Chapter 14. Disentangling Neolithic cuisine: archaeological evidence for 9,000-year-old food preparation practices and cooking techniques at Çatalhöyük East

González Carretero, L.; Bennison-Chapman, L.E.; Demirergi, A.; Fuller, D.Q.; Ketchum, S.; Madella, M.; ... ; Hodder, I.

COMMUNITIES AT WORK

THE MAKING OF ÇATALHÖYÜK

Edited by

IAN HODDER & CHRISTINA TSORAKI

BRITISH INSTITUTE AT ANKARA
Monograph 55
Çatalhöyük Research Project Series 15
2021

Team members departing from the site (photograph by Scott D. Haddow).

'Throw some water on that taxi, until we meet again'
Sean Doyle 2020

'Su gibi git, su gibi gel'
Turkish saying

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Contents

Contributors v
List of figures vii
List of tables xiii
Acknowledgements xv

1. Communities at work: 25 years of research at Çatalhöyük *Ian Hodder and Christina Tsoraki* 1

2. A quarter-century of community engagement at Çatalhöyük *Allison Mickel, Patrycja Filipowicz and Lucy Bennison-Chapman* 13

3. Narratives around audiences: creating relationships between Çatalhöyük and different publics *Sara Perry, Veysel Apaydin, Caitlin L. Curtis, Ashley Fisher, Katrina Gargett, Serap Özdöl Kutlu, Sierra McKinney and Duygu Tarkan* 27

4. *The City* 2016–2018: a video and audio installation *Rossella Biscotti* 39

5. Integrating records of Mellaart and Hodder research projects at Çatalhöyük: the GDN Area *Marek Z. Barański, Lech Czerniak, Aroa García-Suárez, Serena Love, Kamilla Pawłowska, Christina Tsoraki, Milena Vasić, Alex Bayliss, Sean Doyle, Lisa Guerre, Robert Sobott, Elizabeth Stroud, Duygu Tarkan, Belinda Tibbetts and Jesse Wolfhagen* 51

6. Integrating conservation in practice at Çatalhöyük, an inter-team perspective *Ashley M. Lingle, Jerrod Seifert, Marek Z. Barański, Barbara Betz, Gesualdo Busacca, Scott Haddow, Justine Issavi, Burcu Tung, Milena Vasić and Jesse Wolfhagen* 71

7. Digital Çatalhöyük: a cyber-archaeological approach *Maurizio Forte, Nicolò Dell'Unto and Nicola Lercari* 89

8. The seasonality of using wetland and riparian environments at Çatalhöyük *Jesse Wolfhagen, Rena Veropoulidou, Gianna Ayala, Dragana Filipović, Carla Lancelotti, Marco Madella, Ceren Kabukcu, Kamilla Pawłowska, Carlos G. Santiago-Marrero and John Wainwright* 103

9. The complexity of open spaces at Çatalhöyük *Justine Issavi, Lucy Bennison-Chapman, Amy Bogaard, Lindsay Der, Sean Doyle, Aroa García Suárez, Scott D. Haddow, Ceren Kabukcu, Kamilla Pawłowska, Heeli Schechter, Duygu Tarkan, Christina Tsoraki, Milena Vasić, Rena Veropoulidou and Jesse Wolfhagen* 115

10. An integrated approach to the study of socio-material networks at Çatalhöyük *Camilla Mazzucato, Sean Doyle, Justine Issavi, Serena Love, Duygu Tarkan, Christina Tsoraki, Milena Vasić and Rena Veropoulidou* 147

11. Continuity and change in architectural traditions at Late Neolithic Çatalhöyük *Marek Z. Barański, Aroa García-Suárez, Ceren Kabukcu, Arkadiusz Klimowicz, Serena Love, Wendy Matthews, Camilla Mazzucato, Kamilla Pawłowska, Robert Sobott, Christina Tsoraki and Burcu Tung* 177

12. Entwining time and materialising communities: house biographies and temporalities of space-making *Kevin Kay* 199

13. Diachronic entanglements at Çatalhöyük: complementing network visualisations of key human and thing dependencies with a data-scaffolding and modelling approach *Angus Mol, Dominik Lukas and Ian Hodder* 215

14. Disentangling Neolithic cuisine: archaeological evidence for 9,000-year-old food preparation practices and cooking techniques at Çatalhöyük East *Lara González Carretero, Lucy Bennison-Chapman, Arzu Demirergi, Dorian Q Fuller, Sheena Ketchum, Marco Madella, Kamilla Pawłowska, Carlos Santiago-Marrero, Christina Tsoraki, Katheryn C. Twiss and Rena Veropoulidou* 229

15. Social tolerance and violence at Neolithic Çatalhöyük *Christopher J. Knüsel, Bonnie Glencross, Christina Tsoraki, Cristina Belmonte Santisteban, Lucy Bennison-Chapman and Marco Milella* 243

16. The colour of things. Pigments and colours in Neolithic Çatalhöyük *Eline M.J. Schotsmans, Gesualdo Busacca, Lucy E. Bennison-Chapman, Ashley M. Lingle, Marco Milella, Belinda W. Tibbetts, Christina Tsoraki, Milena Vasić and Rena Veropoulidou* 263

Bibliography 289

Online supplementary material

Supplementary material available online (https://doi.org/10.18866/BIAA/e-15) comprises colour, 3D or scalable versions of selected figures from chapters 6, 7, 8, 9, 10, 12, 13, 15 and 16.

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List of figures

Chapter 1

1.1. Map of excavation areas on the East and West Mounds (map: Çatalhöyük Research Project and Camilla Mazzucato).

Chapter 2

2.1. House in Küçükköy.
2.2. Ayfer Bartu Candan conducting ethnography with local women hired to sort heavy residue.
2.3. Children at summer camp (photograph by Jason Quinlan).
2.4. Allison Mickel interviewing Hüseyin Veli Yaşlı in Küçükköy (photograph by Tunç İlada).

Chapter 3

3.1. Turkish pair testing a prototype of an EMOTIVE experience for Çatalhöyük in summer 2019, focused on understanding the nature of egalitarian life.
3.2. Interior of the Building 77 replica house, showing interpretation board and icons alongside the rooftop entrance and cooking area of the home.
3.3. Jessica and Emmeline installing a 'modern' icon sign in the replica of the Hunting Shrine, indicating that the exit is a modern (not prehistoric) feature of the home.
3.4. Tunç İlada of Ege University touring Turkish and international visitors through the North Area of the site in 2015 (photograph courtesy of Tunç İlada).
3.5. The *Curious Case of Çatalhöyük* exhibition in Istanbul, 2017.
3.6. Çatalhöyük Research Project Archive by Refik Anadol.
3.7. A member of the Young Archaeologists' Club pointing out building features to his group as they explore the virtual walkthroughs of Çatalhöyük's replica houses (photograph by Sarah Drewell).
3.8. A personalised object left behind as part of the trading experience in the digital education kit.
3.9. Young Archaeologists' Club members engaging with Bo the Chatbot and his guided activities during the final component of the digital education kit (photograph by Sarah Drewell).
3.10. View of the North Area excavation from the agricultural fields of Küçükköy (photograph by Talu Tuntaş).

Chapter 4

4.1. Film still from *The City* (2018) (all figures courtesy of Protocinema Istanbul – New York).
4.2. Film still from *The City* (2018).
4.3. Film still from *The City* (2018).
4.4. Film still from *The City* (2018).
4.5. Film still from *The City* (2018).
4.6. Film still from *The City* (2018).
4.7. Film still from *The City* (2018).
4.8. Film still from *The City* (2018).
4.9. Film still from *The City* (2018).
4.10. Film still from *The City* (2018).
4.11. Film still from *The City* (2018).
4.12. Film still from *The City* (2018).
4.13. *The City* (2018), installation view DAAD Gallery in Berlin, Germany, 2019.
4.14. *The City* (2018), installation view DAAD Gallery in Berlin, Germany, 2019.

Chapter 5

5.1. The location of trenches within the GDN Area at Çatalhöyük East Mound.
5.2. Reconstruction of compound foundations of B.141.
5.3. The northern cross-section in the TP Area illustrating the difference in elevations between stepped foundations of B.74/B.61 (after Barański 2017).

5.4. Comparative data from Mellaart and Hodder research projects in regard to internal spaces and features within B.81, B.140 and B.142.
5.5. The 1960s plan of building-levels III–I (above) (source: Mellaart 1967: 45, fig. 3) and the reassessed plan of a late contemporary neighbourhood (below) (source: Barański 2017: 207, fig. 101).
5.6. Texture (sand, silt and clay) analysis by excavation areas (illustration by Serena Love).
5.7. Principal components analysis by excavation areas (illustration by Serena Love).
5.8. Reconstruction of B.81 and B.142.
5.9. Spatial changes within a column of buildings from: (a) the Early period in the South Area, (b) the Middle period in the North Area and (c) the Late/Final periods in the GDN/TP Area.

Chapter 6
6.1. Unit (21501) in B.119. Lozenge motif in relief. Photograph taken in 2015, just before the painting was lifted by the conservation team.
6.2. Crossover between conservation and excavation team members in B.77 during the 2013 season.
6.3. Building 80 Feature 5014. Geometric wall painting in situ.
6.4. Building 80 with reconstruction and Perspex wall painting.
6.5. Building 5, burial F.3808. Skull and artefacts found beneath bundled bones (photograph by Jason Quinlan).
6.6. Iron brooch (32102.x7) found in Sp.85, in burial F.5077, before conservation treatment.
6.7. Composite X-radiograph of (32102.x7).
6.8. Iron broach (32102.x7) post-treatment.
6.9. Conservator working to consolidate and block-lift a burial (sk.23921/F.3896) selected for display in the Konya Museum.
6.10. Burial F.3642, found in Building 77. Conservation and human remains team members consulting before block-lifting the burial.
6.11. Emine Bülüç starting oven construction in one of the reconstruction rooms.
6.12. At the entrance to the North Area, the sign provides information about site management and conservation. The larger conceptual content of the sign focuses on how the site deteriorates and what we do to manage it (Perry et al. 2017).
6.13. Sign for the bottommost viewing point in the South Area, referring to the visible reconstruction work in B.80. The sign clarifies the conservation efforts, what visitors can see from here and why it has been done (Perry et al. 2017).

Chapter 7
7.1. 3D visualisation of B.89 by digital photogrammetry.
7.2. X-ray shaded view of a moulded architectural element collapsed in the middle of the stratigraphic infill.
7.3. Three-dimensional visualisation of the archaeological stratigraphy of B.89 and related Harris matrix.
7.4. a) All scans of B.89 captured in 2014; (b) Point cloud of skeleton (30928).
7.5. Terrestrial laser scanning units used at Çatalhöyük between 2010 and 2015, from left to right: Minolta Vivid 910; Trimble GX; Trimble FX; FARO Focus 3D S120.
7.6. Building 77 in the teleimmersive system. Visualisation of different categories of stratigraphic layers and archaeological finds.
7.7. The teleimmersive system at the University of California, Berkeley (2015).
7.8. Dig@IT. View of (a) in-context menu; (b) timeline; (c) virtual tablet; (d) measuring-tape tool.
7.9. Virtual-reality session on B.89 in the DiVE (Duke Immersive Virtual Environment).

Chapter 8
8.1. Chart of seasonal activities in wetland and riparian environments around Neolithic Çatalhöyük.
8.2. Posterior estimates of modelled average enamel $\delta^{18}O$ values for sheep from Çatalhöyük.

Chapter 9
9.1. Map of referenced Neolithic sites in southwest Asia (based on Zeder 2011; Özdoğan et al. 2011; 2012).
9.2. South Area open spaces and buildings by period. Illustration includes Mellaart excavation data (source: ÇPR excavation database and geodatabase).

9.3. North Area open spaces and buildings by period (source: ÇPR excavation database and geodatabase).
9.4. Percentage of external units by data category, through time.
9.5. Percentage of internal units by data category, through time.
9.6. Percentage of external midden units by deposition type.
9.7. Percentage of external midden units by deposition type, through time.
9.8. Percentage of excavated activity units by type.
9.9. Percentage of excavated activity units by type and through time.
9.10. Frequency of feature types by space through time.
9.11. Overall logged density of finds in open spaces by data category.
9.12. Overall logged density of finds in open spaces by area.
9.13. Overall logged density of finds in open spaces by occupation period.
9.14. Extracted components for PCA based on heavy residue densities (g/L).
9.15. PCA biplot based on heavy residue densities (g/L). Spaces are grouped by time period.
9.16. PCA biplot based on heavy residue densities (g/L). Spaces are grouped by area.
9.17. Extracted components of PCA based on open space composition.
9.18. Biplot of unit-type composition PCA results grouped by occupation period
9.19. Biplot of unit-type composition PCA results grouped by excavation area.
9.20. Assyrian woman dehusking lentils in the village of Anhil in Tur Abdin (photograph source: @AssyriaNews).
9.21. Bar plot of tertiary human remains by element, through time.
9.22. Kernel densities for all finds classes through space and time: a) Sp.85; b) Sp.610; c) Sp.631.
9.23. Spatial distribution of beads in Sp.85 and Sp.610.
9.24. Spatial distribution of figurines in Sp.85 and Sp.610.
9.25. Spatial distribution of obsidian in Sp.85 and Sp.610.
9.26. Spatial distribution of shells in Sp.610 (32114).

Chapter 10

10.1. Relevant objects and buildings are recorded and arranged in a nodelist format (UCINET) (A) and displayed as a 2-mode network (B) 2-mode networks or affiliated networks are made of two types of nodes, in this case of buildings and objects that are linked (affiliated) to one another. The 2-mode network can be converted into a weighted 1-mode network of buildings (C) or objects (D). The weighted 1-mode network of buildings links the building (nodes) that share the same objects. The weight of links represents the number of objects that link each pair of buildings. The 1-mode network of objects on the contrary links the objects that are co-present in the same building and the weight of the link corresponds to the number of buildings shared by a pair of objects.
10.2. (A) Weighted Early network and (B) binarised Early network using the average of all values as the threshold cut-off value (see table 10.3).
10.3. Maps of the buildings included in the ENB.
10.4. 2-mode ENB – (circles – buildings/ squares – objects).
10.5. (A) 1-mode weighted ENB and (B) 1-mode binary ENB.
10.6. ENB plotted according to different centrality values (A) degree centrality, (B) eigenvector centrality, (C) Opsahl degree centrality (α=0.5), and (D) Opsahl degree centrality (α=1.5). Nodes are arranged in a radial layout where vertices are placed such that their distance from the centre is proportional to their centrality scores (*visone*) (Baur 2008).
10.7. ENB: (A) network partitions generated by the Louvain modularity maximisation algorithm (B and C) and network partition (D) overlaid on the buildings map of the South Area.
10.8. Maps of the buildings included in the MNB: (A) North Area; (B) South Area.
10.9. 2-mode MNB – (circle – buildings/ square – objects).
10.10. (A) 1-mode weighted MNB and (B) 1-mode binary MNB.
10.11. MNB plotted according to different centrality values (A) degree centrality, (B) eigenvector centrality, (C) Opsahl degree (α=0.5), and (D) Opsahl degree (α=1.5). Nodes are arranged in a radial layout where vertices are placed such that their distance from the centre is proportional to their centrality scores (*visone*) (Baur 2008).
10.12. MNB: (A) network partitions generated by the Louvain modularity maximisation algorithm (B) and network partition overlaid on the building map of the North and South Area (C).
10.13. Maps of the buildings included in the LNB: (A) North Area; (B) South Area.

10.14. 2-mode LNB – (circle – buildings/ square – objects).
10.15. (A) 1-mode weighted LNB and (B) 1-mode binary LNB.
10.16. LNB plotted according to different centrality values (A) degree centrality, (B) eigenvector centrality, (C) Opsahl degree (α=0.5), and (D) Opsahl degree (α=1.5). Nodes are arranged in a radial layout where vertices are placed such that their distance from the centre is proportional to their centrality scores (*visone*) (Baur 2008).
10.17. LNB: (A) network partitions generated by the Louvain modularity maximisation algorithm (B) and network partition overlaid on the building map of the North and South Area (C).

Chapter 11
11.1. Juxtaposition of various layouts of buildings from the Early, Middle, Late and Final periods at Neolithic Çatalhöyük (illustration by Marek Z. Barański based on Çatalhöyük Research Project GIS Archive).
11.2. Box plot of building sizes in different occupation periods.
11.3. Bar chart of mudbrick fabrics from all the occupational phases.
11.4. Box plot of mudbrick sizes from the major occupation periods.
11.5. Types of brickwork at Çatalhöyük: (a) simple wall, (b) double simple walls, (c) one-brick-thick compound foundation, (d) one-and-a-half-brick-thick compound foundations with a rubble core and (e) one-and-a-half-brick-thick compound foundations with a solid core (source: Barański 2017).
11.6. Reconstruction of the main phases of use of B.74/B.61: (a) the early phase, (b) the transition phase and (c) the late phase.
11.7. An overview of B.79 (photograph by Jason Quinlan).
11.8. An overview of B.80 (photograph by Jason Quinlan).
11.9. A close-up view of the 'pillow-shaped' pillar in B.79.
11.10. The 1960s reconstruction of a main room showing timber framework and panelling (source: Mellaart 1967: fig. 11).
11.11. Impressions of two beams on top of the western wall of B.79 (photograph by Jason Quinlan).
11.12. Reconstruction of a possible structural layout of B.79.
11.13. Reconstruction of a possible attic/mezzanine in the northwestern corner of the main room of B.77.
11.14. Reconstruction of a possible partition wall in the northern part of B.162.

Chapter 12
12.1. Intertwining of hearth maintenance and floor plastering through time in Building 132 (field sketch by Arkadiusz Klimowicz).
12.2. Life histories of several features in Çatalhöyük houses, expressed as the activation and deactivation of different registers.
12.3. The process for deriving a relative timeline from a Harris matrix, following Taylor (2016) (from Kay 2020a, fig. 4).
12.4. Example of a 'full' biography traced from a relative timeline, showing features in the southern half of Building 49 between the first floors and closure. Solid lines: features insistent through an extended time. Icons: features without extended insistence; that is, pits, burials and x-finds in surfaces.
12.5. Burial, painting and sculpture in five 66th-century house biographies.
12.6. Biography of a 'history house' in the 66th century: (a) B.77 early in its life, when it was visually unremarkable at most times but periodically painted and buried-in; (b) B.77 late in its life, with an accumulation of striking sculpted elements but less painting and burial (photographs by Jason Quinlan).
12.7. Number of fire installations at each timestep through the occupation of Early, Middle and Late period houses.
12.8. Changing biographies and daily practice in the seventh millennium: (a) schematic plan of B.17 in timestep 25, showing opposing kitchens and 'friction'; (b) schematic plan of B.59 in timestep 20, after removal of the south-western kitchen; (c) schematic plan of B.56 in timestep 15, showing single, central kitchen.

Chapter 13
13.1. A theoretical model of entanglements, showing how a set of initial and core entanglement paths can be tracked through time.
13.2. Data distribution of pottery with quadratic, cubic and 4th degree regression analysis. The dashed lines in the right histogram indicate the position of the 0.6/-0.6 threshold.
13.3. Intensity of change: sums of rates of change based on all data distributions by Hodder Level.

13.4. Overall intensity per level with percentage distribution for Hodder levels M–R.
13.5. Creation of nodes in the model by co-occurring hits of the threshold in distinct data-lanes (here: disappearance of clay balls and full adoption of pottery indicating the transition).
13.6. The data-driven model of T,T relations as shown in *Netlogo*'s observer, with cross-temporal ties created between all events that occurred within two levels of each other.
13.7. The network derived from the matrix thinking method applied to the data-driven model (fig. 13.6).

Chapter 14
14.1. Clay balls in situ in the floor surface in front of oven F.7732, Sp.531, B.132 (Level North F, 2016).
14.2. Oven in Building 80 with in situ accumulation of stones possibly used as heaters (photograph by Jason Quinlan).
14.3. Examples of archaeological charred remains of plant-based food recovered from Çatalhöyük East.
14.4. Chronological and spatial distribution of cereal product types from Çatalhöyük East.
14.5. Chronological distribution of types of cereal-based products and their plant composition showing variation through time at Çatalhöyük East.

Chapter 15
15.1. A composite representation of all affected zones and locations of cranial injuries at Neolithic Çatalhöyük.
15.2. A drawing of a depressed fracture in the frontal bone of a mature adult male (17485) from Building 49, Level North G, Middle Period of site occupation, 6700–6500 cal BC: a) location of the lesion on the superior surface of the cranial vault, just anterior to the coronal suture; b) location of the region of injury on a cranial model; c) close-up of the lesion. (illustration by Kathryn Killackey).
15.3. An ectocranial view (external surface of cranial vault) of a healed penetrating traumatic injury (circled) of the posterior left parietal in a young adult male (16513) from Level South P dating to the Late Period, 6500–6300 cal BC.
15.4. An endocranial view of the same cranial fragment (circled) as in fig. 15.3 of skeleton (16513) bearing penetrating trauma. This lesion is a 'forme fruste' with an incompletely detached spall of bone broken from the inner table of the cranial vault.
15.5. (a) Skeleton (3368) in situ in Feature 285, Space 115, Cut (3369) in the midden between Building 4 and Buildings 6, 7, and 21 in the South Area of the site, from Level South L, dated to 7100–6700 cal BC, the Early Period of the site occupation; (b) plan drawing of skeleton (3368). In both images note the close proximity of the hands and feet and that between the cranium and the knees. The contracted position is accentuated by kyphoscoliosis of the vertebral column.
15.6. Adolescent individual (19593) found in the post-abandonment fill in Sp.87, B.114, from Level North G of the Middle Period, 6700–6500 cal BC. This individual was missing the cranium, the first six cervical vertebrae, and the entirety of the left upper limb (photograph by Jason Quinlan).
15.7. Young adult male (32608), found in B.161, Sp.605, from Level South K, 7100–6700 cal BC, Early Period (photograph by Jason Quinlan).
15.8. The Epigravettian-Mesolithic panel of rock engravings from Grotta Addaura, Mount Pellegino, near Palermo, Sicily. Two individuals towards the centre of the panel appear bound in a group of what appear to be hooded individuals. The implicit movement of the figures, in various poses, seems to afford a glimpse of a transcendent ritual event. The bound position is reminiscent of the position of the near-contemporary Epipalaeolithic Mataha (Jordan) individual (photograph courtesy of Archivio Fotografico del Museo Archeologico Regionale Antonino Salinas di Palermo).
15.9. The paired depressed fractures of skeleton (18645), an adult female, found in B.97 from Level South O of the Middle Period, 6700–6500 cal BC.

Chapter 16
16.1. (a) Red ochre nodules (Fe_2O_3) from Çatalhöyük (photograph by Christina Tsoraki); (b) blue azurite $Cu_3(CO_3)_2(OH)_2$ from Çatalhöyük (photograph by Jason Quinlan).
16.2. Schist palette used for processing red-coloured ochre (photograph by Christina Tsoraki).
16.3. *O. edulis* (oyster) palette. The black discolouration is caused by the burned building (photograph by Jason Quinlan).

16.4. *Unio* shell palette with ochre (photograph by Eline Schotsmans).
16.5. *Unio* shell palette with cinnabar (photograph by Rena Veropoulidou).
16.6. (a) In situ photograph of skeleton (32818) with cinnabar shell (31884.x41) at the right shoulder (photograph by Jason Quinlan); (b) cinnabar shell (31884.x41) (photograph by Eline Schotsmans); (c) detail of the cinnabar stripe (photograph by Marco Milella).
16.7. Blue pigment on wooden bowl (photograph by Eline Schotsmans).
16.8. Bone 'applicator' with lump of blue pigment (16308.x2) (photograph by Jason Quinlan).
16.9. Microscopic image of a multi-layered plaster from B.17; the consecutive marl layers are observable separated by red pigment or by soot (photograph by Gesualdo Busacca).
16.10. Plaster head installation with obsidian eyes and ochre paint from B.132 (21666) (photograph by Jason Quinlan).
16.11 (a) *Viviparus* painted bead/pendant; (b) *Lymnaea* (or *Stagnicola*) sp. painted bead/pendant (photograph by Rena Veropoulidou).
16.12. Shell (*Ranellidae*) painted artefact or 'figurine' (photograph by Rena Veropoulidou).
16.13. Clay ball with evidence of red pigment (photograph by Lucy Bennison-Chapman).
16.14. (a) Skeleton (21884) was buried on the right side with the skeletal elements on the uppermost and left side of the skeleton more intensely stained with red pigment (photograph by Jason Quinlan); (b) right patella more stained on its medial (uppermost) side (photograph by Eline Schotsmans); (c) the partial discolouration of the left femoral head confirms that the individual was flexed and fleshed when the ochre was applied, leaving the main part of the femoral head unstained (photograph by Eline Schotsmans).
16.15. (a) Frontal bone of skeleton (22196) with remains of cinnabar and phytoliths; (b) microscopic image of cinnabar layer with phytoliths on top.
16.16. Artist's rendering of a person wearing a headband over painted cinnabar (illustration by Gauthier Devilder). The deceased could have worn a headband painted with cinnabar, or a headband over a stripe of cinnabar applied to the skin (see text).
16.17. Ventral view of obsidian mirror (19447.x3) with red and blue pigment found near skeleton (19460) (photograph by Jason Quinlan).
16.18. Obsidian mirror from burial fill (30039): (a) well-polished dorsal face (photograph by Jason Quinlan); (b) its reflective surface showing details and colours (photograph by Sean Doyle).
16.19. Number of individuals and relative percentages of skeletons with direct pigment traces and associated pigments per occupation period.
16.20. Paintings and burials during level North G. Detail of the North Area.
16.21. Synoptic tables showing occupational phases and relative numbers of burials and paintings of selected buildings belonging to Levels South O and North G. Multiple-burial phases, multiple-painting phases and combinations of both are highlighted.

List of tables

Chapter 1
1.1. Çatalhöyük East temporal groupings of levels.

Chapter 5
5.1. The relationships between levels and buildings of the Mellaart and Hodder research projects at Çatalhöyük.

Chapter 7
7.1. Specifications of different laser scanners.
7.2. Terrestrial laser scanners used by the 3D Digging Project between 2010 and 2015.

Chapter 8
8.1. Some indicative characteristics of the most frequent dung-derived plant taxa (based on the information in Davis 1965–1985).

Chapter 9
9.1. Postholes in open spaces. Organised chronologically from earliest (top) to latest (bottom). Posthole in North Area italicised (source: ÇPR excavation database).
9.2. Overview of open spaces.
9.3. Overview of subset of open spaces for more detailed study (n=22).
9.4. Wall types through time.
9.5. Find classes density g/L quartiles.
9.6. Find classes logged density quartiles.

Chapter 10
10.1. Selected buildings for each major occupation period (Early, Middle and Late).
10.2. Selected objects/practices used to establish links between nodes.
10.3. Building networks binarising cut-off values. All link values less than or equal to the threshold values are regarded as 0, while those above the threshold value are assigned a value of 1.
10.4. Centrality results calculated on the ENB nodes.
10.5. Results of the macro-level metrics on the three networks of buildings (Early, Middle and Late).
10.6. Values of Louvain modularity scored by the Early, Middle and Late networks.
10.7. ENB: results of the QAP regression (R^2) and correlation (r).
10.8. Centrality results calculated on the MNB nodes.
10.9. MNB: results of the QAP regression (R^2) and correlation (r).
10.10. Centrality values for the Late period building networks.
10.11. LNB: results of the QAP regression (R^2) and correlation (r).

Chapter 11
11.1. List of buildings described in the chapter, by period and excavation area.

Chapter 12
12.1. Building biographies drawn on in this chapter.

