of the Neanderthals, and the adaptations to varying ecological niches in over a million years of human presence. As a volume it successfully achieves its aim to provide a 'glimpse' of current research. The volume, like the archaeological record, is dominated by lithics. This is particularly true for the earlier periods, when taphonomy certainly will have played a role in the survival of organic technologies that have been discovered elsewhere in European Middle Pleistocene contexts (Thieme, 1997; van Kolfschoten et al., 2015). As Arzarello points out (paper 1), it is impossible to fully understand human behaviour on the basis of lithics alone, and some research on the use of plants for consumption and/or technologies would have contributed to the scope of the volume. Nevertheless, several chapters do cover non-lithic technologies, including evidence for potential wood working in the Lower Palaeolithic (paper 2), Neanderthal use of shells for tools (paper 6), Upper Palaeolithic osseous technologies (papers 8, 12), and the possible use of adhesives (paper 11).

Turning to that ever-present lithic record, we see the broad patterns that we expect of technological change from the Lower Palaeolithic through the end of the Upper Palaeolithic. Methodological approaches include technological and typological analyses (papers 1, 3, 4, 5, 11, 12), accompanied in some cases by use-wear studies (papers 2, 11). For the Lower and Middle Palaeolithic, two papers discuss how the availability and the shape of raw materials influence methods of exploitation (papers 1, 5). Two other chapters demonstrate the use of both localised and long-distance raw materials during the Protoaurignacian, highlighting local adaptations to different landscapes as well as the existence of social networks (papers 8, 10). Several chapters attest to the wide range of reduction methods used by Neanderthals, producing flakes, blades, bladelets and retouched tools (papers 3, 4, 5, 8). Serradimigni (paper 11) describes and illustrates a fascinating special category of Final Epigravettian tools from Continenza Cave, categorised as 'Sinuous', used for processing fish.

The volume underscores that the Apennine Peninsula provided a wide variety of ecological niches that humans adapted to over long periods of time ranging from coastal plains, marshes and lagoons to mountains and steppes. These niches varied in their accessibility over time – for example with mountainous regions likely inaccessible during the Last Glacial Maximum and coastal areas significantly reduced during warmer periods. The available biomass unsurprisingly shifted as well, with humans adapting to this by targeting megafauna in some periods, while including smaller game, coastal and freshwater resources and birds during others (e.g. papers 9, 14, 17).

Aureli & Ronchitelli (paper 4) show that during the Middle Palaeolithic there were high concentrations of sites along the Tyrrhenian and Adriatic coasts, the Salento region and Berici hills, while other regions such as Piemonte and Calabria were nearly empty. Mobility levels appear to be linked more with environmental shifts than with human species, with Neanderthals (paper 5) and our own species either being interlinked through networks or travelling long distances during the earliest Upper Palaeolithic (paper 8), early Epigravettian (paper 10) and even Late Upper Palaeolithic and Mesolithic periods (paper 16).

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Use-wear analysis of Lower Palaeolithic stone tools suggests the possibility of scavenging of carcasses, potentially including rotting ones (paper 2). While subsistence behaviours do clearly broaden over time, there appears to be increasing evidence of similarities between the Middle and Upper Palaeolithic. Alongside terrestrial hunting, consumption of aquatic resources (papers 8, 11, 14, 17) and birds (papers 9, 14) is evidenced in both periods. Changes over time in subsistence behaviours may reflect shifts in multiple factors including climate, environments, and technologies rather than cognitive differences.

Many chapters mention the negative effects of taphonomy on the Palaeolithic Italian record (papers 1, 7, 17), while others highlight what can be seen with excellent preservational contexts (papers 2, 6, 10, 14). Problems with poor-quality absolute dating in the Italian record are frequently mentioned throughout the volume (papers 4-8), particularly relevant for ongoing debates about the authorship and dating of transitional technologies such as the Uluzzian (Higham et al., 2014). Good quality dating is certainly helping to resolve some of these questions, with a hiatus between final Neanderthal and earliest Anatomically Modern Human populations evidenced in some regions (paper 8) while they look likely to have overlapped in others (paper 7). Clearly many key questions remain about this important transitional period.

Borgia & Cristiani (introduction) lament the lack of art in the volume, particularly as Italy has a plethora of parietal and mobiliary art as well as personal ornamentation, though several chapters do mention both Middle and Upper Palaeolithic symbolic and ritual behaviours (papers 8, 9, 14, 15). I would add that what also is sometimes missing in the volume are discussions of the societies behind the sites and artefacts, including existence and contributions of women and children. A few chapters do touch on the presence of fossil remains of children (papers 4, 14), and Romagnoli (paper 6) hints that children would have been able to make use of shell tools. It is certain that future research will continue to expand upon how Palaeolithic artefacts may represent the presence and innovative capacities of the younger members of groups (Riede et al., 2018).

The book closes with a hard look at Italian research history and the shortcomings of its late tendency towards scientific approaches (paper 17), including a critique of the negative impact of funding freezes at institutions in the country (afterword). These problems are not unique to the Italian Palaeolithic, and serve as a cautionary tale to those of us in countries where funding problems are likely to get worse before they get better. Several chapters demonstrate that in spite of these challenges, research programmes are interdisciplinary and systematic, looking to resolve long-standing problems using diverse approaches including re-excavation of older sites to revise chronologies and stratigraphies (paper 15), landscape studies (paper 13), experimental work (paper 14), and the development and application of new methodologies to study old materials (paper 6). A few small niggles include that figures in some chapters are so small that they make interpreting graphs or lithics problematic, and some cross-referencing between chapters – particularly those dealing with the same sites and/or periods – would have made the volume more cohesive.

A main aim of the symposium was to encourage international collaborations in many different subdisciplines (introduction). Indeed, the volume brings together researchers from multiple institutions in nine different countries on both sides of the Atlantic. In my opinion, some of the most effective chapters tackling theoretical and research history problems are those which have the most inter-institutional, international, and interdisciplinary engagement (e.g. papers 15, 17). Palaeolithic archaeology will continue to benefit from such collaborative research programmes and publications, making the most of scientific advances in spite of the challenges that lie ahead.

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