Chapter 15
15.1. Skeletons showing traumatic lesions grouped by sex, age and zone affected, ordered by sex. Zone numbers in bold indicate the zone in which the largest proportion of the lesion is located
15.2. Skeletons showing traumatic lesions by sex, age and grouped by anterior, superior, posterior and left- and right-side locations and either above the hat-brim line (AHBL) or below the hat-brim line (BHBL).

15.3. Features of the excluded individuals.
15.4. Descriptive statistics of the size of cranial lesions at Neolithic Çatalhöyük.

Chapter 16
16.1. Overview of studied shells with pigment staining recovered during the Hodder excavations.
16.2. Overview of all skeleton unit numbers with direct pigment traces and with pigments as burial associations, ordered per Hodder level for each occupation period.

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The Çatalhöyük Research Project team in 2014 (photograph by Jason Quinlan).

The Çatalhöyük Research Project team, 2018 study season in Catania, Sicily (photograph by Jason Quinlan).

16. The colour of things. Pigments and colours in Neolithic Çatalhöyük

Eline M.J. Schotsmans, Gesualdo Busacca, Lucy E. Bennison-Chapman, Ashley M. Lingle, Marco Milella, Belinda W. Tibbetts, Christina Tsoraki, Milena Vasić and Rena Veropoulidou

'Humans and things, humans and humans, things and things' Ian Hodder (2011b)

Introduction

In the past, colours and pigments have been used variably in different social and ritual activities, as well as in the expression of symbolism through material culture. Documented from the Middle Palaeolithic onwards (D'Errico 2008; Brooks et al. 2018), the use of pigments became increasingly common in a range of contexts.

Research on the use of colours and pigments in past cultures has changed throughout time in parallel with important transitions in archaeological theory. During the 1980s, archaeology began to embrace approaches based on a variety of post-structuralist perspectives, not only studying objects but also the systems of knowledge that produced an object (e.g., Hodder 1982). This led to a surging interest in the experiential character of material culture in the 1990s, with an emphasis on the embodiment of past materialities (e.g., Meskell 1996; Gilchrist 2000) and the importance of perception and senses in archaeological research (e.g., Watson, Keating 1999; Houston, Taube 2000; Jones 2001). In the study of pigments, these changing approaches led to an increased focus on the functional uses of pigments through systematic microscopic analysis and experimental studies. As such, the dichotomy between functional or symbolic interpretations was broken, and researchers started to integrate both in their studies (D'Errico 2008). This approach was further supported by ethnographic data demonstrating the absence of a distinction between symbolic and utilitarian functions of pigments (Lydall 1978; Rosso 2017).

The terms 'pigments' and 'colours' cannot be used as synonyms. Pigments are the *material* colour or the actual colourant substance, while 'colour' is a broader concept referring to chromatic properties that are inherent to a certain material and the way light is absorbed or reflected. Colour refers to the spectral composition of visible light and the way it is processed in our brain. In this sense, it is important to remark that colour is not only about hue, but encompasses other properties such as brightness, lustre, transparency, contrast and more. While pigments and colours are inextricably linked to each other and both central to the aesthetic appreciation of things, their investigation from an archaeological perspective is necessarily different. Pigments are easier to single out and analyse archaeologically. In contrast, the appreciation and use of the chromatic properties inherent to materials is more difficult to assess archaeologically, leading to more discursive hypotheses on issues such as value and aesthetics within past societies.

The Neolithic settlement of Çatalhöyük offers an exceptional dataset for studying pigments and colour usage over 1,000 years of the existence of the settlement. Scholars from different disciplines have studied pigments, paintings and art at Çatalhöyük (e.g., Matthews 2005a; Matthews et al. 2013; Anderson et al. 2014b; Çamurcuoğlu 2015), but linking this research together in a broader and systematic way has not been attempted before. The aim of this chapter, therefore, is to analyse evidence of pigments and colours from Neolithic Çatalhöyük based on data collected during the 25 years of research under the directorship of Ian Hodder (1993–2017) (Çatalhöyük Research Project). More specifically, in order to discuss the possible social relevance of colour within the society of Neolithic Çatalhöyük, this chapter looks into possible associations between pigments and colours, and their links with different tools, production techniques, artefacts and human remains. Pigments encountered during the Mellaart excavations (1961–1965) are excluded from this text.

Characterisation of pigments at Çatalhöyük

The Çatalhöyük society produced one of the richest colour palettes currently known in the Neolithic. Colours and shades of white, red, pink, yellow, orange, blue, green, brown and black have been identified at the site, with pigments including ochres, cinnabar, copper colourants, carbon black and calcium carbonate.*

* For colour versions of all figures in this chapter, please visit https://doi.org/10.18866/BIAA/e-15.

The most common pigments on site are ochres: stable metal oxides which are non-fugitive and inert. Their shades include red, orange, brown and yellow. Ochres are derived from variably coloured rocks and soils primarily composed of oxides and hydroxides of iron. They are mainly secondary deposits, occurring as soils from weathered, highly oxidised surface outcrops of ore deposits enriched in the colour-bearing constituent, usually iron oxides or iron hydroxides (Eastaugh et al. 2008; Triat 2010). Red ochres contain hematite, iron (III) oxide (Fe_2O_3) and typically other minerals such as quartz, clays, gypsum, micas or feldspars (Eastaugh et al. 2008; Triat 2010). Ochre used at Çatalhöyük may have been collected from a variety of sources, including the limestone hills forming the northern boundary of the Konya Plain and the Erenler-Alacadağ volcanic outcrops located ca 60 to 70km to the southwest of the site (Erdoğu, Ulubey 2011; Doherty 2017). The orange and brown variations of ochre at the site are due to inclusions of either goethite (FeO(OH)) or lepidocrocite (hydrohematite (γ-FeO(OH)), which were likely linked to different sources in the landscape or could have been achieved by different preparation processes such as deliberate mixing (Çamurcuoğlu 2015). Red ochre was found in different forms: as nodules (fig. 16.1a), as loose powder or on the surface of objects. It was particularly common on wall paintings and in burials (see below) and was encountered in different depositional contexts across the site, including middens, room fills, floor deposits and construction/make-up layers.

Yellow ochre from Çatalhöyük is primarily composed of goethite (FeO(OH)) and mainly used on wall paintings during the earlier occupation levels (Çamurcuoğlu 2015). While yellow ochre is occasionally mentioned in the database in association with burials, microscopic analysis has shown that several instances of recorded yellow residues in burials are in fact botanical remains (Shillito et al. 2013b).

Another tint of red at Çatalhöyük is encountered in the form of cinnabar (HgS). Cinnabar is a scarlet to brick-red form of mercury(II) sulphide, also known as vermilion. Cinnabar commonly forms in veins and small impregnations associated with volcanic activity and hot spring action, often replacing quartz and other sulphide minerals, and is often found in association with stibnite, pyrite, marcasite, gypsum, quartz and calcite (Eastaugh et al. 2008). Research conducted in and around Konya, the closest modern city to Çatalhöyük, showed that the region is rich in lead, iron, copper and mercury oxide sources (Bahar 2018). The mercury mines around Konya became well known in the Roman period (Bahar 2018). While there are a few instances of cinnabar and red ochre mixed together on wall paintings from Neolithic Çatalhöyük (Çamurcuoğlu 2015; Doherty 2017) and on objects such as shells, their presence at the site seems to be mainly concentrated on human crania from a small number of burials (see below).

At Çatalhöyük copper carbonate and copper(II) minerals occur as both green and blue pigments. Green occurs as malachite $Cu_2CO_3(OH)_2$, which forms as a secondary mineral in the upper oxidised zones of copper ore deposits (Eastaugh et al. 2008). Blue pigment consists of azurite $Cu_3(CO_3)_2(OH)_2$, which is deep blue in colour and is always found with malachite in nature (Eastaugh et al. 2008) (fig. 16.1b). Both pigments are quite stable when reacting with light and normal atmosphere, but they darken when exposed to sulphuric fumes and binding agents (Çamurcuoğlu 2015). Azurite encountered at Çatalhöyük was collected from at least

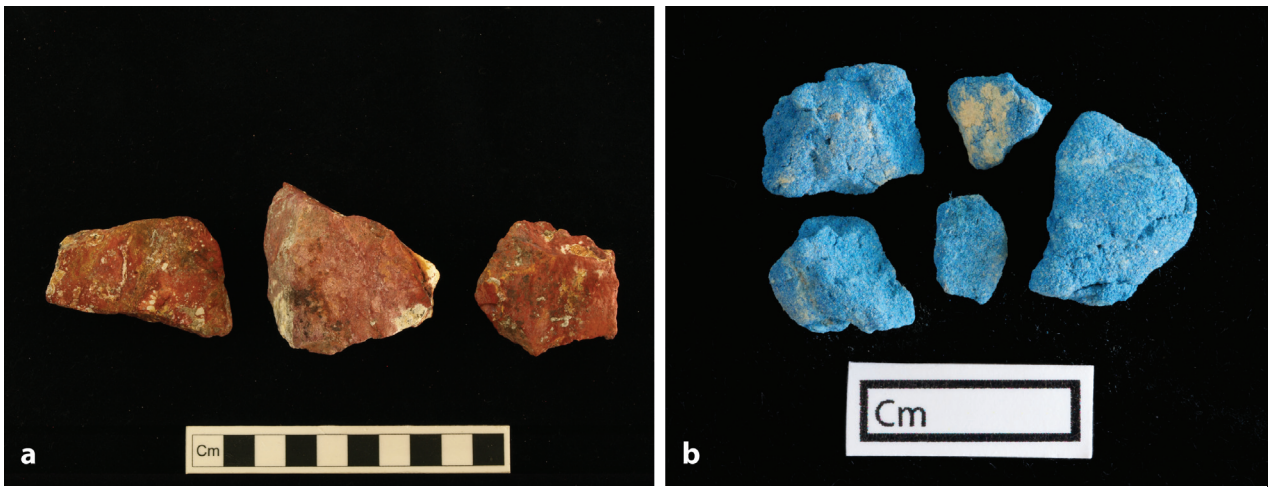

Figure 16.1. (a) Red ochre nodules (Fe_2O_3) from Çatalhöyük (photograph by Christina Tsoraki); (b) blue azurite $Cu_3(CO_3)_2(OH)_2$ from Çatalhöyük (photograph by Jason Quinlan).

two different sources. For example, dark blue azurite (30039.s9) associated with the burial of an adolescent (23126) in B.131 contained arsenic, antimony, lead and zinc, attributed to the Middle period (6700–6500 cal BC) (Level North G). These elements were not present in light blue azurite found in B.150 (31888.s8) from the Late period (6500–6300 cal BC) (for details about the elemental analyses of both blue pigments see Haddow et al. 2017: 107–08, 133–34). Additional analysis with powder X-ray diffraction (PXRD) indicated that both samples consisted of azurite, but (30039.s9) contained different minerals derived from an arsenic-rich geology such as the area around Niğde, close to the Black Sea or in the Kutahya region of western Anatolia (e.g., Doğan, Doğan 2007). At Çatalhöyük, blue or green pigments were mostly identified in burial contexts. However, possible malachite was found in association with figurine (32806.x2) and was also observed on a clay stamp (23993.D1), both found in infill layers of B.150 from the Late period (Meskell, Nakamura 2017). In addition, Mellaart (1967: 132) mentions the occurrence of a single wall painting with blue colour but does not detail where it was. The latter could not be confirmed during the Hodder excavations. A blue-looking wall painting (17645) analysed with portable X-ray fluorescence (PXRF) in 2017 did not contain a copper component and was likely carbon black (Schotsmans, personal observation).

Black pigments at the site derive from carbon black, representing shades from black to blue and brown in colour. This pigment was obtained by burning animal bones, fat and woody plant material (Çamurcuoğlu 2015). Black was intentionally used on the wall paintings at Çatalhöyük. Charred inclusions were also commonly found in the burial fills, but the pigment's intentional inclusion in these deposits is debateable.

Finally, white pigments derive from calcium carbonate in various forms. The most common natural form of calcium carbonate is calcite. It is ubiquitous in the mineral, animal and vegetable kingdoms and occurs mainly in sedimentary rocks like chalk and limestone, in metamorphic rocks like marble and occasionally in igneous rocks (Gettens et al. 1974). The white plasters of Çatalhöyük are a significant aspect of the colour palette of the site (see below). Microchemical analyses of ochre from Çatalhöyük showed that hematite was found to be mixed with low concentrations of clay and calcite, suggesting that the iron oxide might have been deliberately diluted (Mortimore et al. 2004; Anderson et al. 2014b). In any case, if a calcium carbonate-based white pigment had been used at Çatalhöyük, it would have been difficult to detect because of the overall presence of white plasters.

Pigment processing, containers and applicators

At Çatalhöyük evidence for pigment processing, pigment containers and application tools was found in the form of schist palettes, shell containers, a wooden bowl and animal bone pigment applicators.

Schist palettes were used extensively for pigment processing activities throughout the occupation sequence at Çatalhöyük (fig. 16.2). This is confirmed by microwear analysis that showed wear traces consistent with mineral contact material and the frequent presence of light red-coloured ochre on the use-faces of these tools. Their morphometric characteristics, raw material choice and wear patterns strongly indicate that palettes were employed for small-scale processing of pigments that had already been reduced to small particles, producing a fine-grained powder as the final product (Tsoraki, Volume 14, Chapter 13; forthcoming). This finding is in agreement with Camurcuoglu's suggestion that pigments used for the creation of wall paintings were finely ground, ensuring their smooth application while achieving a brighter colour (Çamurcuoğlu 2013).

The shell assemblage at Neolithic Çatalhöyük includes a very small group of shells with traces of pigments (n=19 which is 1.4% of the shell artefact assemblage (n=1,300) and 0.06% of the studied shells (n=29,395)) (table 16.1), of which ten were found during 2010–2017 excavations, and nine were previously reported by Bar-Yosef Mayer (2013) but re-examined for use-wear and closer examination of pigments. When considering the different species, the assemblage consists of freshwater species, namely *Unio* sp., *Viviparus* sp. and *Lymnaea* or *Stagnicola* sp., as well as two marine species (*Ostrea edulis*, *Ranellidae*, in all likelihood *Ranella olearium*). Out of these 19 shells, 15 shells were categorised as 'palettes' and four as painted shells (also see section on painted shells below) (table 16.1). The vast majority belong to the *Unio* species,

Figure 16.2. Schist palette used for processing red-coloured ochre (photograph by Christina Tsoraki).

Occupation period	*Level*	*Unit*	*Find*	*Building/ Space*	*Context*	*Skeleton details*	*Species*	*Type*	*Use wear*	*PXRF results*
Late (6500–6300 cal BC)	North H	10326	x2	B.55	Room fill		*Unio (mancus)*	Container/palette		Ochre
	South S	11644	x3	B.44	Room fill		*Viviparus sp.*	Bead-pendant/painted	Perforation	Ochre
	South S	11644	x19	B.44	Room fill		*Unio (mancus)*	Container/palette		NA
	South S	11617	x1	B.44	Pit or post hole		*Lymnaea/Stagnicola* sp.	Pendant/painted	Areas of polishing, slight incision (lip of perforation), rubbing (external surface)	Ochre
	South S	11617	x1	B.44	Pit or post hole		*Lymnaea/Stagnicola* sp.	Pendant/painted	Areas of polishing, slight incision (lip of perforation), rubbing (external surface)	Ochre
	TP M	23765	x40	B.150	Cluster		*O. edulis*	Palette	Scratches, furrows (internal surface); perforation	NA
	TP M	32863	x1	B.150	Platform		*R. olearium*	Painted ('figurine')		NA
	TP M	31884	x41	B.150	Burial	Adult male (32818)	*Unio (mancus)*	Container/palette		Cinnabar
Middle (6700–6500 cal BC)	North G	20965		Sp.489	Midden		*Unio (mancus)*	Container/palette		Ochre
	North G	20965		Sp.489	Midden		*Unio (mancus)*	Container/palette		Ochre
	North G	30038	x1	B.131	Multiple burial		*Unio (mancus)*	Container/palette		NA
	North G	21622	S3	Sp.602	Room fill		*Unio (mancus)*	Palette/bead-pendant?	Scratches, concentric striations due to drilling (internal surface); perforation	Cinnabar
	North G	22065	x3	B.77	Burial	Infant (30199)	*Unio (mancus)*	Container/palette		Cinnabar
	North G	17457	x4	B.49	Burial	Infant (17457)	*Unio (mancus)*	Container/palette	Brushing (internal, above pallial line)	Cinnabar
	North G	17457	x6	B.49	Burial	Infant (17457)	*Unio (mancus)*	Container/palette		Ochre
	North G	17939	x1	B.49	Burial	Infant (17939)	*Unio (mancus)*	Palette	Scratches, furrows, concentric striations due to drilling (internal surface); perforation	Cinnabar
	North F	31585		B.132	Cluster		*Unio (mancus)*	Container/palette	Brushing (internal surface)	Cinnabar
	North F	22194	x6	B.5	Burial	Adult male (22196)	*Unio (mancus)*	Container/palette		Cinnabar
	South ?M	2841	x2	B.50	Burial	Infant (2842)	*Unio (mancus)*	Container/palette		Cinnabar

Table 16.1. Overview of studied shells with pigment staining recovered during the Hodder excavations.

one of the most commonly encountered mollusc species at Çatalhöyük, which was collected from a clean water body with slow moving water not far from the settlement. Shell analyses suggest that this shell species served different needs: its flesh was consumed as food, and its shell was used as raw material for the production of various artefacts (beads, 'serrated' objects, pendants) and, after heat alteration, possibly also as temper (Reese 2005; Bar-Yosef Mayer 2013; Veropoulidou 2017; Volume 13, Chapter 3; Volume 14, Chapter 9).

Fourteen *Unio* specimens were categorised as containers for pigments or as 'palettes'. The term 'palette' refers to a tool used to lay, mix and hold pigments. Of these, one (21622) bears a perforation to furnish a handle to facilitate the use of the palette, to strap it from the belt or the wrist, or to suspend it as a bead/pendant. One additional palette is an *Ostrea edulis* (oyster) valve (23765), which also bears a perforation (fig. 16.3). Neither perforation bore any use-wear traces. The nacreous and nonporous surface of the *Unio* shell and its shallow concave shape make it a perfect container and suitable surface to lay and hold the pigments. One of the most common *Unio* species in the world was named *Unio pictorum* (genitive plural of *pictor* = painter), the 'painter's mussel', because it was historically used as a conveniently sized and shaped receptacle for holding artists' paint (*Encyclopedia of Life*). The use of shells as palettes is testified from as early as 100,000 years ago in Blombos Cave, South Africa (Henshilwood et al. 2011), and on the basis of miniature paintings on manuscripts, it seems to continue into the medieval period in Europe (Emily Carr University).

At Çatalhöyük, the inner sides of these palettes (concave for *Unio*, flat for *O. edulis*) bear traces (stains, coating, lumps) of different pigments of orange and red to vibrant vivid red hues (figs 16.4 and 16.5). PXRF analysis indicated that four palettes contained ochre (fig. 16.4) and eight palettes had cinnabar (fig. 16.5). The remaining three were not analysed or did not provide clear spectra. The staining traces are usually lighter and thinner at the central part of the valve, but thicker and more substantial near the concave part, while in some examples lumps of pigment are present under the cavity of the umbo. Those traces and the occurrence of brush strokes can be interpreted as an indication of the use of pigment mixed with a binder. Two of the palettes ((17939) and (21622)) show deep

Figure 16.3. O. edulis *(oyster) palette. The black discolouration is caused by the burned building (photograph by Jason Quinlan).*

Figure 16.4. Unio *shell palette with ochre (photograph by Eline Schotsmans).*

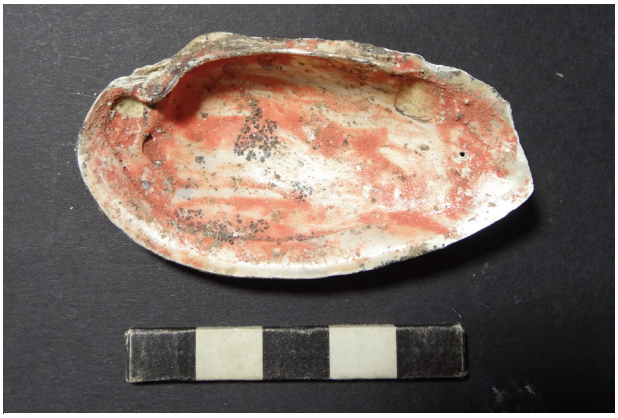

Figure 16.5. Unio *shell palette with cinnabar (photograph by Rena Veropoulidou).*

furrows and scratches on the inner side, traces that possibly resulted from a tool used to prepare or mix the pigment. Another two examples ((31585) and (17457)) bear flat brush strokes of pigment.

Placement of *Unio* shell in burials has been noted in burial features of Early and Middle periods but not in the Late period (Vasić et al., Volume 13, Chapter 17). However, when looking at shells with pigment traces, there were no shell 'palettes' recovered from the Early period (7100–6700 cal BC). The earliest indication for the use of shell palettes comes from a burial fill (2841) of an infant (2842) from the Middle period (6700–6500 cal BC) (Level South M). The inner concave side of the shell had a 0.1mm thick layer of cinnabar, confirmed by PXRF analysis. Another ten palettes were from the Middle occupation period (two from Level North F and eight from North G), and the remaining four palettes were from the Late period (one from Level North H, one from South S and two from TP M).

The majority of 'palettes' (n=8) was associated with human skeletal remains and burial fills. Five shell palettes were found in four different infant burials ((2841), (17457), (17939), (22065)), two were excavated in the burial fill of adult male skeletons ((22194), (31884)), who both had cinnabar on the cranium, and one was found in a multiple burial (30038). The remaining palettes (n=7) were found in other contexts, in particular two in clusters ((31585), (23765)), two in the same midden in (20965) and three in room fill ((10326), (11644), (21622)) (table 16.1).

The employment of shells as palettes is confirmed by the context of finds, as, for instance, in a burial in B.150, where a shell coated with cinnabar was placed at the right shoulder of an adult male (32818). The individual's frontal bone had a stripe of cinnabar (see section below) (fig. 16.6). Another example was found placed on the feet of a two-year-old infant (17939) in a basket in B.49. This *Unio* shell had been ground to a triangular (pointed) shape. It

Figure 16.6. (a) In situ photograph of skeleton (32818) with cinnabar shell (31884.x41) at the right shoulder (photograph by Jason Quinlan); (b) cinnabar shell (31884.x41) (photograph by Eline Schotsmans); (c) detail of the cinnabar stripe (photograph by Marco Milella).

had intense traces of cinnabar on the inner side and scratches on the inner surface from processing the pigment. A perforation was drilled near the corner of the triangle. Taking into account its location in the burial, it is likely that this was a palette that was secondarily used as a bead/pendant for the ankles of the infant. The infant itself did not show any traces of cinnabar. In the same building and same space, another infant (17457) was found deposited on matting or in a basket, preserved as phytoliths, with three shells, blue pigment with a bone spatula, a round copper tubular collar with preserved twisted threads and a shell bead necklace (Hager, Boz 2008). Two of the three shells bore traces of pigment, characterised as cinnabar in shell (17457.x4) and ochre in shell (17457.x6). The preserved phytoliths that surrounded the ochre shell were also analysed with PXRF, indicating the presence of cinnabar. The infant itself did not show any pigment staining. The fact that the container of the infant surrounding the ochre shell had a high cinnabar content, together with the presence of the cinnabar shell, could indicate that it had been coloured with cinnabar. This could also be a possible interpretation of the other infant (17939) mentioned earlier with a perforated palette, but the phytoliths of the basket surrounding this infant were never analysed for a possible presence of pigment.

Another possible pigment container is a wooden bowl (22678.x2) with evidence of blue pigment (fig. 16.7) from a primary deposition of an adolescent female (31705), surrounded by multiple disarticulated subadults in B.131 (C. Kabukcu, personal communication). The pigment was likely azurite, based on the element copper detected with PXRF in 2017 (Schotsmans personal observation). Within the burial fill, several other heat-affected grave associations were recovered, such as shells, fragments of clay objects, chipped stone and shell beads (Haddow et al. 2015b; 2016). Although interpreted as a container, it cannot be excluded that this object was just a blue-stained bowl. More in-depth analysis of the bowl is currently ongoing.

Pigments could have been applied with perishable materials, such as a brush with animal hair, or with less perishable materials, such as pigment applicators made from animal bone. A number of rounded and/or blunted bone points could tentatively be interpreted as hair or clothing pins and/or pigment applicators (Russell 2005; 2016; Russell, Griffitts 2013; Vasić 2018; Vasić et al., Volume 13, Chapter 17). However, it is difficult to discern their exact use with certainty. Only a few bone artefacts demonstrate a possible association with pigment use at Çatalhöyük. At least six potential bone applicators were interpreted as related to pigment use, based on their discovery 'dipped into' a pigment lump ((16308.x2) and (8184.x4)) (fig. 16.8) or because they were recovered next to pigment lumps, such as in a pouch ((13147.x1), (17457.x8), (21634.x13) and (21634.f1)). All were associated with blue or green pigment and are only present in female and infant burials, not in male burials. Males were also treated with pigment (see burials section below), so it should be borne in mind that this could be the result of a rather small sample. On the other hand, the burial assemblage shows patterns regarding the use of pigments in funerary practices, such as a similar lack of green and blue pigment in male burials (see below) (Vasić 2018; Vasić et al., Volume 13, Chapter 17). Given that these burials were allocated to different levels, it is not possible to relate them to any specific period of occupation. The

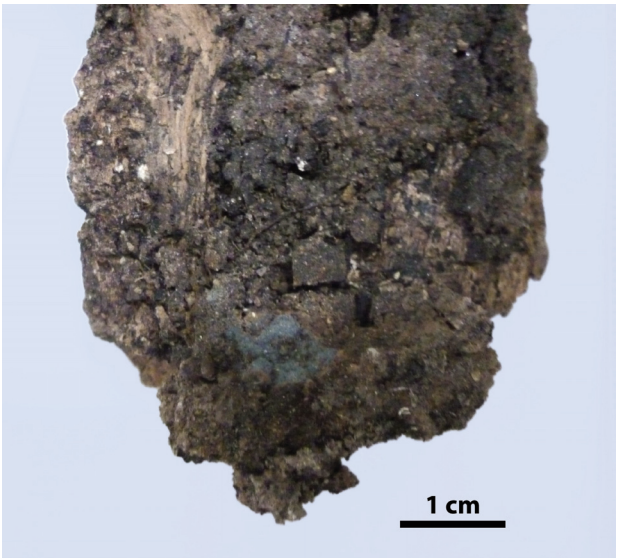

Figure 16.7. Blue pigment on wooden bowl (photograph by Eline Schotsmans).

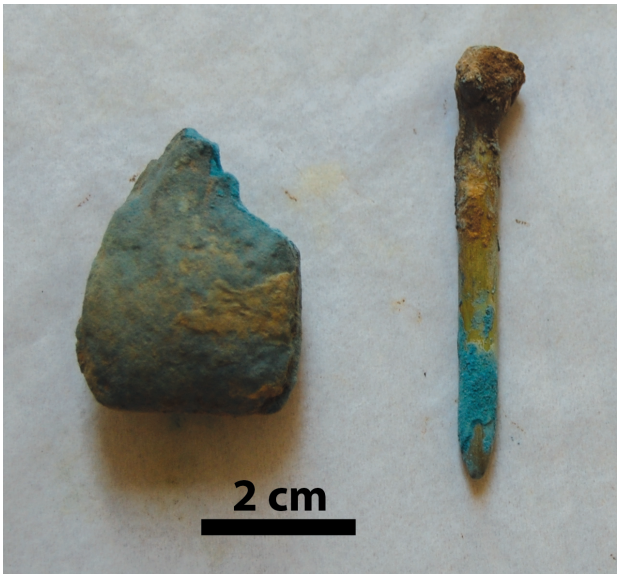

Figure 16.8. Bone 'applicator' with lump of blue pigment (16308.x2) (photograph by Jason Quinlan).

majority of the potential bone applicators (n=4) were retrieved from burials belonging to Level North G, but given that the highest number of inhumations were allocated to this level, it cannot be determined how widespread their use was in either burial or non-burial contexts at any point in the occupation of the settlement, other than they were not very common (Vasić 2018). The precise identification of the animal species could not be carried out for all potential applicators, but evidence gathered so far suggests that different animals were used in the production of these artefacts. For example, a worked fox metatarsal (13147.x1) was found next to the green pigment in a burial of a young adult female in B.60, whereas a blunted point (16308.x2) made from a large mammal (cow-sized) long bone, stuck in a lump of blue pigment, was found in a pouch together with an old adult female in B.102 (fig. 16.8) (Russell, Griffitts 2013).

The houses and their colours

'White soil', plastering and replastering at Çatalhöyük

The exploitation of lime for plastering floors and walls is one of the most common features of the PPNB villages of the Levant and southeastern Anatolia (Garfinkel 1987). What makes Çatalhöyük unique in the context of Neolithic Anatolia and the Near East is the use of 'marl' as a plastering material to cover house surfaces such as walls and platforms. Marl is a natural sediment, composed of very fine-grained calcium carbonate and is rich in clay. Marl utilised at Çatalhöyük derives from the Konya Basin, which geologically is dominated by white, carbonate mudstones (marl), and the alluvial plains associated with the river systems (Roberts et al. 1979; Fontugne et al. 1999; Kuzucuoğlu et al. 1999; Boyer et al. 2006). Research showed that there were differences between the sources and preparation of marl and its exploitation within the houses (Tung 2008). Different parts of the houses have been previously defined as 'dirty' and 'clean' areas. The 'dirty' areas, used for cooking and for production activities, were generally plastered with thicker and coarser mud plaster (Tung 2008). A better quality of marl was used for the 'clean' areas, such as burial platforms, benches and installations (Matthews 2005a; Doherty 2006). This indicates that marl utilised at the site was obtained from different locations (Matthews 2005a; Doherty 2006; Tung 2008).

Research by Çamurcuoğlu (2015) suggested that the Çatalhöyük paintings were generally applied onto clay/carbonate-based marls of different colours, and onto white, burnished surfaces made of a material traditionally referred to as 'soft-lime', which is derived from dolomitic carbonate sediments obtained 5km north of the settlement. Soft-lime is very white in colour and contains 95% pure carbonates of calcium and magnesium (Matthews et al. 1997; Roberts et al. 1999; Doherty 2011). It is important to note that soft-limes are not burnt lime plasters, despite the name. Nowadays, the inhabitants of the surroundings of Çatalhöyük still whitewash the houses with marl or soft-lime, calling it 'Ak Toprak' or 'white soil' (Çamurcuoğlu 2015).

Plastering toolkits at Neolithic Çatalhöyük were made from different materials and include stone tools (Wright 2013; Tsoraki forthcoming), bone scapulae (Russell, Griffitts 2013) and shells (Bar-Yosef Mayer 2013). Based on detailed technological and microwear analysis of the ground stone assemblage, hand-sized tools with different textural characteristics can be associated with different stages of the plastering sequence. This includes mainly schist and limestone tools with a relatively rough texture that were probably used during the earlier stages of plaster application (applicators). Intentionally modified metamorphosed limestone/marble cobbles were employed for the final burnishing of the plastered surfaces (burnishers). The homogenous texture of the raw materials and the intentionally polished surfaces would have enabled the creation of plastered surfaces with a shiny and smooth finish (Tsoraki, Volume 14, Chapter 13; forthcoming).

There is debate about whether the practice of plastering interior building surfaces changed through time or not. According to Matthews (2005a) and Doherty (2017: 70) single-layered thick 'plaster' was applied in earlier periods (7100–6700 cal BC), while during the later occupation phases (6700–5950 cal BC) a multi-layered soft-lime/marl combination was adopted, in some cases up to 450 layers. This could not be confirmed by Busacca (Volume 14, Chapter 12), who analysed multi-layered early plasters, microscopically separated by soot (fig. 16.9). The practice of plastering in multi-layered form might have been based on seasonal or annual cycles (Matthews 2005b). This could indicate that replastering houses might have been motivated by both practical and ritual reasons. From a practical point of view, plastering is hygienic and antibacterial because of its alkaline properties. It helps to keep the insects out, to remove scuff marks and to make the walls white again. Indeed, its mild antiseptic properties would prevent mould, vermin and insect infestation (Irwin of Taunton 1808; Matthews 2005a). However, while it initially reduces the number of bacteria, it does not eliminate them, so that they reflourish over time (Schotsmans et al. 2014). This could be a reason for re-plastering or limewashing annually, a practice that continues nowadays on the Konya Plain in spring. Another important practical factor for white plastered walls is light reflection. The houses only had one small entrance via the roof. Light that came in via

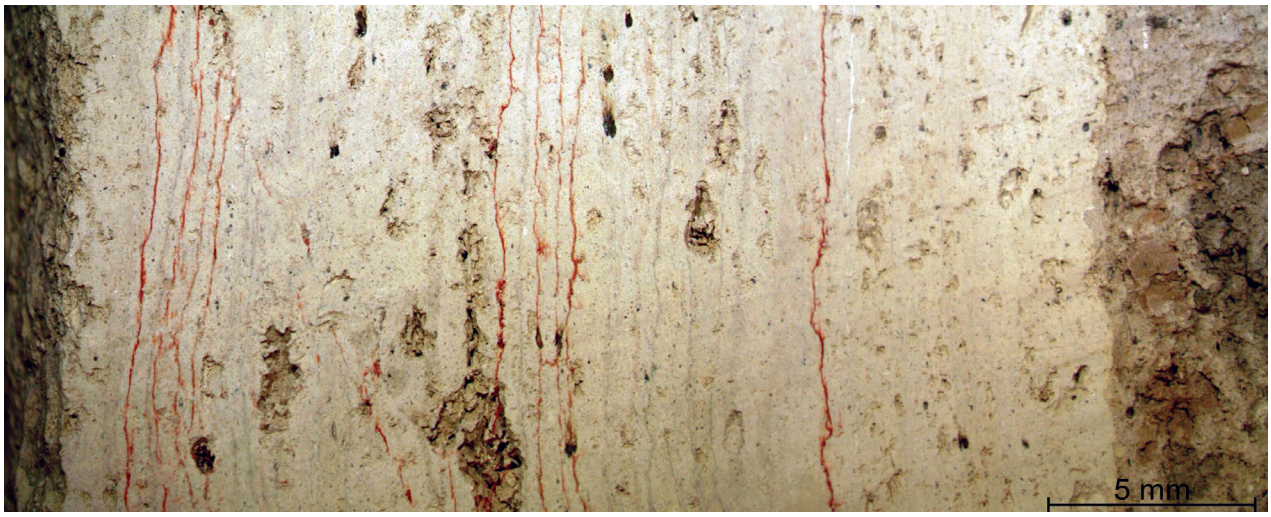

Figure 16.9. Microscopic image of a multi-layered plaster from B.17; the consecutive marl layers are observable separated by red pigment or by soot (photograph by Gesualdo Busacca).

the ladder entry was reflected by the white, burnished walls. This luminosity played a role in the ritual reasons for plastering and replastering, together with the use of plaster in mortuary practices (see burial section below). In addition, Clarke (2012: 177) argues that 'plaster and the act of coating the floors and walls with plaster, played a key role in the creation and maintenance of community cohesion and social well-being'.

Architectural paintings and installations

Within the domestic context of the plastered houses at Çatalhöyük, red pigment was used for the decoration of wooden posts. Mellaart (1967: 58) describes the wooden posts as plastered and frequently painted red. Kabukcu and Asouti (2014) observed red pigment, likely iron oxide, on wood charcoals (17519) from B.77 (Sp.336), indicating that wooden implements were painted red before their exposure to fire.

Most of the buildings excavated to date have yielded evidence of some form of paintings, although with a great variability in density (Çamurcuoğlu 2015; Busacca 2020). Paintings (n=178) occur on a variety of plaster-lined house interior features, such as walls (42.3%), platforms (24.7%), niches, benches, post/pillars (each 6.6%), floors (4.9%) and others (Busacca 2020). Experimental studies have shown that pigments were likely mixed with water and applied with brushes onto leather-hard or dry burnished plaster (St. George 2012). This procedure most closely reproduces the striated patterning that is visible in some particularly well-preserved paintings at Çatalhöyük (Çamurcuoğlu 2015; Busacca 2020). Microchemical analyses of some of the paintings showed that the red paint consisted of a fine-grained sediment of clay, calcite and hematite, together with embedded grains of red and colourless obsidian which may have had an effect on the optical properties of the artwork (Anderson et al. 2014b).

With regard to painted designs, the vast majority of the 178 studied architectural paintings from Çatalhöyük were composed of monochromatic red layers (58.6%), followed by a significant portion of paintings whose motifs cannot be identified due to poor state of preservation or insufficient exposure (23.1%). Geometric motifs make up about 15% of the painting corpus, while hand motifs (2.1%) and combinations of geometric and hand motifs (0.6%) are less frequent. When comparing the corpus of architectural paintings from the Hodder excavations with Mellaart's corpus, one of the most surprising observations is the almost total lack of anthropomorphic or zoomorphic motifs, with the only exception being a painting representing a human, found in a burial chamber in B.72 (17645) dated to the Final period (6300–5950 cal BC) (Czeszewska 2014; Marciniak et al. 2015a). Conversely, geometric and hand motifs uncovered during the Hodder excavations show parallels with some of the paintings excavated by Mellaart in the 1960s. These geometric motifs include a wide range of patterns including linear motifs (sometimes incised), bands, circles, spirals (sometimes incised), zigzag lines, crosses, quatrefoils, rosettes and others (Czeszewska 2014; Busacca, Volume 14, Chapter 12: figs 12.5–12.8).

For other architectural features, red pigment was often used on plastered animal heads set into the walls and platform, known as installations, such as two plastered animal heads from B.139 ((23165.s1) and (23165.s3)) or the plastered animal skull of a goat or calf from B.77 (19285) (Busacca, Lingle 2017). A

unique example of a painted plaster head installation was found within B.132 as part of a larger wall feature (21666.x1). The face could be interpreted as either human or animal. It was painted red and contained two obsidian flakes in place of the eyes (fig. 16.10). Earlier layers of red ochre paint were also identified, together with black paint directly under the obsidian eyes, suggesting the eyes were painted before the final obsidian flakes were put in place (Lingle et al. 2015). Other cases of black-painted traits were discovered in a post-retrieval pit in B.160 (22334) and on a plastered cattle cranium embedded in the main floor sequence of B.89 (Busacca, Lingle 2017).

The colour of things

Stone axes and 'maceheads'

More than 30 types of rocks and minerals with distinct colour and textural properties were employed for stone technologies by the Neolithic community at Çatalhöyük (Tsoraki, Volume 14, Chapter 13). Patterns in raw material use suggest selectivity. While in some cases the selection and use of raw materials may relate to the mechanical properties of rocks (for example, durability), other factors seem to have guided the preferential use of raw materials. This is particularly evident in the case of edge tools (axes, adzes and chisels) and 'maceheads'. In the case of edge tools, there was a clear preference for

Figure 16.10. Plaster head installation with obsidian eyes and ochre paint from B.132 (21666) (photograph by Jason Quinlan).

metamorphic rocks and in particular greenstone and serpentinite, followed by igneous diabase, all colourful rocks with greenish hues and distinctive textures (Tsoraki, Volume 14, Chapter 13). The preference for green-coloured stones for polished axes is also reported throughout the sequence at Cafer Höyük (Cauvin et al. 2011). When considering production processes an interest in creating smooth and nicely polished surfaces is evident across different rocks (Tsoraki, Volume 14, Chapter 13). Through polishing the colour of stones is amplified, variations in colour hues are emphasised and textural features become more prominent (Edmonds 1995; Cooney 2002; Tsoraki 2011). In the case of 'maceheads', there was a preference for raw materials with a striking colour and textural patterning, such as hard limestone/marble with a veined texture or red-coloured hard limestone with white veins. Like edge tools, the finishing techniques of grinding and polishing further enhanced the colour and textural properties of the rocks and resulted in the creation of visually distinctive and potent objects (Tsoraki, Volume 14, Chapter 13).

Beads

Beads and pendants, as the main forms of bodily adornment at Çatalhöyük, played an important part in both life and death there (Bains 2012; Bains et al. 2013; Vasić et al. 2014; Vasić 2018; Vasić et al., Volume 13, Chapter 17). The colour of the vast majority of beads was directly dependent on the raw material selected for their production; given that they were made of a large variety of raw materials, beads display a wide range of colours. Sedimentary rocks, especially limestone and tufa, were the materials predominantly used for bead manufacture; consequently, a significant portion of the bead assemblage has off white, pink and red colours. White marble was also relatively common in bead production and so were various shells of different hues of white colour, as well as beads made of animal bone and teeth, with animal teeth and *Unio* shell pendants being more lustrous (iridescent). Metamorphic rocks other than marble were used as well, most commonly schist and phyllite, producing beads of colours ranging from light green to dark green/black and grey. Igneous diabase, occasionally used in bead manufacture, has grey and greenish hues. The type of clay, and to some extent finishing techniques, directly dictated the colour of clay beads, the majority of which range from light grey to dark grey/black. Dark colours are also seen in serpentinite beads (dark green/black with a veined appearance) and beads made from materials that are likely to be galena and hematite (grey/black with metallic lustre), as well as in the rare occurrences of obsidian beads. Amongst minerals, carnelian ranges from light to dark orange, turquoise occurs in variants ranging from light to bright blue, and fluorapatite has green and blue colours. These minerals clearly stand out in the bead assemblage and significantly contribute to its diversity, and it is likely that they were chosen precisely because of their bright colours (Vasić et al., Volume 13, Chapter 17).

Although the selected material to a great extent determined the colour of the final product, manufacturing methods, such as abrasive and polishing techniques, were also of importance in obtaining different colours (Vasić et al., Volume 13, Chapter 17). In addition, a small number of beads made of bone, clay and shell provide evidence of pigments being used to alter the original colour. The best example is a *Lymnaea* pendant (11617.x1) that was decorated with black and red stripes (Veropoulidou, Volume 13, Chapter 3: fig. 3.1c).

Another way to alter the colour properties of materials was through deliberate exposure to fire under controlled conditions with the purpose of obtaining a black colour, as seen on a small number of bone, shell, wooden and stone beads. Similarly, despite the occurrence of blue materials (fluorapatite and turquoise), the Final period at Çatalhöyük produced evidence of bead materials being altered through the use of heat with the purpose of obtaining blue colour. Nevertheless, given its relative rarity (in comparison to the large part of the assemblage that was left unaltered), colour alteration was not a common practice at Çatalhöyük (Vasić et al., Volume 13, Chapter 17).

Despite the diversity of the bead assemblage in terms of colours, materials and types, clear preferences have been noted (Vasić et al., Volume 13, Chapter 17). That is, materials of particular colours were chosen for the manufacture of certain bead types. For example, cylindrical and axe head beads (types T.2 and T.4 respectively) are typically of white and black colours, whereas most flattened barrel-shaped beads (T.5) were blue. Disc/ring beads, which represent the vast majority of the bead assemblage, were made of a large variety of materials and colours, yet a very small number of green and blue discs exist.

Colour definitely played a major role in the selection of material for bead production, but it was also of importance for the creation of bead strings. Evidence from burials suggests that uniform strings, especially necklaces, composed of single bead types were frequently diversified by using different materials, thus achieving more heterogeneous and colourful looks. An example of this inclusion of colour can be seen in the burial of a young individual (23805) of about 1–2 years at death who was buried with an anklet of alternating black and white ovoid stone beads, a small beaten copper

band (worn as a ring) and multiple white and pink shell beads located around the upper thorax and head. All these objects were placed on the body, probably as they would have been worn by a living child. In addition, cinnabar was observed on the frontal bone of the cranium of this individual (Vasić et al., Volume 13, Chapter 17).

Painted shells

Three painted freshwater gastropod specimens of large size, two *Lymnaea* (or *Stagnicola*) and one *Viviparus*, were recovered during the Hodder excavations. In addition, a fragment of a gastropod of the family *Ranellidae* (in all likelihood *Ranella olearium*, Linnaeus 1758, known as 'little trumpet') also appeared to be painted (32863) (table 16.1).

The three freshwater shells were all found in B.44 and all painted with ochre, identified by PXRF. The *Viviparus* painted bead/pendant was recovered from room fill (11644) (fig. 16.11a), while the *Lymnaea* were found in a small pit or backfilled posthole (11617) that also contained obsidian fragments (fig. 16.11b). Their colour is partially preserved, especially in the *Viviparus* shell, but close examination showed that their external surface had been decorated with a striped pattern: a narrow black line and a wider red stripe following the incremental growth of whorls. In other words, stripes are thinner in the short upper whorls and gradually widen in analogy to the width of the lower and last whorl. The last whorl of both *Viviparus* and *Lymnaea* had been pierced with a pointed tool (gouging). Perforations are not neat, but examination under the stereoscope by Veropoulidou and following Guzzo Falci and colleagues (2019) indicates that at least the *Lymnaea* was used as a bead, as it bears wear (areas of polishing, slight incision) from suspension in the lip of the perforation. Similar patterns and coloured decorations are common in nature (seen on many species of marine gastropods from the Mediterranean and, especially, the Red Sea). In this context, it would be tempting to suggest that the people from Çatalhöyük imitated the natural design of marine shells that were more difficult to acquire in comparison to the local ubiquitous species.

The fourth painted shell, *R. olearium* was found in the make-up layer of platform F.8689 (32863) in B.150 (fig. 16.12). It had been cut from the last whorl of the shell, which bears spherical projections as part of its natural decoration. The natural decoration has been enhanced by slight grinding and smoothing. The peak of the right projection bears scratches, possibly done with a pointed tool, and partially preserved spots of a light red pigment, while orange, light brown spots can be observed around the projections. Vertical and horizontal thin black lines (0.1mm) seem to have decorated the surface but also enhanced the natural axial lines of the shell. It is unclear if this shell was meant to resemble a female torso, but in the same building two female figurines were recovered, one of which had small traces of red stain (see below) (Meskell et al. 2016).

Figurines

The Çatalhöyük figurines range from elaborated human bodies with emphasised features (anthropomorphic) to pared-down torsos with simple heads and bases. Unlike other materials that were cached (for example, obsidian, clay balls) or placed in burials, figurines were not placed in 'special deposits' but dispersed through midden, house fill, and external areas much like refuse (Nakamura, Meskell 2009). Mellaart (1964b) describes finding a

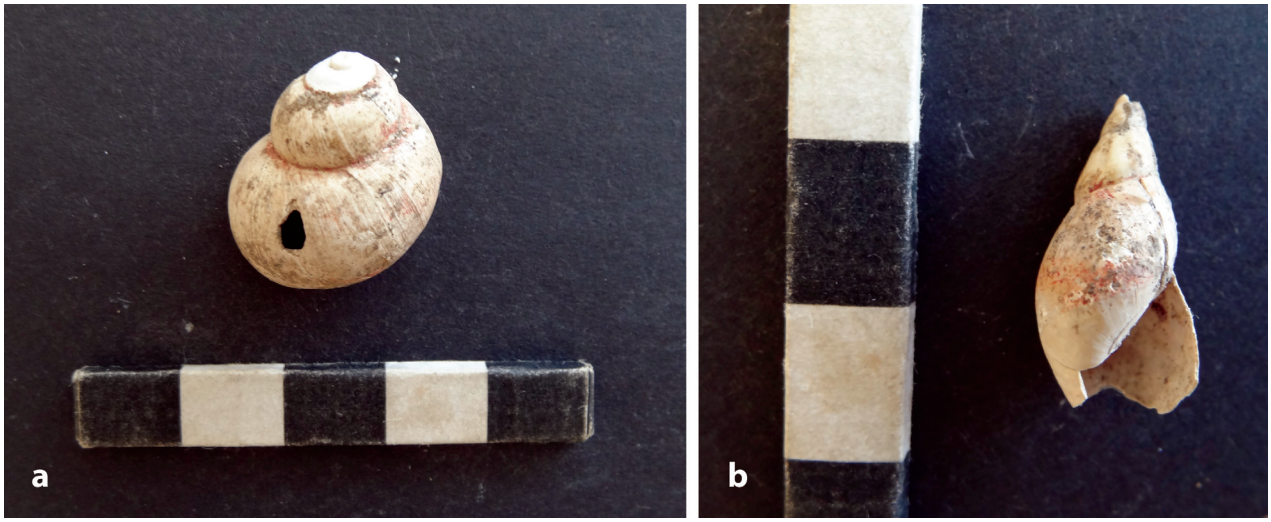

Figure 16.11. (a) Viviparus *painted bead/pendant; (b)* Lymnaea *(or* Stagnicola*) sp. painted bead/pendant (photograph by Rena Veropoulidou).*

*Figure 16.12. Shell (*Ranellidae*) painted artefact or 'figurine' (photograph by Rena Veropoulidou).*

'goddess figurine' painted red. During the Hodder excavations, the use of colourants on clay and stone figurines was also attested, although the authors were not able to compile a complete and verified list for this chapter. Examples of 'coloured' clay specimens are an abbreviated figurine with red traces (12524.H4) (Meskell et al. 2016), a potentially 'young' individual (13129.x1) without a head that bears traces of red pigment and was found in a midden (Nakamura, Meskell 2009), and another human clay figurine without a head (12401.x7) that depicts a robust female on the front and a skeleton on the back, with red paint around the neck and between the breasts in four concentric chains and on the lower areas (Meskell, Nakamura 2005). In addition, a limestone figurine (20736.x3) was found in the make-up layer of the platform of B.150. Limited traces of possible red-coloured pigment were identified on the head of the figurine, around the ear, where the surface is rougher, and on the bottom of the right foot (Meskell et al. 2016).

Clay balls and clay objects

Clay balls and clay objects are two further commonly recovered artefact classes at Çatalhöyük (Bennison-Chapman 2017). 'Clay balls' are large and spherically shaped. They average 6.32cm in diameter, are made from a fine, tightly compacted clay, and have an extremely smooth, almost burnished exterior surface. They are baked or fired at low temperatures and are very heavy for their size. As an artefact class they are extremely homogenous and easily recognisable (Atalay 2003; 2005; 2012b; 2013; Atalay, Hastorf 2005; 2006b; Bennison-Chapman, Volume 14, Chapter 7). There is also the category of 'clay objects'. These potential 'tokens' are far smaller (<5.00cm maximum dimension) and represented by a wide range of intentionally crafted geometric shapes (for example, spheres, cones, discs). Clay objects are also diverse in clay type and finish (Bennison-Chapman 2013; 2014; 2019; 2020; Volume 14, Chapter 8).

Pigments are rarely found on clay balls or clay objects excavated by the Çatalhöyük Research Project. Only one clay object (32606.co1) out of all clay objects excavated (N=2786) had evidence of pigment. In addition, just two clay balls ((22301.m153) and (32606.m101)) (from all excavated clay balls/clay ball fragments 2009–2017 seasons, n=11,190) showed traces of pigment (fig. 16.13). Both clay balls were fragmentary: one, 50% of a clay ball weighing 263g (typical size/weight) and the other, just 13g, a small fragment of <25% of the original object. The clay object was a complete sphere of 1.8cm diameter and 4.9g (typical) weight. In all three cases, the entire exterior surface was painted using a red coloured pigment. The red colour appeared to be very faint and difficult to analyse with PXRF. However, based on the absence of mercury (Hg) and sulphur (S) on both clay balls, it is assumed they had been covered with ochre. Contextually, all three examples came from room infill, from buildings in Level South K, the Early period. One clay ball fragment (22301.m153) was recovered from B.160 (22301) and the other two (one ball, one object) from B.161 from within the same unit (32606).

Pigment and plaster treatment in funerary practices

The use of pigments in burials has been mentioned in other publications on Neolithic Çatalhöyük (e.g., Boz, Hager 2013; Haddow et al. 2020; Haddow et al., Volume 13, Chapter 15; Vasić et al., Volume 13,

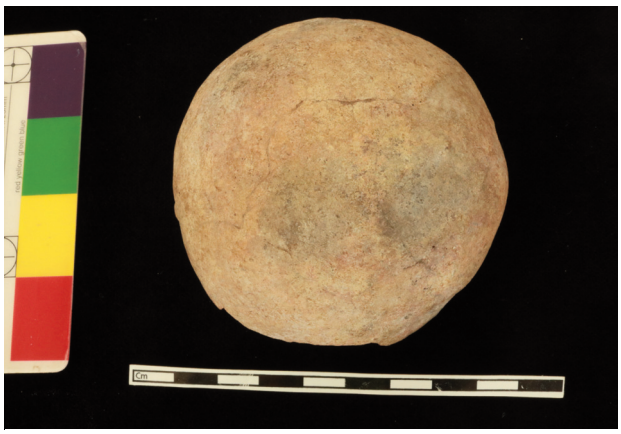

Figure 16.13. Clay ball with evidence of red pigment (photograph by Lucy Bennison-Chapman).

Chapter 17), but a detailed analysis of the dataset of burials with pigments from the Hodder excavations has not been discussed before. In order to assist with interpretations of funerary practices at Çatalhöyük, each burial was assigned to one of several deposition categories that reflect the different contexts from which skeletal remains have been recovered. A detailed description of these depositional categories and the whole stratified assemblage can be found elsewhere (e.g., Boz, Hager 2013; Haddow et al. 2020; Haddow et al., Volume 13, Chapter 15). In brief, the main categories are as follows: *primary undisturbed* depositions are articulated skeletons found in their original interment location that have not been disturbed by subsequent Neolithic activity (n=286). *Primary disturbed* depositions stand for in situ remains of articulated skeletons found in their original location but disturbed by subsequent Neolithic activity (n=185). *Secondary burials* are disarticulated or partially disarticulated skeletons, intentionally moved by Neolithic people from a previous location to a subsequent interment location (n=96). The *tertiary deposition* category is reserved for isolated, disarticulated or partially articulated skeletal elements found outside of typical burial contexts (n=174). Lastly, human remains in the *unknown* deposition category were typically recovered from heavily eroded surface layers, or they had been displaced by animal burrowing, such that their original deposition cannot be determined with certainty (n=75).

In total, at least 816 individuals were recovered from stratified Neolithic contexts during the Hodder excavations. Considering only primary and secondary depositions (n=567) and taking into account direct pigment traces observed on the bones, as well as grave associations with pigments, a total of 62 individuals showed pigment use as part of funerary practices (11% of the sample). This number is based on searches through the database and archive reports, and additional verification of the pigment on the actual skeleton or associated objects (Schotsmans et al. forthcoming). Below, separate analyses of the evidence of pigments on skeletal remains and on grave associations are provided.

Skeletal remains with direct pigment traces

Direct pigment traces were observed on 36 individuals (6.3% of the sample) (table 16.2). Twenty-three of those skeletons with direct pigment traces were primary depositions (64%), ten were primary disturbed depositions (28%) and three were secondary burials (8%).

When looking at age distribution, adults dominate the sample with 56%, which includes all young adults (20–34 years old at death) (n=6), middle adults (35–49 years old at death) (n=6), old adults (50+ years old at death) (n=7) and non-specific adults (20+ years old at death) (n=1). Direct pigment treatment was slightly smaller for the young individuals (44%). Pigment was found on one adolescent (3%), five children (14%), eight infants (22%) and two prenatal individuals (5%). Four children were between 2 and 3 years old at death and one between 8

	Skeletal remains with direct pigment traces	*Pigments as burial associations*
Late occupation period (6500–6300 cal BC)	32818 (C), 23972 (R), 11330 (O), 17533 (C)	32818 (C), 31888 (A&R), 13162 (G), 19460 (R&B)
Middle occupation period (6700–6500 cal BC)	1912 (R), 22196 (C), 10840 (R), 30523 (C), 20685 (C), 30007 (C), 30010 (C), 8598 (O), 32330 (C), 32741 (O), 32762 (O), 32045 (O), 32770 (R), 23805 (C)	2105 (B), 8184 (R&G), 8115 (B), 22196 (C), 17939 (C), 17457 (C&B), 2842 (C), 20655 (R), 30514 (R), 19500 (R), 30199 (C), 19224 (R), 23126 (O&A), 31705 (B), 21685 (R), 23075 (R), 16309 (G), 16308 (B), 21672 (G)
Early occupation period (7100–6700 cal BC)	4406 (R), 4615 (R), 4424 (C), 4458 (R), 21884 (O), 23238 (O), 21817 (O), 21855 (O), 22522 (C&O), 5177 (C), 23236 (R), 4853 (R), 4861 (R), 22335 (C&O), 32437 (C&O), 32645 (O), 32646 (O), 23237 (O)	22516 (C), 4853 (R), 10529 (R)

Table 16.2. Overview of all skeleton unit numbers with direct pigment traces and with pigments as burial associations, ordered per Hodder level for each occupation period. For reasons of clarity, the table shows only the unit numbers of the skeletons, while the stained burial association might have been given the number of the fill. The unit number of the fill is only mentioned in one case, because it was unclear to which skeleton the stained burial association belonged in this multiple burial (31888). Pigments analysed by PXRF are abbreviated as C (cinnabar), O (ochre: iron-oxide) and A (azurite). Non-analysed pigments are mentioned by colour: R = red, B = blue, G = green.

and 12 years old. Five of the eight infants were between 1 and 2 years old at death and three were between 6 months and 18 months. The two foetuses contained red pigment on the cranium, one at 30–32 weeks' gestation and the other one at 36–38 weeks' gestation. The bodies of perinates and neonates were usually placed within woven lidded baskets prior to burial, while infants appear to have been covered or wrapped in textile or matting (as previously observed by Boz, Hager 2013; Nakamura, Meskell 2013), with less evidence for application of red pigment to the remains (Schotsmans et al. forthcoming).

Sex could be determined in 19 out of 36 cases (39% male, 14% female, 42% too young to determine and 5% not determined), including ten males, four possible males, two females and three possible females. There were two skeletons of indeterminate age-at-death (5%) and 15 individuals who were too young to determine their age-at-death (42%) (Schotsmans et al. 2018; Schotsmans et al. 2020; Schotsmans et al. forthcoming).

The distribution between adults and subadults is similar when compared to results presented by Boz and Hager (2013) and Nakamura and Meskell (2013) based on Çatalhöyük burial data compiled between 1995 and 2008, resulting in a 47% (adults) to 53% (subadults) distribution and a slightly higher representation of pigments in infant burials. On the other hand, sex distribution appeared to be different in those publications. Their findings indicated that females were more frequently buried with pigment (Boz, Hager 2013; Nakamura, Meskell 2013), while in the current analysis male individuals dominate. It is, however, difficult to make comparisons with previously compiled datasets. Not only are they less complete (1995–2008), with lower numbers; they also included 'yellow' pigment which has not been taken up in the current database because of the likelihood of it being organic.

The pigment traces observed on the skeletons from this dataset were always red in colour, consisting of either iron-oxide or cinnabar. Physicochemical analysis of the pigments from the site is still ongoing. Table 16.2 defines non-analysed pigments as 'red pigment' and confirmed pigments as iron-oxide or cinnabar, based on the presence or absence of mercury by PXRF. From the analyses it is clear that cinnabar was uniquely found on the cranium (n=14), while iron oxide was observed on the cranium and/or on the postcranial skeleton (Schotsmans et al. 2018; Schotsmans et al. 2020; Schotsmans et al. forthcoming).

In some cases, the dead appear to have been prepared for interment by binding them in flexed positions with cordage. Preserved remnants of basketry, matting and animal hide were also found in some burials (e.g., Boz, Hager 2013; Nakamura, Meskell 2013; Haddow et al., Volume 13, Chapter 15; Vasić et al., Volume 13, Chapter 17; Bender Jørgensen et al., Volume 14, Chapter 11). Phytoliths and carbonised remains interpreted as remnants of baskets and organic material which were wrapped around bodies were observed in just over 5% of all primary, primary disturbed and secondary burials (Vasić et al., Volume 13, Chapter 17). But when observing the subsample of 36 skeletons with pigment traces, 67% showed evidence of some sort of container based on the visible presence of phytoliths, as either cordage, matting or basketry. Note, however, that this does not mean that the remaining 33% did not have any container, as it is likely that phytoliths might have been missed, for example, if only cordage was used (Schotsmans et al. forthcoming).

The methods of pigment application to human remains have been variously questioned (e.g., Erdal 2015; Bocquentin, Garrard 2016; Richter et al. 2019). Was ochre put on the matting, on the clothes or directly on the skin? Or was it added afterwards, when the body was skeletonised? Data from the burial assemblage of Neolithic Çatalhöyük suggest the co-existence of different methods of application. In some cases, ochre was concentrated on one side of the skeleton (for example, skeleton (21884)), while sometimes only patches of ochre were observed on or around certain body parts (for example, skeleton (32762) or (32045)). When analysing the articulated skeletal remains of adult female (21884), buried on the right side, the skeletal elements from the uppermost (left) side of the skeleton were more intensely stained than the lowermost (right side), including the patellae (fig. 16.14). This suggests that ochre was applied to the deceased after being placed in the burial. The partial discolouration of the left femoral head confirms that the skeleton was flexed and fleshed when the ochre was applied, leaving the main part of the femoral head unstained. The abundant presence of phytoliths in the burial suggests the use of matting, although the archaeological evidence makes it difficult to reconstruct the specific use of the latter (that is, placed over or around the body). Therefore, it is difficult to conclude if the matting was painted with ochre, or if ochre was sprinkled on top of the deceased, before the body was placed within matting.

As mentioned above, cinnabar was only applied to the cranium of 14 individuals, often only observed on the frontal or temporal bone. This is 2.5% of the total sample or 39% of the skeletons with direct pigment traces from six primary burials, seven primary disturbed burials and one secondary burial. In terms of age distribution, cinnabar on the cranium was encountered in seven adult burials, one adolescent burial, one child burial and five infant burials. Cinnabar was not observed in burials of individuals younger than 12 months. From the seven adults, six were likely male and one possible female.

Figure 16.14. (a) Skeleton (21884) was buried on the right side with the skeletal elements on the uppermost and left side of the skeleton more intensely stained with red pigment (photograph by Jason Quinlan); (b) right patella more stained on its medial (uppermost) side (photograph by Eline Schotsmans); (c) the partial discolouration of the left femoral head confirms that the individual was flexed and fleshed when the ochre was applied, leaving the main part of the femoral head unstained (photograph by Eline Schotsmans).

These data suggest that the cranial application of cinnabar was likely reserved for males (Schotsmans et al. 2018; Schotsmans et al. 2020; Schotsmans et al. forthcoming). In some cases, a very clear stripe was observed (fig. 16.6), as previously noted by Mellaart (1967: 208) and by the Çatalhöyük Research Project (e.g., Haddow et al. 2017). Often, phytoliths appear to be present on top of the cinnabar stripes (fig. 16.15), which indicates that the deceased could have worn a headband painted with cinnabar, or a headband over a stripe of cinnabar applied to the skin (fig. 16.16). The unstained phytoliths do not necessarily exclude one of these options. If the band had

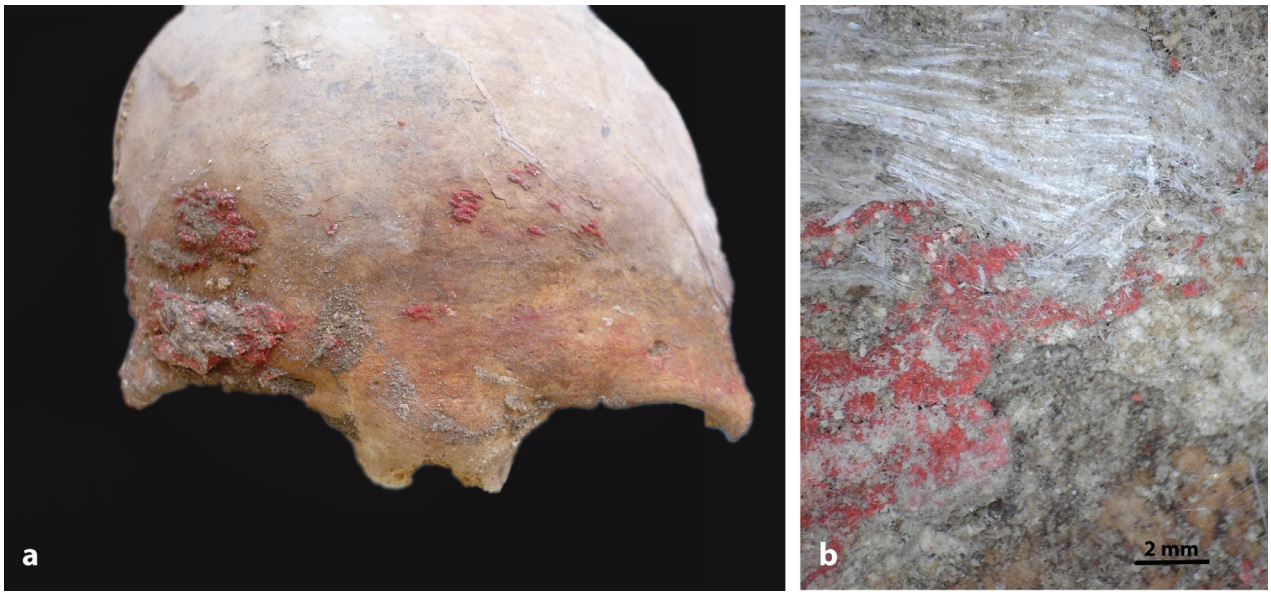

Figure 16.15. (a) Frontal bone of skeleton (22196) with remains of cinnabar and phytoliths; (b) microscopic image of cinnabar layer with phytoliths on top.

been thick enough and only stained superficially, the phytoliths might not have been stained (M. Madella personal communication). The fact that the stripe was also observed on primary depositions suggests that the cinnabar band was put on a fleshed head, which is also observed in ethnic groups in Vanuatu (Aufderheide 2009: 50). Over the years the soft tissue and organic matter of the headband degraded, leaving a coloured stripe on the cranium.

Pigments as burial associations

Pigments as burial association were clearly identified in 25 burials – 19 primary depositions (76%), four primary disturbed depositions (16%) and two secondary burials (8%) – out of all 567 primary and secondary depositions excavated during the Hodder era (4.6%). Details of all individuals with pigment traces are provided in table 16.2. An additional multiple burial (F.3868) contained blue and red pigment, but it was unclear to which individual these were associated.

While red was the only colour observed as direct pigment traces, the colourants excavated as associated objects were red, blue and green, with the majority being red associations. Pigments were represented by either lumps or stained objects such as shells, animal bone, a wooden bowl or a mirror. Four individuals were found with both red and blue/green pigments. Two infants (estimated between 9 and 12 months old at death) from the Middle occupation period were associated with a shell with red pigment and lumps of green (skeleton (8184)) and blue (skeleton (17457)) pigments. In addition, both red and blue residues were found

Figure 16.16. Artist's rendering of a person wearing a headband over painted cinnabar (illustration by Gauthier Devilder). The deceased could have worn a headband painted with cinnabar, or a headband over a stripe of cinnabar applied to the skin (see text).

associated with one obsidian mirror in the burial of an adolescent (23126) in B.131 from the Middle period (Level North G) and two mirrors in the burial of a child (19460) in succeeding B.129 from the Late period (North H).

Concerning age distribution, there is almost an even distribution between adults (48%, n=12) and younger individuals (52%, n=13). The latter include one prenatal individual, one neonate, six infants, three children and two adolescents. Among the 13 individuals whose sex could be determined (one adolescent and 12 adults), there are nine females (36%, eight females and one possible female) and four males (16%, three males and one possible male). The subadults were too young to determine sex (Schotsmans et al., 2018; Schotsmans et al. forthcoming). Blue and green pigment were only observed in burials of adult females (n=5), adolescents (n=2), children (n=1) or infants (n=3) excavated during the Çatalhöyük Research Project, and only present as grave associations, not applied to human remains (Vasić, 2018; Vasić et al., Volume 13, Chapter 17; Schotsmans et al. forthcoming). In this regard it should be mentioned that Mellaart (1964b: 93–94) describes that 'green paint was found on three burials in Levels VI and VII. In one case, a male (?), it covered the bones; in another, female, it had been applied to the "eyebrows" on the skull'. Indeed, one cranium excavated by Mellaart (Trench F, F.V.1/61) contained green staining on the frontal bone. Radivojević et al. (2017) suggest that post-depositional firing of buildings could have changed green mineral fragments around the remains into metallic copper fragments. This could have stained skeletons green, instead of being intentionally applied to the individual. However, the context of this specific cranium is unclear. With sex-determination of the cranium being less reliable (Walrath et al. 2004; Walker 2008), and the question mark behind the word 'male' in Mellaart's text (1964b: 93), it is difficult to interpret this evidence as an exception to the interpretation of blue and green pigment being reserved for females and children. The green staining on Mellaart's skeletons should be studied further before any conclusions are drawn.

An interesting and unique example are the burials in succeeding houses Buildings 131 and 129. Both buildings contained a number of inhumations, with primary inhumations of an adolescent (23126), estimated between 16 and 20 years old at death, and a child (19460), estimated between 10 and 14 years old at death, buried in almost exactly the same place in the north-eastern platform of the building. They were both in the vicinity of secondary crania and disarticulated remains and both buried with obsidian mirrors (figs 16.17 and 16.18), red and blue pigment and beads. The cranium of female adolescent Sk.23126 was resting on a fragment of pottery, and buried with a large number of coloured beads, wooden objects, a large collection of raw ochre nodules, an obsidian mirror and a small lump of azurite from an arsenic-rich geology (Haddow et al. 2017). Child burial (19460) was associated with two obsidian mirrors with blue and red pigment, together with hundreds of very elaborate beads (Knüsel et al. 2012; Vasić et al., Volume 13, Chapter 17) (fig. 16.17).

Plaster treatment

Plastering activities at Çatalhöyük were not limited only to domestic structures. Five individuals (0.9%) exhibit evidence for plaster used as burial treatment, a practice that is common in the PPNB period of the Near East (e.g., Bonogofsky 2001; 2005; Özbek 2009; Slon et al. 2014). The deposition of an old adult female (11306) buried in B.42 holding a plastered and painted adult skull (11330) is the only evidence of skull plastering so far found on the site (Hodder 2006; Boz, Hager 2013; Nakamura, Meskell 2013). The plaster has not been analysed yet in order to confirm if it was a lime-based or a gypsum plaster, but the red paint was identified as iron-oxide (Carter 2009). In addition, a plastered and painted mandible (19829) was recovered from a post-retrieval pit in B.89 (Haddow, Knüsel 2017). Furthermore, a young adult (30040) from a multiple burial in B.131 appeared to have been treated with plaster. Within the plaster, many phytoliths were found which could indicate some sort of container (a bag?) soaked in plaster. The plaster, analysed

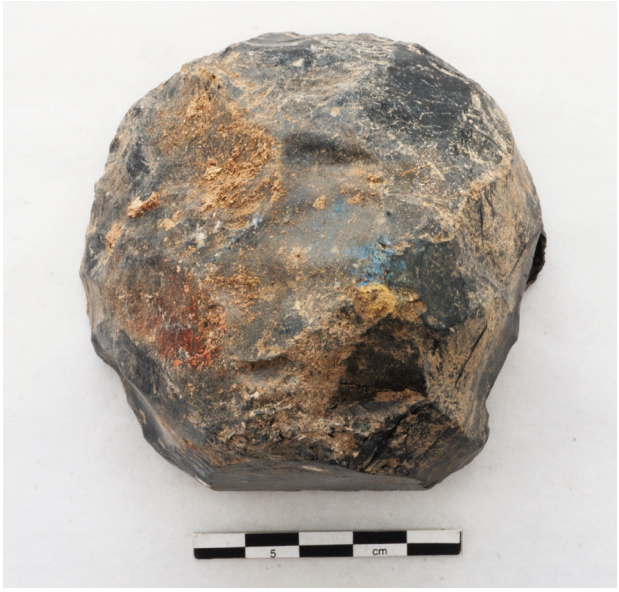

Figure 16.17. Ventral view of obsidian mirror (19447.x3) with red and blue pigment found near skeleton (19460) (photograph by Jason Quinlan).

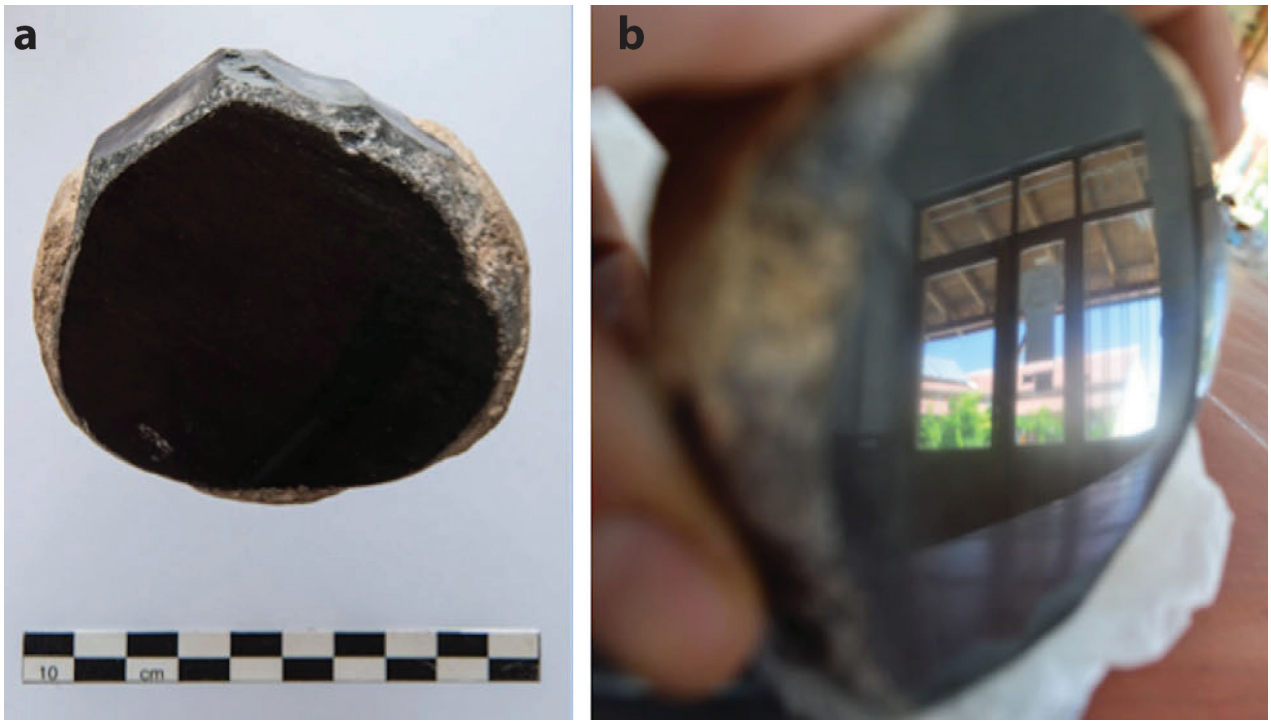

Figure 16.18. Obsidian mirror from burial fill (30039): (a) well-polished dorsal face (photograph by Jason Quinlan); (b) its reflective surface showing details and colours (photograph by Sean Doyle).

with PXRD, was characterised as calcium-carbonate based, thus different from the gypsum plaster burials from Körtik Tepe (Erdal 2015). Two individuals ((14441) and (16601)) from B.49 showed evidence of treatment of limbs with plaster. Unfortunately, no samples were taken for analysis. In the Roman period, it has been suggested that patches of lime on or near specific body parts may relate to a perception of which parts of the body had been the cause of death or were infected (Barber, Bowsher 2000). However, examples of this practice during the Neolithic Near East are scant. Nevertheless, it is important to note that in some cases the light colour of the burial fill could have hampered recognition of plastering on skeletal remains. Hence, it is likely that the current data are an underestimate of the actual frequency of such practice at Çatalhöyük.

Finally, one obsidian mirror (30039.x2) associated with skeleton (23126) was covered with a fine white plaster on the ventral face and margins. Its dorsal face was ground and well polished so that the reflective face was almost entirely blemish-free (fig. 16.18a). It only contained a few small, shallow scratches. Unlike other mirrors found at Çatalhöyük, and compared to the two mirrors associated with skeleton (19460) in B.129 directly above, this mirror had an impressive reflection. When the mirror is turned at an angle to the viewer, all details and colours become visible due to the slight convexity of the surface (fig. 16.18b) (Doyle 2017).

Contextual, spatial and diachronic associations

Pigment treatment in burials

When examining both categories, direct pigment traces and pigments as burial associations, a large difference is noted when comparing adolescents to children and adults. In total 52% of adults, 5% of adolescents and 43% of children had some sort of pigment treatment. Blue and green pigments were found with all age categories but only observed with females, adolescents, children or infants (three infants, one child, two adolescents, one young adult, one middle adult and three old adults).

Mellaart (1967: 209) stated that only female burials were treated with red pigment. Data from the Hodder excavations demonstrate that this is the case when considering pigments as grave associations including blue and green colours (36% is female). When looking at both pigment traces on the skeleton and pigments as burial associations (n=61+1), 30% are male (n=18) and 23% are female (n=14) (47% / n=29 sex could not be determined). Taking only 'red' pigments into account (direct pigment traces and associated objects) only 15% are female (n=8) and 33% are male (n=18) (Schotsmans et al. forthcoming).

Eight out of 15 stained shells were placed into burials, but only two examples were associated with a skeleton with direct pigment traces. Skeleton (32818) was a primary disturbed burial of an adult male, and skeleton (22196) was a secondary burial of a young adult

male cranium only. Interestingly, the crania of both individuals displayed a cinnabar stripe. The shells ((22194.x6) and (31884.HP)) found in those burials also contained cinnabar. This confirms that the shells might have been used as containers for the cinnabar. The fact that they were both recovered from male burials contests Mellaart's (1967: 209) observations that red-stained shells were female grave associations.

Another observation by Mellaart (1967: 209) involved an association between the presence of red pigments in burials and mirrors, a suggestion further supported by Hamilton (1996). The Hodder excavations only revealed two multiple burials with pigments and mirrors (F.3630 in B.129 and F.7961 in B.131) (see above), which makes the sample too small to allow a solid test of this pattern (Vasić et al., Volume 13, Chapter 17). The function of the mirrors is still unclear, but their co-occurrence with pigments might provide information about how mirrors were used, such as for the application of facial cosmetics (Vedder 2005; Hodder 2006).

In terms of diachronic patterns, Mellaart (1966: 183) suggested that the use of (red) pigments was more common in the earlier occupation levels than in the later ones. This trend can be confirmed (fig. 16.19). Percentages of individuals with pigments from the Early, Middle, Late and Final occupation periods amount to 39.7%, 10.4%, 4.6%, and 0% respectively (fig. 16.19) (Schotsmans et al. 2018; Schotsmans et al. 2020; Schotsmans et al. forthcoming). However, it should be noted that the sample size from the Final period might not be representative, as only 20 individuals were excavated. An additional observation is that a combination of cinnabar on the cranium and ochre on the postcranial skeleton is only observed in the Early period.

Paintings and burials

An association between paintings and burials, as observed during the early years of the Hodder excavations (Last 1998; 2005), is supported by more recent archaeological data. A comparative overview of number of buried individuals and painted plaster layers for each building (considering only buildings that have been excavated to at least 75% of their occupational sequence) helps clarify to what extent this association is widespread at Çatalhöyük (Busacca 2020: fig. 13). Although not every building shows a direct association between number of buried individuals and number of painted layers, an association between multiple paintings and multiple burials in the same buildings is present: of the nine buildings showing a number of painted layers above the average of ten (Buildings 17, 80, 1, 3, 49, 52, 77, 114, and 44), eight of them (all except B.3) also show an above-average number of buried individuals (more than 14). In these buildings, therefore, heightened painting activity is accompanied by heightened burial activity.

During the Middle period this association is strengthened by a clear intra-house spatial association between paintings and funerary activity. During this period, paintings and burials tend to be located at close distances within the house, usually along the northern and eastern walls, as revealed by a comprehensive spatial

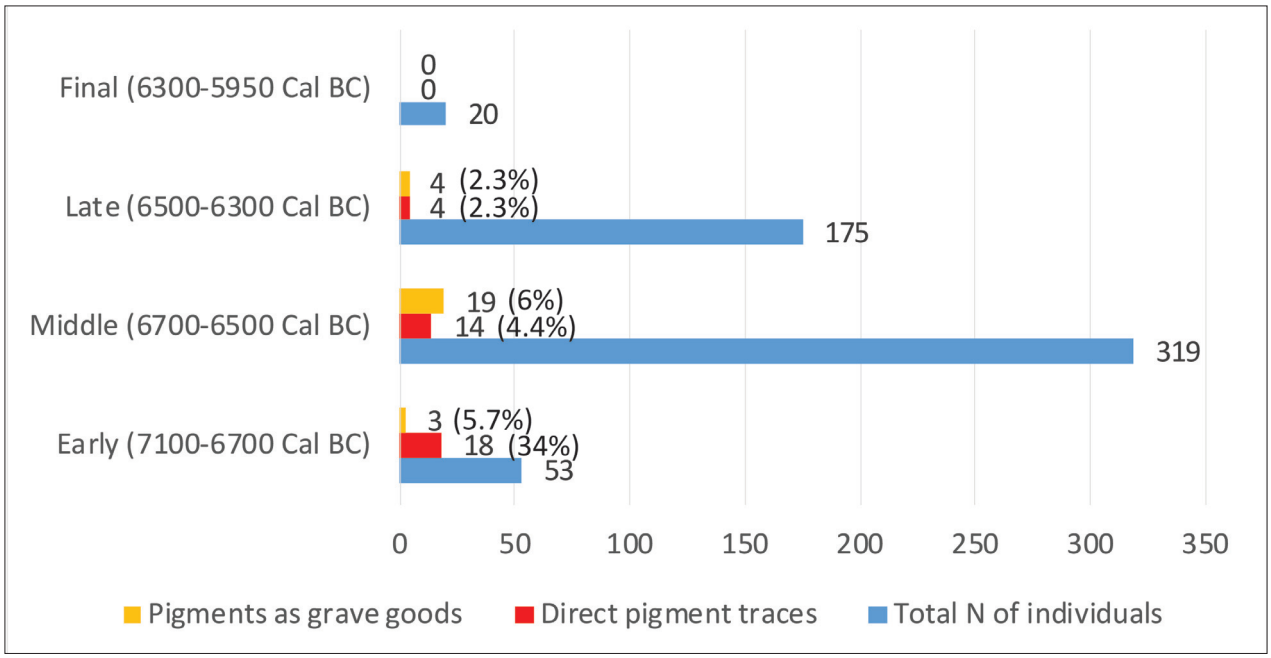

Figure 16.19. Number of individuals and relative percentages of skeletons with direct pigment traces and associated pigments per occupation period.

analysis focusing on the location of architectural paintings (Busacca 2020). This close association appears especially evident when paintings and burials are mapped together, as shown in the case of level North G in the North Area (fig. 16.20). An important role in this spatial association is played by burial platforms, which are a common location for paintings during the Middle period, such as in the cases of Buildings 131, 77, 114, 49 and especially Building 51/52, where the only paintings attested in the building occur in the close vicinity of the two platforms that contain most of the burials in the building. The same could be said for many of the Middle period buildings in the South Area, such as Buildings 89, 76, 80 and 96.

From a contextual point of view, associations between paintings and burials appear more complex and vary across buildings. As shown in the synoptic tables in figure 16.21, some buildings show a clear overlap between multiple-painting and multiple-burial occupational phases. An interesting case in this sense is B.1, where all the paintings discovered in the building are attributed to the same two subphases in which the highest number of burial events occurred (14 in subphase B1.2b, and seven in subphase B1.2c). In this case, then, it is very likely that painting and funerary activities were taking place within a relatively narrow time range, with the practice of painting likely being part of the funerary practices. The opposite seems to be true for B.80, where the phase with most burials (B80.2.4) has no paintings attributed, while the phase with most paintings (B80.2.6), in turn, has no burials. This suggests that painting events were not chronologically associated with burial events in this building. A combination of stratigraphic connection and separation of main painted phases and main burial phases seems to be the most common scenario in other buildings, including Buildings 131, 77 and 49.

A marked shift in painting locations and contextual associations occurred at the beginning of the Late occupation period (Levels North H and South P; ca 6500 cal BC). Most importantly, painting activity decreased and paintings ceased to be spatially associated with

Figure 16.20. Paintings and burials during level North G. Detail of the North Area. The map shows that areas surrounding burial platforms (see plotted skeletal remains) are usually also marked by paintings (red lines).

Building 1

phase	burials	paintings
B1.1b	5	0
B1.2a	0	0
B1.2b	**14**	**3**
B1.2c	**7**	**3**
B1.3	0	0
B1.4	3	0

Building 76

phase	burials	paintings
B76.1	0	0
B76.2.1	1	1
B76.2.2	3	2

Building 131

phase	burials	paintings
B131.1	5	0
B131.2	2	1
B131.3	1	2
B131.4	**6**	**3**

Building 77

phase	burials	paintings
B77.2	7	2
B77.3	**7**	**3**
B77.4	0	5
B77.5	0	4
B77.6	2	2
B77.7	2	6
B77.8	0	0

Building 49

phase	burials	paintings
B49.2a-b	**2**	**8**
B49.2c	0	0
B49.3-5a	3	0
B49.3-5b	3	0
B49.3-5c	1	0
B49.3-5d	0	3
B49.3-5e	0	1
B49.3-5f	0	3
B49.3-5g	1	0
B49.4	0	0
B49.5a	3	1
B49.5b	2	0
B49.5c	1	1
B49.6	0	0
B49.7	1	4

Building 80

phase	burials	paintings
B80.1/2.1	0	2
B80.2.2	2	0
B80.2.3	1	1
B80.2.4	5	0
B80.2.5	1	2
B80.2.6	0	3
B80.2.7	0	0

multiple-burial phases
multiple-painting phases
multiple-burial and multiple-painting phases

Figure 16.21. Synoptic tables showing occupational phases and relative numbers of burials and paintings of selected buildings belonging to Levels South O and North G. Multiple-burial phases, multiple-painting phases and combinations of both are highlighted; below average paintings or burials are not highlighted.

burials, showing a more dispersed distribution and even an association with features such as hearths and ovens (Busacca 2020). This trend could be linked to the important site-wide changes that occurred from the Late period onwards (Level South P) (Hodder 2014d).

Paintings and burials with pigment treatment

When only burials with pigment treatment are taken into account, there appears to be an association between numbers of painted layers per buildings and pigment treatment in burials (either as stained skeletons or pigments as burial associations). Seven out of the nine buildings (Buildings 17, 80, 1, 3, 49, 52, 77, 114 and 44) which have above-average painted plaster layers show at least one burial with pigments on human remains or as burial associations (the average is ten layers, considering all the buildings that have been excavated to at least 75%). Some of the buildings even have many more. Building 17, with 31 painted layers, contains seven inhumations with stained skeletons and one inhumation with a lump of cinnabar, and B.77, with 48 painted layers, has one stained individual and two stained objects. However, there seem to be concentrations of pigments in burials in buildings that did not yield large painting corpuses. Building 150 does not show any painted layers and has two stained individuals and two associated pigments. This shows that an interpretation based on association is not as straightforward.

An interesting case study on the association between paintings, burials and pigments is B.114, located in the North Area. Building 114 was a very small building that demonstrates a marked degree of elaboration as well as several paintings. First of all, the building was characterised by an unusual 'inversion' of the commonly observed internal arrangements (with the 'clean' area to the north and the 'dirty' one to the south), having a burial platform in its southeastern corner, a 'clean' platform in its southwestern corner and an oven encased in its northern wall. This deviation from the observed norm could possibly be related to the exceptionally small size of the building. Rather early in the occupational sequence, a bright-orange-painted geometric pattern appeared to be located in the southeastern sector of the southern wall (F.1024), right above burial platform F.638. Although the geometric painting was poorly preserved, its design could be recognised as an example of the 'ladder' design documented in other broadly contemporary buildings such as B.96 and B.77 (Busacca 2020; Volume 14, Chapter 12). The geometric painting was sealed by a poorly preserved red-painted layer. Interestingly, two burials excavated in the burial platform next to the painted wall could be linked stratigraphically to the painting (B. Tung, personal communication), both bearing evidence of pigment. Double burial F.8100 consisted of a young adult male (30007) and an infant (30010), both with cinnabar on the cranium. In the grave fill and close to the right shoulder of the adult, a 'macehead' was found (Tsoraki, Volume 14, Chapter 13). The grave fill also contained a fragment from a bone point and a human tooth with a perforation resulting from a carious lesion (Haddow et al. 2019), but no beads were found in this burial. The second burial consisted of a young adult male (8598) stained with ochre and a neonate (8596) with a lidded basket. This is one of the few examples where a stratigraphic link between a painting and a burial event could be established and could represent evidence that attests to the link between paintings and funerary practices, a link that might be

reinforced by the presence of red pigment in the burials. During a later occupation phase of B.114, red-painted layers occurred on the southeastern burial platform F.638 and on a step or pedestal abutting the northern wall in its western area (F.7567). The northern wall (F.1026) was also painted red three times during its use life. In a later phase of the building, horizontal grooves similar to those encountered in Buildings 79 and 80 were decorated with red paint. Two layers of red-painted decoration on a niche located in the middle of the southern wall (F.8102) could also be tentatively attributed to this phase of the building. Three stone palettes were recovered from this building (Tsoraki, Volume 14, Chapter 13: fig. 13.31).

Paintings and stained objects

While pigments were used for different purposes at Çatalhöyük, including the treatment of the dead, architectural decoration and the colouring of objects, there is a significant correlation between buildings that have palettes and wall paintings (χ^2=0.000, df= 28). However, this is not always the case. Building 77 has a large ground stone assemblage and extensive wall paintings but lacks schist palettes (Tsoraki 2018; Volume 14, Chapter 13). The same is observed with stained shells. One cinnabar shell (22065.x3) was found in B.77, where at least 48 painted layers were observed on the wall (100% excavated). Three shell palettes with cinnabar and ochre were excavated in B.49, which had at least 31 painted layers (100% excavated) (table 16.1). In contrast, two shell palettes and one painted shell were recovered from Building 150, which did not have any painted layers but did have burials and objects with pigments. The material repertoires of B.150 also include a large number of schist palettes (Tsoraki, Volume 14, Chapter 13). Amongst the burials was a primary disturbed burial with cinnabar on the cranium (32818), an isolated red-stained cranium (23972) and lumps of blue and red pigment in a multiple burial. In addition, possible malachite was observed on a clay stamp (23993.D1) found in an infill layer of B.150 (Meskell, Nakamura 2017), and a limestone figurine (20736.x3) from the make-up layer of the platform also had limited traces of possible red-coloured pigment on the head, around the ear and on the bottom of the right foot (Meskell et al. 2016).

Diachronic summary

To summarise diachronic patterns, schist palettes were used extensively for pigment processing activities throughout the whole occupation sequence at Çatalhöyük, with an increase in the number of palettes in the Late period (Tsoraki, Volume 14, Chapter 13). Architectural paintings are also attested throughout the site's whole occupation, especially during the Early and Middle periods, with a decline in painting activity at the start of the Late period (Busacca, Volume 14, Chapter 12). Clay balls in general were mostly found in the Early and Middle periods, but clay balls with pigment were extremely rare and only recovered from the Early period. The single clay object with pigment comes from the same period (see above). Pigment treatment for funerary purposes was more common during the Early period (Schotsmans et al. 2018; Schotsmans et al. 2020; Schotsmans et al. forthcoming). Shells with pigments only belonged to the Middle and Late periods (Veropoulidou, Volume 14, Chapter 10). Considering the use of pigments in general, the results show that pigments were used throughout the whole occupation, confirmed by the schist palettes for pigment processing, but with changing functions and on different objects.

Discussion and conclusions

Pigments and colours played an important role during almost 1,000 years of habitation at Çatalhöyük. Clearly, the inhabitants were well aware of their natural environment. The operational sequence for pigments includes raw material acquisition, heating rock fragments, the production of a binder, pigment processing (fracturing, crushing and pulverising) and mixing pigment and binder (Rosso 2017). While not every pigment goes through exactly the same phases, these steps show that thorough knowledge of the transformation and physicochemical properties, together with the use of appropriate tools, is required. In addition, the inhabitants were selective, such as in their choice and acquisition of raw materials to create visually distinctive objects or in their choice of certain pigments for certain applications. Jones (2002) suggests that such artefacts have complex biographies and are directly linked with the community. 'The use of substances from spatially distant sources and the deployment of these substances to create pigments and coloured artefacts, means that many artefacts metaphorically speak of temporally extensive relationships among the living' (Jones 2002: 166). Similarly, Clarke (2012: 177) states that 'the plaster production process and the act of coating the floors and the walls with plaster played a key role in the creation and maintenance of community cohesion and social order'. According to Chapman (2000: 17–42) 'the operational sequence and the actual coloured artefacts offer the potential for enchained social relations, being the locus for expression and constitution of relational orders of personhood'. Following these arguments, pigments and coloured objects at Çatalhöyük could have played a role in building identities and social structure, but also in social differentiation. A question to consider is whether

the observed associations between pigments and burials can inform us about social relationships between the inhabitants of Çatalhöyük, and about the existence of selective practices possibly driven by social differentiation in this community.

Preliminarily, the fact that only a small portion of the buried population displays evidence of treatment with colourants suggests that this was not a treatment accorded to all members of the community. This raises the question of the factors motivating such selection (for example, vertical vs horizontal social differentiation). On the basis of the available data, however, we can only exclude that sex and/or age-at-death were relevant variables in this case. While it is often thought that the arrangement of the corpse and the associated objects are indicators of the identity and the social role of the deceased, it should not be forgotten that funerary behaviours might act as a social representation of the survivors, rather than of the deceased and their social standing (Parker Pearson 1999; 2016). The majority of the inhabitants of Çatalhöyük did not receive a special treatment. That means that only some individuals seem to have been important in tracing ancestry. In this context, instead of burying to conceal, burial might have been meant to preserve and commemorate the dead. Following Young (2006), who suggests that colours have relational effects, this might explain a possible association between painted walls and burials, or, even more so, between painted walls and burials with pigment. Along the same lines, Last (1998) argues that the paintings were not simply decoration and that 'the images participated in mediating the relationship between the living and the dead... [creating] an overlap between domestic and ritual practice' (Last 1998: 367). For Çatalhöyük, the connections between daily practice, social rules and social memory have been discussed previously (e.g., Hodder, Cessford 2004). The pigments on the walls, the pigments on objects and the pigments in burials tie in to that. Last (1998) suggests that the paintings become part of the building, creating a link between the household and the physical structure of the house. The idea of the house as a container of both people and memories is known from anthropological research in Botswana (Morton 2007). Buildings, with their current occupational activity, often retain a 'genealogical' dimension with activities of past occupants, and changes to the building itself are materially linked in memory (Morton 2007). The burials were part of processes of memory selection, with each interment creating a 'memory community' (McAnany 2011). But, as Hendon (2010) describes, this memory does not take place in the mind, it is a constant presence through engagement with places, things, sounds, odours and tactile sensations. At Çatalhöyük, the wall paintings strengthen visual memory. The use of similar colours on the walls and in burials might have triggered this visual memory and created a connection between images, objects and people. From a sensorial perspective, the odour of decaying bodies under the platforms might have generated emotional memory. Tactile memory might have taken place through handling, re-handling and circulation of human remains. This all indicates that the inhabitants of Çatalhöyük were surrounded by memory. By living with the dead, by embodiment of the dead, they kept their ancestors alive.

What was the significance of these different colours? The meanings associated with colour are culturally constructed, so that an interpretation cannot be based on a universal perception of colour (Erdoğu, Ulubey 2011). There is an increasing use of ochre in burials from the Epipalaeolithic onwards in the Levant and Anatolia (e.g., Erdal 2015; Bocquentin, Garrard 2016; Richter et al. 2019). Based on ethnographic evidence, red has been interpreted as symbolically indicating life, blood or power (Scarre 2002). Other ethnographic studies show that red ochre is used in house floors for various celebrations such as marriage and death (Boivin 2000). Mellaart (1967) suggests that red paint has a protective function. He writes that 'it wards off evil spirits and protects the object so decorated, be it the body of the dead, the wall of the house, the bench or the platform, ….' (Mellaart 1967: 150). On the other hand, it might have been functional, as an insect repellent, for UV protection, for its anti-bacterial properties or as a hide preservative (Watts 2002; Wadley 2010; Hodgkiss 2014; Rifkin et al. 2015). Both interpretations, of symbolic and utilitarian functions, might be correct and difficult to separate. But whether symbolic or functional, it is clear that ochre treatment was not reserved for all inhabitants of Çatalhöyük, and cinnabar treatment even less so.

Why was a distinction made between cinnabar and ochre? And why was cinnabar uniquely applied to the cranium? What was the symbolic meaning of cinnabar? As mentioned above, cinnabar was only applied to the heads of 14 individuals, which equals 2.5% of the total excavated skeletons or 39% of the skeletal remains with direct pigment traces. This could indicate that the 14 individuals with cinnabar in Çatalhöyük were given a special status – not to say an 'elite' status, but a status that differentiated them from the others. Interestingly, age-at-death did not seem to play a role in obtaining this status, as cinnabar was recovered on seven adults, one adolescent, one child and five infants. Cinnabar vapours are hypnotic and act as a sedative when the mineral is heated (Ho et al. 2003; Liu et al. 2008). This could have changed the state of consciousness of the people handling cinnabar. If it was inhaled by the living while applied to

the dead, maybe a communication was triggered between the living and the deceased? In addition, cinnabar's bright colour could have expressed power. The headband could suggest that this was not only a treatment for the deceased but also worn by certain living individuals. This would trigger communication between the dead and the living, reserved for only a minority of the community: those selected for ancestorhood. The few instances of cinnabar presence in wall paintings in Çatalhöyük (Çamurcuoğlu 2015; Doherty 2017) could strengthen this relationship and communication between the living and the dead. For example, the wall paintings in B.49, described by Çamurcuoğlu (2015), show a mix of cinnabar and ochre. The burials did not contain any skeletal remains with directly applied cinnabar, but there were burial associations with cinnabar present. Space 100 of B.49 showed a geometric painting consisting of mixed ochre and cinnabar (Çamurcuoğlu 2015). The burial space contained an infant (17939) in a basket with a cinnabar shell that was used as bead/pendant, and another infant (17457) in a cinnabar-stained basket and with several grave associations, including two cinnabar shells and an ochre shell. The presence of cinnabar in wall paintings with a link to burials should be studied further before any conclusions can be drawn. The material properties and long-term instability might have turned cinnabar paintings black when exposed to light (McCormack 2000; Nöller 2015). But maybe cinnabar's toxicological effects were known or experienced by the Neolithic inhabitants too (e.g., Liu et al. 2006; Huang et al. 2012), hence its limited use or its use for special occasions.

The colour white was omnipresent. The application of white plaster on wall and floor surfaces probably had symbolic but also practical reasons. Clarke (2012) suggests that plastering played a key role in the creation and maintenance of community cohesion, but also in expressing a differential status. She described how the whiteness and purity of plaster would have increased luminosity. The act of colouring the plaster would have linked different materials together, so that plaster also became part of ritual practices (Clarke 2012). As described above, these acts not only link different materials together; they also connect the living world to the world of the dead. Adding plaster to skeletal remains or burials, as described previously, is another way to link the living with the ancestors. It is unclear how long the plastered head circulated in the world of the living, but whether it was for a short or a long period, it kept the deceased present in the secular world.

What did the few instances of blue and green pigments in burials stand for? And why were the colours blue and green not used in wall paintings? According to Çamurcuoğlu (2015), there could have been different reasons. Malachite and azurite are known to be ephemeral when applied on wet plasters, and in a dark, closed room, they might have darkened. Or they might have had a prestigious status, only used for ritual or symbolic purposes (Çamurcuoğlu 2015). Blue and green are thought to refer to growth, fertility and ripeness, a suggestion put forward for the Neolithic and Chalcolithic of the Levant (Bar-Yosef Mayer 2019). The abovementioned data from Çatalhöyük show that blue and green pigments were only observed in burials of adult females, adolescents, children and infants. This could indicate that it was a cosmetic treatment reserved for females and children. However, it is important to treat this interpretation with caution. It could be the result of a small sample, and the green stains on Mellaart's excavated skeletons should be studied further.

This chapter has attempted to combine analyses from different disciplines regarding 'colourful things' at the Neolithic settlement of Çatalhöyük during the Hodder excavations. The inorganic pigments uncovered at Çatalhöyük can largely be described as stable, being both lightfast and robust. In principle, they would be able to survive multiple millennia of degradation after deposition. Yet, in several cases only specks or very faint colours were noticed, such as on a limestone figurine (20736.x3), two clay balls, one *Viviparus* sp. and two *Lymnaea* sp. shells. Is the faint colour caused by a different pigment composition and binder or by the different material properties of the object? Clay objects show different colour preservation. On some clay figurines (for example, 12524.H4), the red colour was intense and well preserved, while on the clay balls the colour was faint. Is the difference in colour intensity caused by burial taphonomy or by the object's life cycle, losing its original colour during its lifetime and use? This could be the case for the painted shells, as the faintest are the ones used as pendants. Finally, the colour could have been erased intentionally, but this should be able to be observed by use-wear analysis.

These questions indicate that we likely overlooked some of the coloured objects, and that the current data are an underestimate of the actual frequency of colouring practices at Çatalhöyük. As mentioned in the case of plastered burials or plastered limbs, it was not always easy to observe the difference between the light-coloured burial fill and the white intentional plaster. When minimal amounts of red ochre were present, confusion sometimes arose when trying to distinguish ochre from the iron-rich soil. Other evidence is derived from the infant (17457) buried with an ochre and cinnabar shell. The infant itself did not show any pigment staining. Unexpectedly, the phytoliths of the basket around the ochre shell showed a high presence of cinnabar,

indicating that the container might have been coloured with cinnabar. Similarly, a preserved burned wooden bowl (22678.x2) showed small traces of blue pigment (fig. 16.7), which is again very easy to miss, certainly if the wood had totally decayed. Undoubtedly, other colourful materials of organic nature were also part of the Çatalhöyük colour palette (e.g., Russell 2019a; 2019b). Contrary to inorganic pigments, organic colourants generated from plants and animals are typically not as robust; consequently it would be improbable for them to survive. The same applies to organic objects such as colourful leaves or feathers. Their absence, however, does not necessarily mean that they were not used, but rather that they did not leave archaeological traces. By extension, there is clear evidence for how different pigments were employed on wall paintings and in burials, but there is no archaeological evidence of some of the other facets of Neolithic life where colour may have been applied – such as on clothes and textiles, or as cosmetic applications.

Other limitations are pragmatic ones. Only a small percentage of the site has been excavated (<6%). This strongly hampers generalising from the results of this study. In addition, there are methodological limitations. The use of 'possible male' and 'possible female' categories should be interpreted with caution. Every possible male can be a female and the other way around. Reliability of sex determination based on the cranium is even more debatable (Walrath et al. 2004; Walker 2008). For example, Hodder (2006) referred to the plastered skull found in 2004 in B.42 as male, while other reports refer to it as female (Boz, Hager 2013). When the skull is crushed and plastered such as with Çatalhöyük's plastered skull, sex determination is even more limited. The question is, when only isolated crania are recovered, as often seen in the PPNB, is it worth attempting a sex determination or would one rather not determine sex at all? The only other way for sex determinations is DNA analysis, but that comes with a cost.

Many questions remain regarding pigment and colour use at Çatalhöyük. In the future, a consistent and systematic analysis of all pigments from Çatalhöyük, by the same person, with the same recording system and the same instruments, might be useful, including possible sourcing of the pigment and research on the binders that might have been used.

In conclusion, pigments and colours held a symbolic importance for the people at Neolithic Çatalhöyük. The inhabitants had knowledge about the environment, resources, material properties and technologies. The colours were not just aesthetic, but possibly also a way to communicate with the ancestors and to remember the dead. They can be seen as a bridge between the secular world and the ritual world, but they also acted as a means of social distinction. Colours were clearly associated with practices and traditions and can be viewed as mediators of complex, entangled biographical encounters, all being part of 'human-thing entanglement' (Hodder 2011b).

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Supplementary material

For supplementary material related to this chapter, please visit https://doi.org/10.18866/BIAA/e-15. It comprises colour versions of all figures.

Bibliography

Akkermans, P.M., Verhoeven, M. 1995: 'An image of complexity: the burnt village at Late Neolithic Sabi Abyad, Syria' *American Journal of Archaeology* 99.1: 5–32

Aldeias, V. 2017: 'Experimental approaches to archaeological fire features and their behavioral relevance' *Current Anthropology* 58: S191–S205

Aldeias, V., Gur-Arieh, S., Maria, R., Monteiro, P., Cura, P. 2019: 'Shell we cook it? An experimental approach to the microarchaeological record of shellfish roasting' *Archaeological and Anthropological Sciences* 11.2: 389–407

Allison, P.M. 1999: 'Introduction' in P.M. Allison (ed.), *The Archaeology of Household Activities*. London, Routledge: 1–18

Amati, V., Mol, A.A.A., Shafie, T., Hofman, C., Brandes, U. 2019: 'A framework for reconstructing archaeological networks using exponential random graph models' *Journal of Archaeological Method and Theory* 27: 192–219

Amati, V., Shafie, T., Brandes, U. 2018: 'Reconstructing archaeological networks with structural holes' *Journal of Archaeological Method and Theory* 25.1: 226–53

Anderson, B., Harrison, P. (eds) 2010: *Taking-Place: Non-representational Theories and Geography*. Farnham, Ashgate

Anderson, E., Almond, M.J., Matthews, W. 2014a: 'Analysis of wall plasters and natural sediments from the Neolithic town of Çatalhöyük (Turkey) by a range of analytical techniques' *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* 133: 326–34

Anderson, E., Almond, M.J., Matthews, W., Cinque, G., Grogley, M.D. 2014b: 'Analysis of red pigments from the Neolithic sites of Çatalhöyük in Turkey and Sheikh-e Abad in Iran' *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* 131: 373–83

Andersson, P. 2003: 'Holy place or wor…and working place. The challenges of multivocality in the meeting of science and religion at Çatalhöyük today' Çatalhöyük 2003 Archive Report. http://www.catalhoyuk.com/archive_reports/2003

Andrews, D., Bedford, J., Blake, B., Bryan, P., Cromwell, T., Lea, R. 2009: *Measured and Drawn: Techniques and Practice for the Metric Survey of Historic Buildings (Second Edition)*. Swindon, English Heritage

Andrews, P., Molleson, T., Boz, B. 2005: 'The human burials at Çatalhöyük' in I. Hodder (ed.), *Inhabiting Çatalhöyük: Reports from the 1995-99 Seasons* (Çatalhöyük Research Project Series Volume 4). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 261–78

Andrews, T.D., Buggey, S. 2008: 'Authenticity in Aboriginal cultural landscapes' *APT Bulletin* 39.2/3: 63–71

Anvari, J. 2016: *New Stories from Old Buildings: Revisioning Architecture and Social Organization in Central Anatolia and the Lake District between 6500 and 5500 BC*. PhD thesis, Flinders University of South Australia, Adelaide

Apaydin, V. 2016: 'Effective or not? Success or failure? Assessing heritage and archaeological education programmes – the case of Çatalhöyük' *International Journal of Heritage Studies* 22.10: 828–43

Arbuckle, B.S. 2013: 'The late adoption of cattle and pig husbandry in Neolithic central Turkey' *Journal of Archaeological Science* 40: 1805–15

Arranz-Otaegui, A., Carretero, L.G., Ramsey, M.N., Fuller, D.Q., Richter, T. 2018: 'Archaeobotanical evidence reveals the origins of bread 14,400 years ago in northeastern Jordan' *Proceedings of the National Academy of Sciences of the United States of America* 115.31: 7925–30

Ascher, M., Ascher, R. 1981: *Code of the Quipu: A Study in Media, Mathematics and Culture*. Ann Arbor (MI), University of Michigan Press

Ashley-Smith, J. 2018: 'The ethics of doing nothing' *Journal of the Institute of Conservation* 41.1: 6–15

Asouti, E. 2005: 'Woodland vegetation and the exploitation of fuel and timber at Neolithic Çatalhöyük: report on the wood charcoal macro-remains' in I. Hodder (ed.), *Inhabiting Çatalhöyük: Reports from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 4). Cambridge, McDonald Institute for Archaeological Research; London, British Institute at Ankara: 213–58

— 2006: 'Group identity and the politics of dwelling at Neolithic Çatalhöyük.', in I. Hodder (ed.), *Çatalhöyük Perspectives. Reports from the 1995-99 Seasons* (Çatalhöyük Research Project Series Volume 6). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 75–91

— 2013: 'Woodland vegetation, firewood management and woodcrafts at Neolithic Çatalhöyük' in I. Hodder (ed.), *Humans and Landscapes of Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 8). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 129–62

Asouti, E., Kabukcu, C. 2014: 'Holocene semi-arid oak woodlands in the Irano-Anatolian region of Southwest Asia: natural or anthropogenic?' *Quaternary Science Reviews* 90: 158–82

Atalay, S. 2003: *Domesticating Clay: Engaging with 'They'. The Social Life of Clay Balls from Çatalhöyük, Turkey and Public Archaeology for Indigenous Communities*. PhD thesis, University of Berkley California

— 2005: 'Domesticating clay: the role of clay balls, mini balls and geometric objects in daily life at Çatalhöyük' in I. Hodder (ed.), *Changing Materialities at Çatalhöyük: Reports from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 5). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 139–68

— 2006: 'Community archaeology at Çatalhöyük 2006' *Çatalhöyük 2006 Archive Report*. http://www.catalhoyuk.com/archive_reports/2006

— 2010a: '"We don't talk about Çatalhöyük, we live it": Sustainable archaeological practice through community-based participatory research' *World Archaeology* 42.3: 418–29

— 2010b: 'Community based research report 2010' *Çatalhöyük 2010 Archive Report*. http://www.catalhoyuk.com/archive_reports/2010

— 2012a: *Community-Based Participatory Research: Research with, by, and for Indigenous and Local Communities*. Berkeley, University of California Press

— 2012b: 'Analysis of clay balls from the BACH Area' in R. Tringham, M. Stevanović (eds), *Last House on the Hill: BACH Area Reports from Çatalhöyük, Turkey* (Çatalhöyük Research Project Volume 11). Los Angeles, Cotsen Institute of Archaeology Press: 385–90

— 2013: 'Clay balls, mini balls and geometric objects' in I. Hodder (ed.), *Substantive Technologies at Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Volume 9). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 247–52

Atalay, S., Hastorf, C.A. 2005: 'Foodways at Çatalhöyük' in I. Hodder (ed.), *Çatalhöyük Perspectives: Themes from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 6). Cambridge, McDonald Institute for Archaeological Research; London, British Institute at Ankara: 109–24.

— 2006a: 'Food, meals, and daily activities: food habitus at Neolithic Çatalhöyük' *American Antiquity* 71.2: 283–319

— 2006b: 'Domesticating clay: engaging with "they". The social life of clay balls from Çatalhöyük, Turkey and public archaeology for indigenous communities' *American Antiquity* 71: 283–319

Aufderheide, A.C. 2009: *Overmodeled Skulls*. Florida, Feline Press

Avrami, E., Mason, R., de la Torre, M. 2000: *Values and Heritage Conservation*. Los Angeles, The Getty Conservation Institute

Ayala, G., Wainwright, J., Walker, J., Hodara, R., Lloyd, J.M., Leng, M., Doherty, C. 2017: 'Paleoenvironmental reconstruction of the alluvial landscape of Neolithic Çatalhöyük, central southern Turkey: the implications for early agriculture and responses to environmental change' *Journal of Archaeological Science* 87: 30–43

Bacon, E. 1967: 'Çatal Hüyük, the oldest town – and its classical legacy' *Illustrated London News* 1 July: 29

Bağcı Kaya, S. 2011: 'Community based project report 2011' *Çatalhöyük 2011 Archive Report*. http://www.catalhoyuk.com/archive_reports/2011

Bahar, H. 2018: 'Mining in Anatolia in ancient age mercury in Konya Region' *International Journal of Research in Humanities and Social Studies* 8.5: 25–29

Bailey, D., McFadyen, L. 2010: 'Built objects' in D. Hicks, M.C. Beaudry (eds), *The Oxford Handbook of Material Culture Studies*. Oxford, Oxford University Press: 562–87

Bains, R. 2012: *The Social Significance of Neolithic Stone Bead Technologies at Çatalhöyük*. PhD thesis, University College London, London

Bains, R., Vasić, M., Bar-Yosef Mayer, D.E., Russell, N., Wright, K.I., Doherty, C. 2013: 'A technological approach to the study of personal ornamentation and social expression at Çatalhöyük' in I. Hodder (ed.), *Substantive Technologies at Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 9). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 331–64

Baird, D. 2002: 'Early Holocene settlement in Central Anatolia: problems and prospects as seen from the Konya Plain' in F. Gérard, L. Thissen (eds), *The Neolithic of Central Anatolia: Internal Developments and External Relations During the 9th–6th Millennia cal BC, Proceedings of the International CANeW Round Table, Istanbul, 23–24 November 2001*. Istanbul, Ege Yayınları: 139–59

— 2005: 'The history of settlement and social landscapes in the Early Holocene in the Çatalhöyük area' in I. Hodder (ed.), *Çatalhöyük Perspectives: Themes from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 6). Cambridge, McDonald Institute for Archaeological Research; London, British Institute at Ankara: 55–74

— 2007a: 'The Boncuklu Project: the origins of sedentism, cultivation and herding in Central Anatolia' *Anatolian Archaeology* 13: 14–17

— 2007b: 'Pınarbaşı: from Epipalaeolithic camp site to sedentarising village in central Anatolia' in M. Özdoğan, N. Başgelen (eds.), *The Neolithic in Turkey: New Excavations and New Discoveries*. Istanbul, Arkeoloji ve Sanat Yayınları: 285–311

— 2019: 'Connected communities and constructed identities. The Konya Plain 15,000–6000 cal BC' in C. Maner (ed.), *Crossroads: Konya Plain from Prehistory to the Byzantine Period*. Istanbul, Ege Yayinlari: 35–54

Baird, D., Fairbairn, A., Bar-Yosef, O., Mustafaoğlu, G. 2013: 'The Boncuklu Project: the spread of farming and the antecedents of Çatalhöyük' *Heritage Turkey* 3: 21–23

Baird, D., Fairbairn, A., Martin, L., Middleton, C. 2012: 'The Boncuklu Project: the origins of sedentism, cultivation and herding in Central Anatolia' in M. Özdoğan, N. Başgelen (eds), *The Neolithic in Turkey* 3: *New Excavations, New Research: Central Turkey*. Istanbul, Arkeoloji ve Sanat Yayınları: 219–44

Baird, D., Fairbairn, A., Martin, L. 2017: 'The animate house, the institutionalization of the household in Neolithic Central Anatolia' *World Archaeology* 49.5: 753–76

Balasse, M. 2002: 'Reconstructing dietary and environmental history from enamel isotopic analysis: time resolution of intra-tooth sequential sampling' *International Journal of Osteoarchaeology* 12: 155–65

Balasse, M., Boury, L., Ughetto-Monfrin, J., Tresset, A. 2012: 'Stable isotope insights ($\delta^{18}O$, $\delta^{13}C$) into cattle and sheep husbandry at Bercy (Paris, France, 4th millennium BC): birth seasonality and winter leaf foddering' *Environmental Archaeology* 17: 29–44

Banerjea, R.Y., Bell, M., Matthews, W., Brown, A. 2013: 'Applications of micromorphology to understanding activity areas and site formation processes in experimental hut floors' *Archaeological and Anthropological Sciences* 7: 89–112

Barański, M.Z. 2013: 'Zastosowanie cyfrowych narzędzi analizy stratygraficznej na przykładzie stanowiska Çatalhöyük w Turcji' *Gdańskie Studia Archeologiczne* 3: 33–50

— 2015: 'GDN Area: research on Late Neolithic architecture' *Catalhoyuk 2015 Archive Report*. http://www.catalhoyuk.com/archive_reports/2015

— 2016a: 'GDN research on the Late Neolithic architecture' *Çatalhöyük 2016 Archive Report*. http://www.catalhoyuk.com/archive_reports/2016

— 2016b: 'Buildings 160, 161, 43, 89 and Spaces 553 and 581' *Çatalhöyük Research Project 2016 Archive Report.* http://www.catalhoyuk.com/archive_reports/2016

— 2017: *Późnoneolityczna architektura Çatalhöyük, Turcja. Kontynuacja i zmiana u schyłku 7 tysiąclecia p.n.e*. PhD thesis, Gdańsk University of Technology, Gdańsk

— 2020: 'Brick sizes and architectural regularities at Neolithic Çatalhöyük' in I. Hodder (ed.), *Consciousness, Creativity, and Self at the Dawn of Settled Life*. Cambridge, Cambridge University Press: 133–49

Barański, M.Z., Belmonte, C., Issavi, J., Klimowicz, A., Tripković, J. 2017: 'Excavations in the North Area' *Catalhoyuk 2017 Archive Report*. http://www.catalhoyuk.com/archive_reports/2017

Barański, M.Z., García-Suárez, A., Klimowicz, A., Love, S., Pawłowska, K. 2015: 'The architecture of Neolithic Çatalhöyük as a process: complexity in apparent simplicity' in I. Hodder, A. Marciniak (eds), *Assembling Çatalhöyük*. Leeds, Maney Publishing: 111–26

Barber, B., Bowsher, D. 2000: *The Eastern Cemetery of Roman London: Excavations 1983–1990*. London, Museum of London Archaeology Service

Barrat, A., Barthelemy, M., Pastor-Satorras, R., Vespignani, A. 2004: 'The architecture of complex weighted networks' *Proceedings of the National Academy of Sciences of the United States of America* 101.11: 3747–52

Barton, K., Levstik, L. 2004: *Teaching History for the Common Good*. London, Routledge

Bartu, A. 2000: 'Where is Çatalhöyük? Multiple sites in the construction of an archaeological site' in I. Hodder (ed.), *Towards a Reflexive Method in Archaeology: The Example at Çatalhöyük* (Çatalhöyük Research Project Series Volume 2). Cambridge, McDonald Institute for Archaeological Research: 101–10

Bartu, A., Candan, C. 2001: 'Engaging with the wider context: social anthropology at Çatalhöyük' *Çatal News* 1. http://www.catalhoyuk.com/newsletters/08/socanth01.html

Bar-Yosef Mayer, D.E. 2013: 'Mollusc exploitation at Çatalhöyük' in I. Hodder (ed.), *Humans and Landscapes of Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 8). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 329–38

— 2019: 'The colour of ornaments in the Neolithic and Chalcolithic of the Levant: their symbolic meaning and economic value' in S. Thavapalan, D.A. Warburton (eds), *The Value of Colour: Material and Economic Aspects in the Ancient World*. Berlin, Topoi: 69–97

Bar-Yosef Mayer, D.E., Leng, M.J., Aldridge, D.C., Arrowsmith, C., Gümüs, B.A., Sloane, H.J. 2012: 'Modern and early-middle Holocene shells of the freshwater mollusc *Unio*, from Çatalhöyük in the Konya Basin, Turkey: preliminary palaeoclimatic implications from molluscan isotope data' *Journal of Archaeological Science* 39: 76–83

— 2013: '*Unio* shells from Çatalhöyük: preliminary palaeoclimatic data from isotopic analyses' in I. Hodder (ed.), *Humans and Landscapes of Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 8). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 87–91

Baur, M. 2008: *Visone – Software for the Analysis and Visualization of Social Networks*. Karlsruhe, Universitat Fridericiana zu Karlsruhe (TH)

Baxter, M.J., Heyworth, M.P. 1989: 'Principal components analysis of compositional data in archaeology' in S. Rahtz (ed.), *Computer Applications and Quantitative Methods in Archaeology 1989*. *CAA89*. Oxford, British Archaeological Reports: 226–40

Bayliss, A., Brock, F., Farid, S., Hodder, I., Southon, J., Taylor, R.E. 2015: 'Getting to the bottom of it all: a Bayesian approach to dating the start of Çatalhöyük' *Journal of World Prehistory* 28.1: 1–26

Bayliss, A., Farid, S., Higham, T. 2014: 'Time will tell: practicing Bayesian chronology modeling on the East Mound' in I. Hodder (ed.), *Çatalhöyük Excavations: The 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 7). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 53–90

Baysal, A., Wright, K.I. 2005: 'Cooking, crafts and curation: ground-stone artefacts from Çatalhöyük' in I. Hodder (ed.), *Changing Materialities at Çatalhöyük. Reports from the 1995–99 Seasons* (Çatalhöyük Research Project 5). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 307–24

Beck, R.A. (ed.) 2007: *The Durable House: House Society Models in Archaeology*. Carbondale (IL), Southern Illinois University

Bennison-Chapman, L.E. 2013: 'Geometric clay objects' in I. Hodder (ed.), *Substantive Technologies at Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 9). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology: 253–76

— 2014: *The Role and Function of 'Tokens' and Sealing Practices in the Neolithic of the Near East: The Question of Early Recording Systems, Symbolic Storage, Precursors to Writing, Gaming, or Monitoring Devices in the World's First Villages*. PhD thesis, University of Liverpool, Liverpool

— 2017: 'Clay balls and clay objects' *Çatalhöyük 2017 Archive Report*. http://www.catalhoyuk.com/archive_reports/2017

— 2019: 'Reconsidering "tokens": Neolithic origins of accounting or multifunctional, utilitarian tools' *Cambridge Archaeological Journal* 29: 233–59

— 2020: 'Conscious tokens?' in I. Hodder (ed.), *Consciousness, Creativity and Self at the Dawn of Settled Life*. Cambridge: Cambridge University Press: 107–32

Benz, M. 2010: 'Beyond death – the construction of social identities at the transition from foraging to farming' in M. Benz (ed.), *The Principle of Sharing. Segregation and Construction of Social Identities at the Transition from Foraging to Farming*. Berlin, ex oriente: 249–75

Benz, M., Gresky J., Štefanisko, D., Alarashi, H., Knipper, C., Purschwitz, C., Bauer, J., Gebel, H.G.K. 2019: 'Burying power: new insights into incipient leadership in the Late Pre-Pottery Neolithic from an outstanding burial at Ba'ja, southern Jordan' *PLoS ONE* 14.8: e0221171. https://doi.org/10.1371/journal.pone.0221171

Berger, J.F, Guilaine, J. 2009: 'The 8200 cal BP abrupt environmental change and the Neolithic transition: a Mediterranean perspective' *Quaternary International* 200: 31–49

Berggren, Å., Dell'Unto, N., Forte, M., Haddow, S.D., Hodder, I., Issavi, J., Lercari, N., Mazzucato, C., Mickel, A., Taylor, J.S. 2015: 'Revisiting reflexive archaeology at Çatalhöyük: integrating digital and 3D technologies at the trowel's edge' *Antiquity* 89.344: 433–48

Best, J. 2015: 'Avian eggshell' *Çatalhöyük 2015 Archive Report*. http://www.catalhoyuk.com/archive_reports/2015

Best, J., Demirergi, A., Jones, J., Orton, D., Mulville, J., Pawłowska, K., Powell, A., Twiss, K., Wolfhagen, J. 2012: 'Faunal remains 2012' *Çatalhöyük 2012 Archive Report.* http://www.catalhoyuk.com/archive_reports/2012

Beyneix, A. 2012: 'Neolithic in France: an overview' in R. Schulting, L. Fibiger (eds), *Sticks, Stones and Broken Bones: Neolithic Violence in a European Perspective*. Oxford, Oxford University Press: 207–22

Biehl, P.F., Franz, I., Orton, D.C., Ostaptchouck, S., Rogasch, J., Rosenstock, E. 2012: 'One community and two tells: the phenomenon of relocating tell settlements at the turn of the 7th and the 6th millennia in Central Anatolia' in R. Hofmann, F.-K. Moetz, J. Müller (eds), *Tells: Social and Environmental Space*. *Proceedings of the International Workshop "Socio-Environmental Dynamics over the Last 12,000 Years: The Creation of Landscapes II (14th–18th March 2011)" in Kiel*. Bonn, Habelt: 53–65

Birch, J., Hart, J.P. 2018: 'Social networks and northern Iroquoian confederacy dynamics' *American Antiquity* 83.1: 13–33

Birch, W. 2005: 'A possible case of shortness of breath at Çatalhöyük – black lungs' in I. Hodder (ed.), *Humans and Landscapes of Çatalhöyük: Reports from the 1995–1999 Seasons* (Çatalhöyük Research Project Series Volume 4). Cambridge, McDonald Institute for Archaeological Research; London, British Institute for Archaeology at Ankara: CD Supplement

Blair, E. H. 2016: 'Glass beads and constellations of practice' in A.P. Roddick, A.B. Stahal (eds), *Knowledge in Motion. Constellations of Learning Across Time and Place*. Tucson, Arizona State University: 98–125

Blake, E. 2013: 'Social networks, path dependence, and the rise of ethnic groups in pre-Roman Italy' in C. Knappett (ed.), *Network Analysis in Archaeology. New Approaches to Regional Interaction*. Oxford, Oxford University Press: 203–22

— 2014: *Social Networks and Regional Identity in Bronze Age Italy*. Cambridge, Cambridge University Press

Blondel, V.D., Guillaume, J.L, Lambiotte, R., Lefebvre, E. 2008: 'Fast unfolding of communities in large networks' *Journal of Statistical Mechanics: Theory and Experiment* 10: 1–12

Bocquentin, F., Garrard, A. 2016: 'Natufian collective burial practice and cranial pigmentation: a reconstruction from Azraq 18 (Jordan)' *Journal of Archaeological Science: Reports* 10: 693–702

Bogaard, A. 2015: 'Communities' in G. Barker, C. Goucher (eds), T*he Cambridge World History. World with Agriculture 12,000 BCE–500 CE*. Cambridge, Cambridge University Press: 124–60

— 2017: 'Neolithic "cooperatives": assessing supra-household cooperation in crop production at Çatalhöyük and beyond' in H.-G.K. Gebel, M. Benz, T. Watkins (eds), *Neolithic Corporate Identities*. Berlin: ex oriente: 117–34

Bogaard, A., Charles, M., Livarda, A., Ergun, M., Filipović, D., Jones, G. 2013: 'The archaeobotany of mid-later occupation levels at Neolithic Çatalhöyük' in I. Hodder (ed.), *Humans and Landscapes of Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 8). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 93–128

Bogaard, A., Charles, M., Twiss, K.C., Fairbairn, A., Yalman, N., Filipović, D., Demirergi, A., Ertuğ, F., Russell, N., Henecke, J. 2009: 'Private pantries and celebrated surplus: storing and sharing food at Neolithic Çatalhöyük, Central Anatolia' *Antiquity* 83.321: 649–68

Bogaard, A., Filipović, D., Fairbairn, A., Green, L., Stroud, E., Fuller, D.Q., Charles, M. 2017: 'Agricultural innovation and resilience in a long-lived early farming community: the 1,500-year sequence at Neolithic to early Chalcolithic Çatalhöyük, Central Anatolia' *Anatolian Studies* 67: 1–28

Bogaard, A., Fochesato, M., Bowles, S. 2019: 'The farming-inequality nexus: new insights from ancient Western Eurasia' *Antiquity* 93.371: 1129–43

Bogaard, A., Henton, E.M., Evans, J.A., Twiss, K.C., Charles, M.P., Vaiglova, P., Russell, N. 2014a: 'Locating land use at Neolithic Çatalhöyük, Turkey: the implications of 87Sr/86Sr signatures in plants and sheep tooth sequences' *Archaeometry* 56: 860–77

Bogaard, A., Ryan, P., Yalman, N., Asouti, E., Twiss, K.C., Mazzucato, C., Farid, S. 2014b: 'Assessing outdoor activities and their social implications at Çatalhöyük' in I. Hodder (ed.), *Integrating Çatalhöyük: Themes from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 10). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 123–48

Bogdan, D. 2005: 'Building 54' *Çatalhöyük 2005 Archive Report*. http://www.catalhoyuk.com/archive_reports/2005

Boivin, N.L. 2000: 'Life rhythms and floor sequences: excavating time in rural Rajasthan and Neolithic Çatalhöyük' *World Archaeology* 31: 367–88

Bonacich, P. 2012: 'Power and centrality: a family of measures' *American Journal of Sociology* 92.5: 1170–82

Bonogofsky, M. 2001: 'Cranial modeling and Neolithic bone modification at 'Ain Ghazal: new interpretations' *Paléorient*, 27: 141–46

— 2005: 'A bioarchaeological study of plastered skulls from Anatolia: new discoveries and interpretations' *International Journal of Osteoarchaeology* 15: 124–35

Borck, L. 2019: 'Constructing the future history: prefiguration as historical epistemology and the chronopolitics of archaeology' *Journal of Contemporary Archaeology* 5.2: 229–38

Borck, L., Mills, B.J., Peeples, M.A., Clark, J.J. 2015: 'Are social networks survival networks? An example from the late pre-Hispanic US southwest' *Journal of Archaeological Method and Theory* 22.1: 33–57

Borgatti, S.P. 2005: 'Centrality and network flow' *Social Networks* 27.1: 55–71

Borgatti, S.P., Carley, K.M., Krackhardt, D. 2006: 'On the robustness of centrality measures under conditions of imperfect data' *Social Networks* 28.2: 124–36

Borgatti, S.P., Everett, M.G. 1997: 'Network analysis of 2-mode data' *Social Networks* 19: 243–69

Borgatti, S.P., Everett, M.G., Freeman, L.C. 2002: *Ucinet for Windows: Software for Social Network Analysis*. Harvard (MA), Analytic Technologies

Borgatti, S.P., Everett, M.G., Johnson, J.C. 2013: *Analyzing Social Networks*. London, SAGE

Borgatti, S.P., Halgin, D.S. 2014: 'Analyzing affiliation networks' in S. Scott, P.J. Carrington (eds), *The SAGE Handbook of Social Network Analysis*. London, SAGE: 417–33

Borić, D. 2008: 'First households and "house societies" in European prehistory' in A. Jones (ed.), *Prehistoric Europe: Theory and Practice*. Cambridge, Wiley-Blackwell: 109–42

Boyer, P., Roberts, N., Baird, D. 2006: 'Holocene environment and settlement on the Çarşamba alluvial fan, south-central Turkey: integrating geoarchaeology and archaeological field survey' *Geoarchaeology* 21.7: 675–98

Boz, B., Hager, L. 2004: 'Human remains report' *Çatalhöyük 2004 Archive Report*. http://www.catalhoyuk.com/archive_reports/2004

— 2013: 'Living above the dead: intramural burial practices at Çatalhöyük' in I. Hodder (ed.), *Humans and Landscapes of Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 8). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 413–40

Brami, M.N. 2017: *The Diffusion of Neolithic Practices from Anatolia to Europe: A Contextual Study of Residential Construction, 8,500–5,500 BC cal*. Oxford, British Archaeological Reports

Brand, S. 1994: *How Buildings Learn: What Happens After They're Built*. New York, Viking Penguin

Brandes, U., Robins, G., McCranie, A., Wasserman, S. 2013: 'What is network science?' *Network Science* 1: 1–15

Brandes, U., Wagner, D. 2004: '*Visone* – analysis and visualization of social networks' in M. Junger, P. Mutzel (eds), *Graph Drawing Software*. Verlag, Springer: 321–40

Bremmer, J. 1983: 'Scapegoat rituals in ancient Greece' *Harvard Studies in Classical Philology* 87: 299–320

Brinkhoff, T. 2018: 'Çumra' *City Population*. http://www.citypopulation.de/php/turkey-konya.php?cityid=689

Brock, F., Dee, M., Hughes, A., Snoeck, C., Staff, R., Ramsey, C.B. 2018: 'Testing the effectiveness of protocols for removal of common conservation treatments for radiocarbon dating' *Radiocarbon* 60.1: 35–50

Brogdon, B.G., Vogel, H., McDowell, J.D. 2003: *A Radiological Atlas of Abuse, Torture, Terrorism and Inflected Trauma*. Boca Raton (FL), CRC Press

Brooks, A.S., Yellen, J.E., Potts, R., Behrensmeyer, A.K., Deino, A.L., Leslie, D.E., Ambrose, S.H., Ferguson, J.R., D'Errico, F., Zipkin, A.M., Whittaker, S., Post, J., Veatch, E.G., Foecke, K., Clark, J.B. 2018: 'Long-distance stone transport and pigment use in the earliest Middle Stone Age' *Science* 360: 90–94

Brown Vega, M., Craig, N. 2009: 'New experimental data on the distance of sling projectiles' *Journal of Archaeological Science* 36: 1264–68

Brughmans, T., Brandes, U. 2017: 'Visibility network patterns and methods for studying visual relational phenomena in archeology' *Frontiers in Digital Humanities* 4:17

Brughmans, T., Collar, A., Coward, F. 2016: 'Network perspectives on the past: tackling the challenges' in T. Brughmans, A. Collar, F. Coward (eds), *The Connected Past. Challenges to Network Studies in Archaeology and History*. Oxford, Oxford University Press: 3–19

Brughmans, T., Keay, S., Earl, G. 2012: 'Complex networks in archaeology: urban connectivity in Iron Age and Roman Southern Spain' *Leonardo* 45.3: 280

— 2014: 'Introducing exponential random graph models for visibility networks' *Journal of Archaeological Science* 49: 442–54

Buchli, V. 2014: 'Material register, surface, and form at Çatalhöyük' in I. Hodder (ed.), *Religion at Work in a Neolithic Society: Vital Matters*. Cambridge, Cambridge University Press: 280–303

Busacca, G. 2017: 'Durable, ephemeral things: architectural paintings from Çatalhöyük and the delicate balance between archaeology and conservation' Presented at TAG UK Annual Meeting 2017

— 2020: *Painting Daily Life: Spatial Contexts, Temporalities and Experiences of Architectural Paintings at Çatalhöyük*. PhD thesis, Stanford University, Stanford

Busacca, G., Lingle, A.M. 2017: 'Zoomorphic plaster heads' *Çatalhöyük 2017 Archive Report*. http://www.catalhoyuk.com/archive_reports/2017

Byrd, B.F. 1994: 'Public and private, domestic and corporate: the emergence of the Southwest Asian village' *American Antiquity* 59.4: 639–66

Callieri, M., Dell'Unto, N., Dellepiane, M., Scopigno, R., Soderberg, B., Larsson, L. 2011: 'Documentation and interpretation of an archeological excavation: an experience with dense stereo reconstruction tools' in F. Nicolucci, M. Dellepiane, S. Pena Serna, H. Rushmeier, L. Van Gool (eds), *VAST 2011: The 12th International Symposium on Virtual Reality, Archaeology and Intelligent Cultural Heritage: The 9th Eurographics Workshop on Graphics and Cultural Heritage: Prato, Italy, October 18–21, 2011*. Goslar, Eurographics Association: 33–40

Campiani, A., Lingle, A., Lercari, N. 2019: 'Spatial analysis and heritage conservation: leveraging 3D data and GIS for monitoring earthen architecture' *Journal of Cultural Heritage* 39: 166–76

Çamurcuoğlu, D. 2013: 'Çatalhöyük wall paintings: materials, technologies and artists' in I. Hodder (ed.), *Substantive Technologies at Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 9). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 317–30

— 2015: *The Wall Paintings of Çatalhöyük (Turkey): Materials, Technologies and Artists*. PhD thesis, University College London, UK

Can, M.F., Şereflişan, H. 2018: 'Age, growth and mortality of *Unio tigridis* (Bourguignat, 1852)' *Turkish Journal of Agriculture – Food Science and Technology* 6: 613–17

Cane, S. 2009: 'Why do we conserve? Developing understanding of conservation as a cultural construct' in A. Richmond, A. Bracker, A.L. Bracker (eds), *Conservation: Principles, Dilemmas and Uncomfortable Truths*. London, Routledge: 163–76

Caple, C. 2000: *Conservation Skills: Judgement, Method and Decision Making*. London, Routledge

Carleton, W.C., Conolly, J., Collard, M. 2013: 'Corporate kin-groups, social memory, and "history houses"? A quantitative test of recent reconstructions of social organization and building function at Çatalhöyük during the PPNB' *Journal of Archaeological Science* 40.4: 1816–22

Carsten, J. 2018: 'House-lives as ethnography/biography' *Social Anthropology* 26.1: 103–16

Carsten, J., Hugh-Jones, S. 1995: *About the House: Lévi-Strauss and Beyond*. Cambridge, Cambridge University Press

Carter, E., Campbell, S., Gauld, S. 2003: 'Elusive complexity: new data from Late Halaf Domuztepe in south central Turkey' *Paléorient* 29.2: 117–34

Carter, T. 2009: 'Çatalhöyük chipped stone report' *Çatalhöyük 2009 Archive Report*. http://www.catalhoyuk.com/archive_reports/2009

Carter, T., Conolly, J., Spasojevic, A. 2005: 'The chipped stone' in I. Hodder (ed.), *Changing Materialities at Çatalhöyük: Reports from the 1995–1999 Seasons* (Çatalhöyük Research Project Series Volume 5). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 221–83

Carter, T., Haddow, S.D., Russell, N., Bogaard, A., Tsoraki, C. 2015: 'Laying the foundations: creating households at Neolithic Çatalhöyük' in I. Hodder, A. Marciniak (eds), *Assembling Çatalhöyük*. Leeds, Maney Publishing: 97–110

Carter, T., Milić, M. 2013: 'The chipped stone' in I. Hodder (ed.), *Substantive Technologies at Çatalhöyük. Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 9). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 417–78

Casanova, E., Knowles, T.D.J., Bayliss, A., Dunne, J., Barański, M.Z., Denaire, A., Lefranc, P., di Lernia, S., Roffet-Salque, M., Smyth, J., Gillard, T., Claßen, E., Coles, B., Ilett, M., Jeunesse, C., Krueger, M., Marciniak, A., Minnitt, S., Rotunno, R., van de Velde, P., van Wijk, I., MOLA, Evershed, R.P. 2020. 'Accurate compound-specific radiocarbon dating of archaeological pottery vessels' *Nature* 580: 506–10

Çatalhöyük Research Project 1995: 'Mission statement.' *Çatal News* 1. http://www.catalhoyuk.com/newsletters/01/missstat.html

Çatalhöyük Research Project 1996: 'Ethnoarchaeology and social anthropology' *Çatal News* 2. http://www.catalhoyuk.com/newsletters/02/ethnoarch.html

Çatalhöyük Research Project 2000: 'Introduction' *Çatal News* 7. http://www.catalhoyuk.com/newsletters/07/intro00.html
Çatalhöyük Research Project 2001: 'Introduction' *Çatal News* 8. http://www.catalhoyuk.com/newsletters/08/intro01.html
Çatalhöyük Research Project 2004a: 'Events' *Çatal News* 11. http://www.catalhoyuk.com/newsletter/2004
Çatalhöyük Research Project 2004b: 'Local craft initiative' *Çatal News* 11. http://www.catalhoyuk.com/newsletter/2004
Cauvin, J., Aurenche, O., Cauvin, M.-C., Balkan-Atlı, N. 2011: 'The Pre-Pottery site of Cafer Höyük' in M. Özdoğan, P. Kuniholm, N. Başgelen (eds), *The Neolithic in Turkey. New Excavations & New Research – The Euphrates Basin*. Istanbul, Arkeoloji ve Sanat Yayinlari: 1–40
Çek, S., Şereflişan, H. 2006: 'Certain reproductive characteristics of the freshwater mussel *Unio terminalis delicates* (Lea, 1863) in Gölbaşi Lake, Turkey' *Aquaculture Research* 37: 1305–15
Cessford, C. 2005: 'Estimating the Neolithic population of Çatalhöyük' in I. Hodder (ed.), *Inhabiting Çatalhöyük: Reports from the 1995-1999 Seasons* (Çatalhöyük Research Project Series Volume 4). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 323–26
— 2007a: 'Level Pre-XII.E–A and Levels XII and XI, Spaces 181, 199 and 198' in I. Hodder (ed.), *Excavating Çatalhöyük: South, North and KOPAL Area Reports from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 3). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 59–102
— 2007b: 'Building 1' in I. Hodder (ed.), *Excavating Çatalhöyük: South, North and KOPAL Area Reports from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 3). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 405–530
— 2007c: 'Overall discussion of Buildings 1 and 5' in Hodder (ed.), *Excavating Çatalhöyük: South, North and KOPAL Area Reports from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 3). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 531–49
Chapman, J. 2000: *Fragmentation in Archaeology*. London, Routledge
Charles, M.P., Doherty, C., Asouti, E., Bogaard, A., Henton, E., Larsen, C.S., Ruff, C.B., Ryan, P., Sadvari, J.W., Twiss, K.C. 2014: 'Landscape and taskscape at Çatalhöyük: an integrated perspective' in I. Hodder (ed.), *Integrating Çatalhöyük: Themes from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 10). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 71–90
Chazan, M., Lehner, M. 1990: 'An ancient analogy: pot baked bread in ancient Egypt and Mesopotamia' *Paléorient* 16.2: 21–35
Chyleński, M., Ehler, E., Somel, M., Yaka, R., Krzewińska, M., Dabert, M., Juras, A., Marciniak, A. 2019: 'Ancient mitochondrial genomes reveal the absence of maternal kinship in the burials of Çatalhöyük people and their genetic affinities' *Genes* 10.3: 207
Clare, L., Dietrich, O., Gresky, J., Notroff, J., Peters, J., Pöllath, N. 2019: 'Ritual practices and conflict mitigation at Early Neolithic Körtik Tepe and Göbekli Tepe, Upper Mesopotamia: a mimetic theoretical approach' in I. Hodder (ed.), *Violence and the Sacred in the Ancient Near East*. Cambridge, Cambridge University Press: 96–128
Clare, L., Weninger, B. 2014: 'Dispersal of Neolithic lifeways: absolute chronology and rapid climate change in Central and West Anatolia' in M. Özdoğan, N. Başgelen, P. Kuniholm (eds), *The Neolithic in Turkey* 6. Istanbul, Archaeology and Art Publications: 1–65
Clark, J.D., Harris, J.W. 1985: 'Fire and its roles in early hominid lifeways' *African Archaeological Review* 3.1: 3–27
Clarke, J. 2012: 'Decorating the Neolithic: an evaluation of the use of plaster in the enhancement of daily life in the Middle Pre-Pottery Neolithic B of the Southern Levant' *Cambridge Archaeological Journal* 22: 177–86
Cochrane, E.E., Lipo, C.P. 2010: 'Phylogenetic analyses of Lapita decoration do not support branching evolution or regional population structure during colonization of remote Oceania' *Philosophical Transactions of the Royal Society B: Biological Sciences* 365.1559: 3889–902
Collar, A., Coward, F., Brughmans, T., Mills, B.J. 2015: 'Networks in archaeology: phenomena, abstraction, representation' *Journal of Archaeological Method and Theory* 22: 1–32
Collins, C, Asouti, E., Grove, M., Kabukcu, C., Bradley, L., Chiverrell, R. 2018: 'Understanding resource choice at the transition from foraging to farming: an application of palaeodistribution modelling to the Neolithic of the Konya Plain, south-central Anatolia, Turkey' *Journal of Archaeological Science* 96: 57–72
Cooney, G. 2002: 'So many shades of rock: colour symbolism and Irish stone axeheads' in A. Jones (ed.), *Colouring the Past. The Significance of Colour in Archaeological Research*. Oxford, Berg: 93–107

Copley, M., Clark, K., Evershed, R. 2005: 'Organic residue analysis of pottery vessels and clay balls' in I. Hodder (ed.), *Changing Materialities at Çatalhöyük: Reports from the 1995-99 Seasons* (Çatalhöyük Research Project Series Volume 5). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 169–74

Coward, F. 2008: 'Small worlds, material culture and Ancient Near Eastern social networks' *Proceedings of the British Academy* 158: 453–84

— 2010: 'Casting the netwide: small world, material culture and social networks during the Epipaleolithic and early Neolithic' *Bulletin of the Council for British Research in the Levant* 5: 52–56

Croft, D.P., James, R., Krause, J. 2008: *Exploring Animal Social Networks*. Princeton (NJ), Princeton University Press

Croft, D.P., Madden, J.R., Franks, D.W., James, R. 2011: 'HypoThesis testing in animal social networks' *Trends in Ecology and Evolution* 26.10: 502–07

Curtis, C.L. 2017a: *Contextualizing Sustainability in Heritage Practice: A Multiscalar Approach to Community Engagement at Çatalhöyük and Aktopraklık, Turkey*. PhD thesis, Department of Anthropology, University at Buffalo, New York

— 2017b: 'Contextual sustainability in heritage practice: urbanization, neighbourliness, and community dialogue in Akçalar, Turkey' in Albert, M. (ed.), *Going Beyond – Perceptions of Sustainability in Heritage Studies* 2. New York: Springer: 145–57

— forthcoming (2022):'The changing landscape of Küçükköy: striving for agricultural and community sustainability near Çatalhöyük in the 21st century' in P.F. Biehl, J. Anvari, E. Rosenstock (eds), *The End of Çatalhöyük – The West Mound Excavations*. Los Angeles, Cotsen Institute of Archaeology Press

Cutajar, J.D., Duckor, A., Sully, D., Fredheim, L.H. 2016: 'A significant statement: new outlooks on treatment documentation' *Journal of the Institute of Conservation* 39.2: 81–97

Cutting, M. 2005: 'The architecture of Çatalhöyük: continuity, household and settlement.' in I. Hodder (ed.), *Çatalhöyük Perspectives. Reports from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 6). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 151–70

Czeszewska, A. 2014: 'Wall paintings at Çatalhöyük' in I. Hodder (ed.), *Integrating Çatalhöyük: Themes from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 10). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 185–96

Davis, A., Gardner, B., Gardner, M.R. 1941: *Deep South*. Chicago, Chicago University Press

Davis, P.H. (ed.) 1965–1985: *Flora of Turkey and the East Aegean Islands*. Edinburgh, Edinburgh University Press

Dekker, D., Krackhardt, D., Snijders, T.A.B. 2007: 'Sensitivity of MRQAP tests to collinearity and autocorrelation conditions' *Psychometrika* 72.4: 563–581

de la Haye, K., Embree, J., Punkay, M., Espelage, D.L., Tucker, J.S., Green, H.D. 2017: 'Analytic strategies for longitudinal networks with missing data' *Social Networks* 50: 17–25

DeLanda, M. 2006: *A New Philosophy of Society: Assemblage Theory and Social Complexity*. London, Bloomsbury

Dell'Unto, N. 2016: 'Using 3D GIS platforms to analyse and interpret the past' in M. Forte, S. Campana (eds), *Digital Methods and Remote Sensing in Archaeology: Archaeology in the Age of Sensing*. Cham, Springer: 305–22

— 2020: 'The analytical role of 3D realistic computer graphics' in M. Gillings, P. Hacıgüzeller, G. Lock (eds), *Archaeological Spatial Analysis: A Methodological Guide*. New York, Routledge: 444–59

Dell'Unto, N., Landeschi, G., Apel, J., Poggi, G. 2017: '4D recording at the trowel's edge: using three-dimensional simulation platforms to support field interpretation' *Journal of Archaeological Science: Reports* 12: 632–45

Dellepiane, M., Dell'Unto, N., Callieri, M., Lindgren, S., Scopigno, R. 2013: 'Archeological excavation monitoring using dense stereo matching techniques' *Journal of Cultural Heritage* 14.3: 201–10

DeMarrais, E. 2017: 'Animacy, abstraction, and affect in the Andean past: toward a relational approach to art' *Cambridge Archaeological Journal* 27.4: 655–69

Demas, M., Agnew, N. 2006: 'Decision making for conservation of archaeological sites: the example of the Laetoli hominid trackway, Tanzania' in N. Agnew, J. Bridgland (eds), *Of the Past, for the Future, Integrating Archaeology and Conservation Getty Conservation Institute Symposium Proceeding Publication of the 5th World Archaeological Congress*. Los Angeles, Getty Conservation Institute: 64–72

Demirergi, G.A. 2015: *Food Sharing during the Transition to Agriculture at Neolithic Çatalhöyük, Central Anatolia*. PhD thesis, SUNY Stony Brook, New York

Demirergi, G.A., Twiss, K.C., Bogaard, A., Green, L., Ryan, P., Farid, S. 2014: 'Of bins, basins and banquets: storing, handling and sharing at Neolithic Çatalhöyük' in I. Hodder (ed.), *Integrating Çatalhöyük: Themes from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 10). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 91–108

Der, L. 2016: *The Role of Human-Animal Relations in the Social and Material Organization of Çatalhöyük, Turkey*. PhD thesis, Department of Anthropology, Stanford University

De Reu, J., De Smedt, P., Herremans, D., Van Meirvenne, M., Laloo, P., De Clercq, W. 2014: 'On introducing an image-based 3D reconstruction method in archaeological excavation practice' *Journal of Archaeological Science* 41: 251–62

D'Errico, F. 2008: 'Le rouge et le noir: implications of early pigment use in Africa, the Near East and Europe for the origin of cultural modernity' *South African Archaeological Society Goodwin Series* 10: 168–74

Dewbury, A.G., Russell, N., 2007: 'Relative frequency of butchering cutmarks produced by obsidian and flint: an experimental approach' *Journal of Archaeological Science* 34.3: 354–57

Doğan, M., Doğan, A.U. 2007: 'Arsenic mineralization, source, distribution, and abundance in the Kutahy region of the western Anatolia, Turkey' *Environmental Geochemistry and Health* 29: 119–29

Doherty, C. 2006: 'The use of clay at Çatalhöyük' *Çatalhöyük 2006 Archive Report*. http://www.catalhoyuk.com/archive_reports/2006

— 2009: 'Clay materials' *Çatalhöyük 2009 Archive Report.* http://www.catalhoyuk.com/archive_reports/2009

— 2011: 'Clay and landscape studies' *Çatalhöyük 2011 Archive Report*. http://www.catalhoyuk.com/archive_reports/2011

— 2013: 'Sourcing Çatalhöyük's clays' in I. Hodder (ed.), *Substantive Technologies at Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 9). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 51–66

— 2017: *Living with Clay: Materials, Technology, Resources and Landscape at Çatalhöyük*. PhD thesis, University of Leicester, Leicester

Dohrenwend, R.E. 2002: 'The sling: forgotten firepower of antiquity' *Journal of Asian Martial Arts* 11.2: 29–49

Doughty, L. 2002: 'The Temper Project' *Çatal News* 8. http://www.catalhoyuk.com/newsletters/09/temper.html

Douglas, M.'B'. 2014: 'Evaluating Catalhoyuk: economic and ethnographic approaches to understanding the impact of cultural heritage' in I. Hodder (ed.), *Integrating Çatalhöyük: Themes from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 10). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 47–54

Doyle, S. 2017: 'Chipped Stone from the North and South Areas' *Çatalhöyük 2017 Archive Report*. http://www.catalhoyuk.com/ archive_reports/2017

Dumont, C. 2002: 'Dead family or archaeological collections? On the significance of Native dead' *Race, Gender & Class* 9.2: 8–31

Dural, S. 2007: *Protecting Çatalhöyük: Memoir of an Archaeological Site Guard*. London, Routledge

— 2015: *Life at Çatalhöyük 9,000 Years Ago*. Konya, S.Ü. Basimevi

Düring, B.S. 2000: *Places, Privacy Patterns, and Social Identities in the Architecture of Neolithic Çatalhöyük*. Unpublished MA Thesis: Leiden University, Leiden

— 2001: 'Social dimensions in the architecture of Neolithic Çatalhöyük' *Anatolian Studies* 51: 1–18

— 2005: 'Building continuity in the Central Anatolian Neolithic: exploring the meaning of buildings at Aşıklı Höyük and Çatalhöyük' *Journal of Mediterranean Archaeology* 18.1: 3–29

— 2006: *Constructing Communities: Clustered Neighbourhood Settlements of the Central Anatolian Neolithic, ca. 8500–5500 cal BC*. PhD thesis, Leiden University, Leiden

— 2007a: 'The articulation of houses at Neolithic Çatalhöyük, Turkey' in R.A. Beck (ed.), *The Durable House: House Society Models in Archaeology*. Carbondale, Center for Archaeological Investigations: 130–53

— 2007b: 'Reconsidering the Çatalhöyük community: from households to settlement systems' *Journal of Mediterranean Archaeology* 20.2: 155–82

— 2010: *The Prehistory of Asia Minor: From Complex Hunter-Gatherers to Early Urban Societies*. Cambridge, Cambridge University Press

— 2013: 'The anatomy of a prehistoric community. Reconsidering Çatalhöyük' in J. Birch (ed.), *From Prehistoric Villages to Cities. Settlement Aggregation and Community Transformation*. New York, London, Routledge: 23–43

— 2016: 'The 8.2 event and the Neolithic expansion in Western Anatolia' in P.F. Biehl, O.P. Nieuwenhuyse (eds), *Climate and Cultural Change in Prehistoric Europe and the Near East*. Albany (NY), State University of New York Press: 135–50

Düring, B.S., Marciniak, A. 2005: 'Households and communities in the central Anatolian Neolithic' *Archaeological Dialogues* 12.2: 165–87

Duru, G. 2018: 'Sedentism and solitude: exploring the impact of private space on social cohesion in the Neolithic' in I. Hodder (ed.), *Religion, History, and Place in the Origin of Settled Life*. Louisville (CO), University Press of Colorado: 162–85

Duru, R. 2012: 'The Neolithic of the Lakes Region Hacılar – Kuruçay Höyük – Höyücek – Bademağacı Höyük' in M. Özdoğan, N. Başgelen, P. Kuniholm (eds), *The Neolithic in Turkey* 4*: New Excavations, New Research: Western Turkey*. Istanbul, Arkeoloji ve Sanat Yayınları: 1–65

Dyer, M., Fibiger, L. 2017: 'Understanding blunt force trauma and violence in Neolithic Europe: the first experiments using a skin-skull-brain model and the Thames Beater' *Antiquity* 91.360: 1515–28

Eastaugh, N., Walsh, V., Chaplin, T., Siddall, R. 2008: *Pigment Compendium: A Dictionary of Historical Pigments*. London, Routledge

Eddisford, D. 2009: 'Building 79, Space 134' *Çatalhöyük 2009 Archive Report*. http://www.catalhoyuk.com/archive_reports/2009

— 2014: 'Building 49' in I. Hodder (ed.), *Çatalhöyük Excavations: the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 7). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 313–56

Edensor, T. 2016: 'Incipient ruination: materiality, destructive agencies and repair' in M. Bille, T.F. Sørensen (eds), *Elements of Architecture: Assembling Archaeology, Atmosphere and the Performance of Building Spaces*. London, Routledge: 348–64

Edmonds, M. 1995: *Stone Tools and Society. Working Stone in Neolithic and Bronze Age Britain*. London, B.T. Batsford Ltd

Ekejiuba, F. 1995: 'Down to fundamentals: women-centred hearth-holds in rural West Africa' in D. Bryceson (ed.), *Women Wielding the Hoe: Lessons from Rural Africa for Feminist Theory and Development Practice*. London, Berg: 47–61

Emily Carr University. https://www.connect.ecuad.ca/~vsager/FNDT%20150%20Spring%2012/palette%20history.html

EMOTIVE 2019: *The EMOTIVE Project: Storytelling for Cultural Heritage*. https://emotiveproject.eu/

Encyclopedia of Life. http://eol.org/pages/3061929/details

Endacott, J., Brooks, S. 2013: 'An updated theoretical and practical model for promoting historical empathy' *Social Studies Research and Practice* 8.1: 41–58

Entwistle, N., Heritage, G., Milan, D. 2019: 'Ecohydraulic modelling of anabranching rivers' *River Research and Applications* 35: 353–64

Erbil, Ö. 2016: 'Austrian archaeological excavations in Turkey canceled amid diplomatic row' *Hurriyet Daily News*. http://www.hurriyetdailynews.com/austrian-archaeological-excavations-in-turkey-canceled-amid-diplomatic-row-103629

Erdal, Y.S. 2015: 'Bone or flesh: defleshing and post-depositional treatments at Körtik Tepe (Southeastern Anatolia, PPNA Period)' *European Journal of Archaeology* 18: 4–32

Erdal, Y.S., Erdal, Ö.D. 2012: 'Organized violence in Anatolia: a retrospective research on the injuries from the Neolithic to Early Bronze Age' *International Journal of Paleopathology* 2.2–3: 78–92

Erdoğu, B., Ulubey, A. 2011: 'Colour symbolism in the prehistoric architecture of Central Anatolia and Raman spectroscopic investigation of red ochre in Chalcolithic Çatalhöyük' *Oxford Journal of Archaeology* 30: 1–11

Erim-Özdoğan, A. 2011: 'Çayönü' in M. Özdoğan, N. Başgelen, P. Kuniholm (eds), *The Neolithic in Turkey: New Excavations and New Research: The Tigris Basin*. Istanbul, Arkeologi ve Sanat Yayınları: 185–269

Ertuğ-Yaraş, F. 1997: *An Ethnoarchaeological Study of Subsistence and Plant Gathering in Central Anatolia*. PhD thesis, Washington University, Washington

Facey, W. 1997: *Back to Earth: Adobe Building in Saudi Arabia, Riyadh*. London, Al-Turath/London Centre of Arab Studies

Fairbairn, A., Asouti, E., Russell, N., Swogger, J.G. 2005a: 'Seasonality' in I. Hodder (ed.), *Çatalhöyük Perspectives: Reports from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 6). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 93–108

Fairbairn, A., Martinoli, D., Butler, A., Hillman, G. 2007: 'Wild plant seed storage at Neolithic Çatalhöyük East, Turkey' *Vegetation History and Archaeobotany* 16: 467–79

Fairbairn, A., Near, J., Martinoli, D. 2005b: 'Macrobotanical investigation of the North, South and KOPAL Area excavations at Çatalhöyük East' in I. Hodder (ed.), *Inhabiting Çatalhöyük: Reports from the 1995-1999 Seasons* (Çatalhöyük Research Project Series Volume 4). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 137–202

Farid, S. 2000: 'The excavation process at Çatalhöyük' in I. Hodder (ed.), *Towards Reflexive Method in Archaeology: The Example at Çatalhöyük* (Çatalhöyük Research Project Series Volume 2). London, British Institute of Archaeology at Ankara; Cambridge, McDonald Institute for Archaeological Research: 19–35

— 2007a: 'Introduction to the South Area excavations', in I. Hodder (ed.), *Excavating Çatalhöyük: Reports from the 1995–1999 Seasons* (Çatalhöyük Research Project Series Volume 3). London, British Institute of Archaeology at Ankara; Cambridge, McDonald Institute for Archaeological Research: 41–58

— 2007b: 'Level IX relative heights, Building 2, Buildings 22 & 16 and Building 17' in I. Hodder (ed.), *Excavating Çatalhöyük: Reports from the 1995–1999 Seasons* (Çatalhöyük Research Project Series Volume 3). London, British Institute of Archaeology at Ankara; Cambridge, McDonald Institute for Archaeological Research: 139–226

— 2007c: 'Level VIII. Space 161, Space 162, Building 4, Space 115, Buildings 21 & 7, Building 6 and relative heights of Level VI' in I. Hodder (ed.), *Excavating Çatalhöyük: Reports from the 1995–1999 Seasons* (Çatalhöyük Research Project Series Volume 3). London, British Institute of Archaeology at Ankara; Cambridge, McDonald Institute for Archaeological Research: 227–82

— 2007d: 'Level X relative heights, Buildings 23 & 18 and Building 9' in I. Hodder (ed.), *Excavating Çatalhöyük: Reports from the 1995–1999 Seasons* (Çatalhöyük Research Project Series Volume 3). London, British Institute of Archaeology at Ankara; Cambridge, McDonald Institute for Archaeological Research: 103–37

— 2009: 'Other activities' *Çatal News* 16. http://www.catalhoyuk.com/sites/default/files/Catal_News_2009.pdf

— 2014a: '"Proportional representation": multiple voices in archaeological interpretation at Çatalhöyük' in R. Chapman, A. Wylie (eds), *Material Evidence*. London, Routledge: 79–98

— 2014b: 'Timelines: phasing Neolithic Çatalhöyük' in I. Hodder (ed.), *Çatalhöyük Excavations: The 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 7). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 91–129

— 2014c: 'Building 43' in I. Hodder (ed.), *Çatalhöyük Excavations: The 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 7). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 221–28

— 2014d: 'Building 50, Spaces 112 and 231' in I. Hodder (ed.), *Çatalhöyük Excavations: The 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 7). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 229–44

Farid, S., Hodder, I. 2014: 'Excavation, recording and sampling methodologies' in I. Hodder (ed.), *Çatalhöyük Excavations: The 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 7). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 35–52

Ferguson, T.J. 1996: 'Native Americans and the practice of archaeology' *Annual Review of Anthropology* 25: 63–79

Filipović, D. 2014: *Early Farming in Central Anatolia: An Archaebotanical Study of Crop Husbandry, Animal Diet and Land Use at Neolithic Çatalhöyük*. Oxford, Archaeopress

Finlayson, B., Makarewicz, C. 2017: 'The construction of community in the Early Neolithic of Southern Jordan' in M. Benz, H.-G.K. Gebel, T. Watkins (eds), *Neolithic Corporate Identities*. Berlin, ex oriente: 91–106

Finlayson, B., Mithen, S.J., Najjar, M., Smith, S., Maričević, D., Pankhurst, N., Yeomans, L. 2011: 'Architecture, sedentism, and social complexity at Pre-Pottery Neolithic A WF16, southern Jordan' *Proceedings of the National Academy of Sciences of the United States of America* 108.20: 8183–88

Flannery, K.V. 2002: 'The origins of the village revisited: from nuclear to extended households' *American Antiquity* 67.3: 417–33

Fontugne, M., Kuzucuoğlu, C., Karabıyıkoğlu, M., Hatté, C., Pastre, J.F. 1999: 'From Pleniglacial to Holocene: a 14C chronostratigraphy of environmental changes in the Konya Plain, Turkey' *Quaternary Science Reviews* 18: 573–91

Formicola, V. 2007: 'From the Sunghir children to the Romito dwarf' *Current Anthropology* 48.3: 446–53

Formicola, V., Pontrandolfi, A., Svoboda, J. 2001: 'The Upper Palaeolithic triple burial of Dolní Vestonice: pathology and funerary behaviour' *American Journal of Physical Anthropology* 115: 372–79

Forte, M. 2010a: '3D digging project' *Çatalhöyük 2010 Archive Report*. http://www.catalhoyuk.com/archive_reports/2010

— 2010b: 'Introduction to cyber-archaeology' in M. Forte (ed.), *Cyber-Archaeology*. Oxford, Archaeopress: 9–14

— 2014a: '3D archaeology: new perspectives and challenges – the example of Çatalhöyük' *Journal of Eastern Mediterranean Archaeology and Heritage Studies* 2.1: 1–29

— 2014b: 'Virtual reality, cyberarchaeology, teleimmersive archaeology' in F. Remondino, S. Campana (eds), *3D Recording and Modelling in Archaeology and Cultural Heritage: Theory and Best Practices*. Oxford, Archaeopress: 113–28

— 2015: 'Cyber archaeology: a post-virtual perspective' in P. Svensson, D.T. Goldberg (eds), *Between Humanities and the Digital*. Cambridge, MIT Press: 295–309

Forte, M., Dell'Unto, N., Issavi, J., Onsurez, L., Lercari, N. 2012: '3D archaeology at Çatalhöyük' *International Journal of Heritage in the Digital Era* 1.3: 351–78

Forte, M., Dell'Unto, N., Jonsson, K., Lercari, N. 2015: 'Interpretation process at Çatalhöyük using 3D' in I. Hodder, A. Marciniak (eds), *Assembling Çatalhöyük*. New York, Routledge: 43–57

Forte, M., Gallese V. 2015: 'Embodiment and 3D archaeology: a Neolithic house at Çatalhöyük' in R. Crook, K. Edwards, C. Hughes (eds), *Breaking Barriers: Proceedings of the 47th Annual Chacmool Archaeological Conference, November 7–9, 2014, Calgary, Alberta, Canada*. Chacmool, Chacmool Archaeological Association of the University of Calgary: 35–55

Forte, M., Kurillo, G. 2010: 'Cyberarchaeology: experimenting with teleimmersive archaeology' in *2010 16th International Conference on Virtual Systems and Multimedia: VSMM 2010: October 20–23, 2010, Seoul, Korea*. Piscataway, Institute of Electrical and Electronics Engineers: 155–62

Forte, M., Kurillo, G., Matlock T. 2010: 'Teleimmersive archaeology: simulation and cognitive impact' in M. Ioannides, D. Fellner, A. Georgopoulos, D.G. Hadjimitsis (eds), *Digital Heritage: Third International Conference, Euromed 2010: Lemessos, Cyprus, November 8–13, 2010: Proceedings*. Berlin, Springer: 422–31

Fortunato, S. 2010: 'Community detection in graphs' *Physics Reports* 486: 75–175

Fortunato, S., Barthelemy, M. 2007: 'Resolution limit in community detection' *Proceedings of the National Academy of Sciences of the United States of America* 104.1: 36–41

Fortunato, S., Hric, D. 2016: 'Community detection in networks: a user guide' *Physics Reports* 659: 1–44

Fowler, C. 2013: 'Dynamic assemblages, or the past is what endures: change and the duration of relations' in B. Alberti, A.M. Jones, J. Pollard (eds), *Archaeology after Interpretation: Returning Materials to Archaeological Theory*. Walnut Creek, Left Coast Press: 235–56

Fox, K. 2017: '"God save Erdogan": Inside the Turkish president's heartland' CNN. https://www.cnn.com/interactive/2017/04/world/konya-turkey

Freeman, L.C. 1978: 'Centrality in social networks conceptual clarification' *Social Networks* 1.3: 215–39

Friesem, D., Boaretto, E., Eliyahu-Behar, A., Shahack-Gross, R. 2011: 'Degradation of mud brick houses in an arid environment: a geoarchaeological model' *Journal of Archaeological Science* 38.5: 1135–47

Friesem, D.E., Tsartsidou, G., Karkanas, P., Shahack-Gross, R. 2014: 'Where are the roofs? A geo-ethnoarchaeological study of mud brick structures and their collapse processes, focusing on the identification of roofs' *Archaeological and Anthropological Sciences* 6.1: 73–92

Fuchs-Khakhar, C. 2019: 'Home is where the hearth is: what a multi-scalar approach to fireplaces from Çatalhöyük, Turkey, can reveal about cooking practices in Neolithic households' *Environmental Archaeology* DOI: 10.1080/14614103.2018.1550950

Fuller, D.Q., González Carretero, L. 2018: 'The archaeology of Neolithic cooking traditions: archaeobotanical approaches to baking, boiling and fermenting' *Archaeology International* 21: 109–21

Fuller, D.Q., Rowlands, M. 2011: 'Ingestion and food technologies: maintaining differences over the long-term in west, south and east Asia' in J. Bennet, S. Sherratt, T.C. Wilkinson (eds), *Interweaving Worlds - Systematic Interactions in Eurasia, 7th to 1st millennia BC. Essays from a Conference in Memory of Professor Andrew Sherratt*. Oxford, Oxbow Books: 37–60

Ganis, M. 2011: 'The intuitive builders of Çatalhöyük' *Çatalhöyük 2011 Archive Report*. http://www.catalhoyuk.com/archive_reports/2011

García-Suárez, A. 2017: *Investigating Neolithic Ecology and Settlement Networks in the Konya Plain: Integrated Micro-contextual Analysis of Buildings and Open Areas at Çatalhöyük East, Boncuklu Hüyük and Pınarbaşı*. PhD thesis, University of Reading, UK

García-Suárez, A., Portillo, M., Matthews, W. 2018: 'Early animal management strategies during the Neolithic of the Konya Plain, Central Anatolia: integrating micromorphological and microfossil evidence' *Environmental Archaeology*: 1–19

Gardener, C J., Mcivor, J.G., Jansen, A. 1993: 'Passage of legume and grass seeds through the digestive tract of cattle and their survival in faeces' *Journal of Applied Ecology* 30: 63–74

Garfinkel, Y. 1987: 'Burnt lime products and social implications in the Pre-Pottery Neolithic B villages of the Near East' *Paléorient* 13: 69–76

Garner, F.H. 1963: 'The palatability of herbage plants' *Grass and Forage Science* 18: 79–89

Gauld, S., Campbell, S., Carter, E. 2003: 'Elusive complexity: new data from late Halaf Domuztepe in south central Turkey' *Paléorient* 29.2: 117–33

Gauld, S., Oliver, J.S., Kansa, S.W., Carter, E. 2012: 'On the tail end of variation in Neolithic burial practices: Halaf feasting and cannibalism at Domuztepe southeastern Anatolia' in M. Perry (ed.), *Bioarchaeology and Behaviour: The People of the Neolithic Near East*. Gainesville, University Press of Florida: 8–34

Gelabert, L.P., Asouti, E., Martí, E.A. 2011: 'The ethnoarchaeology of firewood management in the Fang villages of Equatorial Guinea, central Africa: implications for the interpretation of wood fuel remains from archaeological sites' *Journal of Anthropological Archaeology* 30: 375–84

Gettens, R.J., Fitzhugh, E.W., Feller, R.L. 1974: 'Calcium carbonate whites' *Studies in Conservation* 19: 157–84

Gilchrist, R. 2000: 'Archaeological biographies: realizing human lifecycles, courses and histories' *World Archaeology* 31: 325–28

Giomi, E., Peeples, M.A. 2019: 'Network analysis of intrasite material networks and ritual practice at Pueblo Bonito' *Journal of Anthropological Archaeology* 53: 22–31

Girard, R. 1972 [2011]: *La Violence et le Sacré*. Paris, Fayard/Pluriel

Girvan, M., Newman, M.E.J. 2001: 'Community structure in social and biological networks' *Proceedings of the National Academy of Sciences of the United States of America* 99.12: 7821–26

Gjesfjeld, E. 2015: 'Network analysis of archaeological data from hunter-gatherers: methodological problems and potential solutions' *Journal of Archaeological Method and Theory* 22.1: 182–205

Glencross, B., Boz, B. 2014: 'Representing violence in Anatolia and the Near East during the transition to agriculture: readings from contextualized human skeletal remains' in C.J. Knüsel, M.J. Smith (eds), *The Routledge Handbook of the Bioarchaeology of Human Conflict*. London, Routledge: 90–108

Golitko, M., Feinman, G.M. 2015: 'Procurement and distribution of pre-Hispanic Mesoamerican obsidian 900 BC–AD 1520: a social network analysis' *Journal of Archaeological Method and Theory* 22.1: 206–47

Golitko, M., Feinman, G.M., Nicholas, L.M. 2019: 'Archaeological network analysis viewed through Mesoamerican obsidian' in T. Kerig, C. Mader, K. Ragkou, M. Reinfeld, T. Zachar (eds), *Social Network Analysis in Economic Archaeology – Perspectives from the New World*. Bonn, Verlag Dr. Rudolf Habelt GmbH: 1–12

Golitko, M., Meierhoff, J., Feinman, G.M., Williams, P.R. 2012: 'Complexities of collapse: the evidence of Maya obsidian as revealed by social network graphical analysis' *Antiquity* 86: 507–23

González Carretero, L. 2020: *On the Origins of Bread Cultures in the Near East: A New Archaeobotanical Study on Charred Meals and Cooking Practices from Neolithic Çatalhöyük (Turkey) and Jarmo (Iraqi Kurdistan)*. PhD thesis, Institute of Archaeology, University College London, UK

González Carretero, L., Wollstonecroft, M., Fuller D.Q. 2017: 'A methodological approach to the study of archaeological cereal meals: a case study at Çatalhöyük East (Turkey)' *Vegetation History and Archaeobotany* 26.4: 415–32

González-Ruibal, A. 2016: 'House societies in the ancient Mediterranean (2000–500 BC)' *Journal of World Prehistory* 29.4: 383–437

Goodman, M. 1999: 'Temporalities of prehistoric life: household development and community continuity' in J. Brück, M. Goodman (eds), *Making Places in the Prehistoric World: Themes in Settlement Archaeology*. London, Routledge: 145–59

Goring-Morris, N. 2000: 'The quick and the dead: the social context of aceramic Neolithic mortuary practices as seen from Kfar HaHoresh' in I. Kuijt (ed.), *Life in Neolithic Farming Communities: Social Organization, Identity, and Differentiation*. New York, Kluwer Academic/Plenum Publishers: 103–36

Goring-Morris, N., Belfer-Cohen, A. 2010: 'Different ways of being, different ways of seeing … changing worldviews in the Neolithic Near East' in B. Finlayson, G. Warren (eds), *Landscapes in Transition*. Oxford, Oxbow Books: 9–22

Goring-Morris, N., Belfer-Cohen, A. 2018: 'Long-term memory and the community in the later prehistory of the Levant' in I. Hodder (ed.), *Religion, History, and Place in the Origin of Settled Life*. Boulder (CO), University Press of Colorado: 99–114

Goring-Morris, N., Horwitz, L.K. 2007: 'Funerals and feasts during the Pre-Pottery Neolithic B of the Near East' *Antiquity* 81: 902–19

Granovetter, M.S. 1973: 'The strength of weak ties' *The American Journal of Sociology* 78.6: 1360–80

Grima, R. 2017: 'Presenting archaeological sites to the public' in G. Moshenska (ed.), *Key Concepts in Public Archaeology*. London, UCL Press

Guilaine, J., Zammit, J. 2001: *Le Sentier de la Guerre: Visages de la Violence Préhistorique*. Paris, Édition de Seuil

Gümüş, B.A., Bar-Yosef Mayer, D.E. 2013: 'Micro-freshwater gastropods at Çatalhöyük as environmental indicators' in I. Hodder (ed.), *Humans and Landscapes of Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 8). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 81–87

Guyomarc'h, P., Campagna-Vaillancourt, M., Kremer, C., Sauvageau, A. 2010: 'Discrimination of falls and blows in blunt head trauma: a multi-criteria approach' *Journal of Forensic Science* 55.2: 423–27

Guzzo Falci, C.G., Cuisin, J., Delpuech, A., Van Gijn, A., Hofman, C.L. 2019: 'New insights into use-wear development in bodily ornaments through the study of ethnographic collections' *Journal of Archaeological Method and Theory* 26: 755–805

Haaland, R. 2007: 'Porridge and pot, bread and oven: food ways and symbolism in Africa and the Near East from the Neolithic to the present' *Cambridge Archaeological Journal* 17.2: 165–82

Haddow, S.D., Betz, B., Knüsel, C.J., Milella, M., Schotsmans, E.M.J., Moore, S.V. 2016: 'Human remains' *Çatalhöyük 2016 Archive Report*. http://www.catalhoyuk.com/archive_reports/2016

Haddow, S.D, Knüsel. C.J. 2017: 'Skull retrieval and secondary burial practices in the Neolithic Near East: recent insights from Çatalhöyük, Turkey' *Bioarchaeology International* 1: 52–71

Haddow, S.D., Sadvari, J.W., Knüsel, C.J., Dell'Unto, N., Forte, M. 2013: 'Bioarchaeology in 3D: three-dimensional modeling of human burials at Neolithic Çatalhöyük'. Poster presented at American Association of Physical Anthropologists Annual Meeting, Knoxville

Haddow, S.D., Sadvari, J.W., Knüsel, C.J., Hadad, R. 2015a: 'A tale of two platforms: commingled remains and the life-course of houses at Neolithic Çatalhöyük' in A.J. Osterholtz (ed.), *Theoretical Approaches to Analysis and Interpretation of Commingled Human Remains*. New York, Springer: 5–29

Haddow, S.D., Knüsel, C.J., Tibbetts, B., Milella, M., Betz, B. 2015b: 'Human remains' *Çatalhöyük 2015 Archive Report*. http://www.catalhoyuk.com/archive_reports/2015

Haddow, S.D., Milella, M., Tibbetts, B., Schotsmans, E.M.J., Knüsel, C.J. 2017: 'Human remains' *Çatalhöyük 2017 Archive Report*

Haddow, S.D., Schotsmans, E.M.J., Milella, M., Pilloud, M.A., Tibbetts, B., Knüsel, C.J. 2020: 'From parts to a whole? Exploring changes in funerary practices at Çatalhöyük' in I. Hodder (ed.), *Consciousness and Creativity at the Dawn of Settled Life: The Test-Case of Çatalhöyük*. Cambridge, Cambridge University Press: 250–72

Haddow, S.D., Tsoraki, C., Vasić, M., Dori, I., Knüsel, C.J., Milella, M. 2019: 'An analysis of modified human teeth at Neolithic Çatalhöyük, Turkey' *Journal of Archaeological Science: Reports* 28: 102058

Hager, L.D., Boz, B. 2008: 'Human remains archive report' Çatalhöyük 2008 Archive Report. http://www.catalhoyuk.com/archive_reports/2008

Halstead, P. 2005: 'Resettling the Neolithic: faunal evidence for seasons of consumption and residence at Neolithic sites in Greece' in D. Bailey, A. Whittle, V. Cummings (eds), *(Un)settling the Neolithic*. Oxford, Oxbow Books

Halstead, P., O'Shea, J. (eds) 1989: *Bad Year Economics: Cultural Responses to Risk and Uncertainty*. Cambridge, Cambridge University Press

Hamilton, C. 2000: 'Faultlines: the construction of archaeological knowledge at Çatalhöyük' in I. Hodder (ed.), *Towards Reflexive Method in Archaeology: The Example at Çatalhöyük* (Çatalhöyük Research Project Series Volume 2). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 119–27

Hamilton, N. 1996: 'Figurines, clay balls, small finds and burials' in I. Hodder (ed.), *On the Surface: Çatalhöyük 1993–95* (Çatalhöyük Research Project Series Volume 1). Cambridge, McDonald Institute for Archaeological Research; London, British Institute at Ankara: 215–63

Hardy, K., van de Locht, R., Wilson, J., Tugay, O. 2013: 'Starch granules and complex carbohydrates at Çatalhöyük' in I. Hodder (ed.), *Humans and Landscapes of Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 8). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 191–212

Hardy-Smith, T., Edwards, P.C. 2004: 'The garbage crisis in prehistory: artefact discard patterns at the Early Natufian site of Wadi Hammeh 27 and the origins of household refuse disposal strategies' *Journal of Anthropological Archaeology* 23.3: 253–89

Harris, E.C. 1997: *Principles of Archaeological Stratigraphy* (2nd edition). London, Academic Press

Harris, O.J.T. 2013: 'Relational communities in prehistoric Britain' in C. Watts (ed.), *Relational Archaeologies: Humans, Animals, Things*. London, Routledge: 173–89

— 2017: 'Assemblages and scale in archaeology' *Cambridge Archaeological Journal* 27.1: 127–39

Harrison, K., Martin, V., Webster, B. 2013: 'Structural fires at Çatalhöyük' in I. Hodder (ed.), *Substantive Technologies at Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 9). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 137–146

Hart, J.P. 2012: 'The effects of geographical distances on pottery assemblage similarities: a case study from Northern Iroquoia' *Journal of Archaeological Science* 39.1: 128–34

Hastorf, C.A. 2012: 'The habitus of cooking practices at Neolithic Çatalhöyük: what was the place of the cook?' in S.R. Graff, E. Rodríguez-Alegría (eds), *The Menial Art of Cooking: Archaeological Studies of Cooking and Food Preparation*. Louisville (CO), University Press of Colorado: 65–86

Hauptmann, H. 2011: 'The Urfa region' in M. Özdoğan, P. Kuniholm, N. Başgelen (eds), *The Neolithic in Turkey. New Excavations & New Research – The Euphrates Basin*. Istanbul, Arkeoloji ve Sanat Yayinlari: 85–138

Hayden, B. 1990: 'Nimrods, piscators, pluckers, and planters: the emergence of food production' *Journal of Anthropological Archaeology* 9: 31–69

— 2001: 'Fabulous feasts: a prolegomenon to the importance of feasting' in M. Dietler, B. Hayden (eds), *Feasts: Archaeological and Ethnographic Perspectives on Food, Politics, and Power*. Tuscaloosa, University of Alabama Press: 23–64

— 2009: 'Funerals as feasts: why are they so important?' *Cambridge Archaeological Journal* 19.1: 29–52

Heinrich, E., Siedl, U. 1969: 'Zur Siedlungsform von Çatal Hüyük' *Archäeolgischer Anzeiger* 84.2: 113–19

Heiss, A.G. 2015: 'Bread' in K.B. Methany, M.C. Beaudry (eds), *Archaeology of Food. An Encyclopedia*. Lanham, Rowman & Littlefield: 70–75

Henderson, J., Lingle, A.M. 2018: 'Preventive conservation in archaeological sites' in S. Varela (ed.), *The Encyclopedia of Archaeological Sciences*. New York, Wiley-Blackwell

Hendon, J.A. 2010: *Houses in a Landscape: Memory and Everyday Life in Mesoamerica*. Durham, Duke University Press

Hendy, J., Colonese, A.C., Franz, I., Fernandes, R., Fischer, R., Orton, D., Lucquin, A., Spindler, L., Anvari, J., Stroud, E., Biehl, P.F., Speller, C., Boivin, N., Mackie, M., Jersie-Christensen, R.R., Olsen, J.V., Collins, M.J., Craig, O.E., Rosenstock, E. 2018: 'Ancient proteins from ceramic vessels at Çatalhöyük West reveal the hidden cuisine of early farmers' *Nature Communications* 9.1: 4064

Henshilwood, C.S., D'Errico, F., Van Niekerk, K.L., Coquinot, Y., Jacobs, Z., Lauritzen, S.E., Menu, M., García-Moreno, R. 2011: 'A 100,000-year-old ochre-processing workshop at Blombos Cave, South Africa' *Science* 334: 219–22

Henton, E.M. 2010: *Herd Management and the Social Role of Herding at Neolithic Çatalhöyük: An Investigation Using Oxygen Isotope and Dental Microwear Evidence in Sheep*. PhD thesis, University College London, UK

— 2013: 'Oxygen stable isotope and dental microwear evidence of herding practices at Çatalhöyük' in I. Hodder (ed.), *Humans and Landscapes of Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 8). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 299–316

— in press: 'Domestic herd management in the closing 200 years of Çatalhöyük East, elucidated through the combined use of oxygen isotopes and microwear in sheep teeth' in L. Czerniak, A. Marciniak (eds), *Late Neolithic at Çatalhöyük East: Excavations of Upper Levels in the Team Poznan Area*. Los Angeles, Cotsen Institute of Archaeology Press

Henton, E.M., Meier-Augenstein, W., Kemp, H.F. 2010: 'The use of oxygen isotopes in sheep molars to investigate past herding practices at the Neolithic settlement of Çatalhöyük, Central Anatolia' *Archaeometry* 52: 429–49

Hillson, S.W., Larsen, C.S., Boz, B., Pilloud, M., Sadvari, J.W., Agarwal, S.C., Glencross, B., Beauchesne, P., Pearson, J.A., Ruff, C.B., Garofalo, E.M., Hager, L.D., Haddow, S.D. 2013: 'The human remains I: interpreting community structure, health and diet in Neolithic Çatalhöyük' in I. Hodder (ed.), *Humans and Landscapes of Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 8). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 339–96

Hinchliffe, S. 2010: 'Working with multiples: a non-representational approach to environmental issues' in B. Anderson, P. Harrison (eds), *Taking-Place: Non-representational Theories and Geography*. Farnham, Ashgate: 303–20

Hinchliffe, S., Whatmore, S. 2006: 'Living cities: towards a politics of conviviality' *Science as Culture* 15.2: 123–38

Hinkle, D.E., Wiersma W., Jurs S.G. 2003: *Applied Statistics for the Behavioral Sciences* (5th edition). Boston, Houghton Mifflin

Ho, B.S.J., Lin, J.-L., Huang, C.-C., Tsai, Y.-H., Lin, M.-C. 2003: 'Mercury vapor inhalation from chinese red (cinnabar)' *Journal of Toxicology: Clinical Toxicology* 42: 75–78

Hodder, I. 1982: *Symbolic and Structural Archaeology*. Cambridge, Cambridge University Press

— 1990: *The Domestication of Europe: Structure and Contingency in Neolithic Societies*. Oxford, Blackwell

— (ed.) 1996a: *On the Surface: Çatalhöyük 1993–95* (Çatalhöyük Research Project Series Volume 1). Cambridge, McDonald Institute for Archaeological Research; London, British Institute at Ankara

— 1996b: 'Re-opening Çatalhöyük' in I. Hodder (ed.), *On the Surface: Çatalhöyük 1993–95* (Çatalhöyük Research Project Series Volume 1). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 1–17

— 1996c: 'Introduction' Çatalhöyük 1996 Archive Report. http://www.catalhoyuk.com/archive_reports/1996

— 1997a: 'Introduction and summary' *Çatalhöyük 1997 Archive Report*. http://www.catalhoyuk.com/archive_reports/1997

— 1997b: '"Always momentary, fluid and flexible": towards a reflexive excavation methodology' *Antiquity* 71.273: 691–700

— 1998: 'The past as passion and play: Çatalhöyük in the construction of multiple pasts' in L. Meskell (ed.), *Archaeology Under Fire: Nationalism, Politics and Heritage in the Eastern Mediterranean and Middle East*. London, Routledge: 124–39

— 1999: *The Archaeological Process: An Introduction*. Cambridge, Cambridge University Press

— (ed.) 2000a: *Towards Reflexive Method in Archaeology: The Example at Çatalhöyük* (Çatalhöyük Research Project Series Volume 2). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara

— 2000b: 'Developing a reflexive method in archaeology' in I. Hodder (ed.), *Towards Reflexive Method in Archaeology: The Example at Çatalhöyük* (Çatalhöyük Research Project Series Volume 2). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 3–14

— 2003: 'Archaeological reflexivity and the "local" voice' *Anthropological Quarterly* 76.1: 55–69

— (ed.) 2005a: *Inhabiting Çatalhöyük: Reports from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 4). Cambridge, McDonald Institute for Archaeological Research; London, British Institute at Ankara

— (ed.) 2005b: *Changing Materialities at Çatalhöyük: Reports from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 5). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara

— (ed.) 2005c: *Çatalhöyük Perspectives: Themes from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 6). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara

— 2005d: 'Memory' in I. Hodder (ed.), *Çatalhöyük Perspectives: Themes from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 6). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 183–96

— 2005e: Peopling Çatalhöyük and its landscape' in I. Hodder (ed.), *Inhabiting Çatalhöyük: Reports from the 1995–1999 Seasons* (Çatalhöyük Research Project Volume 4). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 1–32

— 2006: *The Leopard's Tale: Revealing the Mysteries of Çatalhöyük*. London, Thames and Hudson

— (ed.) 2007a: *Excavating Çatalhöyük: South, North and KOPAL Area: Reports from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 3). Cambridge, McDonald Institute for Archaeological Research; London, British Institute at Ankara

— 2007b: 'Summary of results' in I. Hodder (ed.), *Excavating Çatalhöyük: South, North and KOPAL Area reports from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 3). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 25–40

— 2007c: 'Çatalhöyük in the context of the Middle Eastern Neolithic' *Annual Review of Anthropology* 36: 105–20

— 2010: 'Probing religion at Çatalhöyük: an interdisciplinary experiment' in I. Hodder (ed.), *Religion in the Emergence of Çatalhöyük: Çatalhöyük as a Case Study*. Cambridge, Cambridge University Press: 1–31

— 2011a: 'Is a shared past possible? The ethics and practice of archaeology in the twenty-first century' in K. Okamura, A. Matsuda (eds), *New Perspectives on Global Public Archaeology*. London, Routledge: 19–28

— 2011b: 'Human-thing entanglement: towards an integrated archaeological perspective' *Journal of the Royal Anthropological Institute* 17: 154–77
— 2012a: *Entangled. An Archaeology of the Relationships Between Humans and Things*. Oxford, Wiley-Blackwell
— 2012b: 'Çatalhöyük. A summary of recent work concerning architecture' in B. Söğüt (ed.), *Festschrift for Ahmet A. Tırpan.* Istanbul, Ege Yayınları: 303–14
— 2012c: 'History-making in prehistory' in A.M. Jones, J. Gardiner (eds), *Image, Memory and Monumentality: Archaeological Engagements with the Material World*. Oxford, Oxbow Books: 184–93
— (ed.) 2013a: *Humans and Landscapes of Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 8). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press
— (ed.) 2013b: *Substantive Technologies at Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 9). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press
— 2013c: 'Season review' *Çatalhöyük Archive Report 2013*. http://www.catalhoyuk.com/archive_reports/2013
— 2013d: 'From diffusion to structural transformation: the changing roles of the Neolithic houses in the Middle East, Turkey and Europe' in D. Hofmann, J. Smyth (eds), *Tracking the Neolithic House in Europe: Sedentism, Architecture, and Practice*. New York, Springer: 349–62
— 2013e: 'Dwelling at Çatalhöyük', in I. Hodder (ed.), *Humans and Landscapes of Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 8). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 1–29
— (ed.) 2014a: *Çatalhöyük Excavations: The 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 7). London, British Institute at Ankara; Los Angeles: Cotsen Institute of Archaeology Press
— (ed.) 2014b: *Integrating Çatalhöyük: Themes from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 10). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press
— (ed.) 2014c: *Religion at Work in a Neolithic Society: Vital Matters*. Cambridge, Cambridge University Press
— 2014d: 'Çatalhöyük: the leopard changes its spots. A summary of recent work' *Anatolian Studies* 64: 1–22
— 2014e: 'Mosaics and networks: the social geography at Çatalhöyük' in I. Hodder (ed.), *Integrating Çatalhöyük: Themes from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 10). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 149–68
— 2014f: 'Introduction and summary of summaries' in I. Hodder (ed.), *Integrating Çatalhöyük: Themes from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 10). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 1–22
— 2014g: 'Temporal trends: the shapes and narratives of cultural change at Çatalhöyük' in I. Hodder (ed.), *Integrating Çatalhöyük: Themes from the 2000–2008 Seasons (*Çatalhöyük Research Project Series Volume 10). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 169–84
— 2014h: 'The vitalities of Çatalhöyük' in I. Hodder (ed.), *Religion at Work in a Neolithic Society: Vital Matters*. Cambridge, Cambridge University Press: 1–32
— 2014i: 'Theories and their data: interdisciplinary interactions at Çatalhöyük' in I. Hodder (ed.), *Religion at Work in a Neolithic Society: Vital Matters*. Cambridge, Cambridge University Press: 337–56
— 2015: 'Assembling science at Çatalhöyük: interdisciplinarity in theory and practice' in I. Hodder, A. Marciniak (eds), *Assembling Çatalhöyük*. Leeds, Maney Publishing: 7–12
— 2016a: 'More on history houses at Çatalhöyük: a response to Carleton et al.' *Journal of Archaeological Science* 67: 1–6
— 2016b: *Studies in Human-Thing Entanglement*. http://www.ian-hodder.com/books/studies-human-thing-entanglement
— 2017: 'Ending 25 years of fieldwork at Çatalhöyük.' *Çatalhöyük 2017 Archive Report*. http://www.catalhoyuk.com/archive_reports/2017
— (ed.) 2018a: *Religion, History and Place in the Origin of Settled Life*. Boulder (CO), University of Colorado Press
— 2018b: 'Introduction: two forms of history-making in the Neolithic of the Middle East' in I. Hodder (ed.), *Religion, History, and Place in the Origin of Settled Life*. Boulder (CO), University Press of Colorado: 3–32
— (ed.) 2019: *Violence and the Sacred in the Ancient Near East: Girardian Conversations at Çatalhöyük*. Cambridge, Cambridge University Press
— (ed.) 2020: *Consciousness, Creativity and Self at the Dawn of Settled Life*. Cambridge, Cambridge University Press
Hodder, I., Cessford, C. 2004: 'Daily practice and social memory at Çatalhöyük' *American Antiquity* 69.1: 17–40

Hodder, I., Cessford, C., Farid, S. 2007: 'Introduction to methods and approach' in I. Hodder (ed.), *Excavating Çatalhöyük: South, North and KOPAL Area Reports from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 3). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 3–24

Hodder, I., Doherty, C. 2014: 'Human-thing entanglements' in I. Hodder (ed.), *Çatalhöyük: Themes from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 10). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 221–32

Hodder, I., Doughty, L., 2007: *Mediterranean Prehistoric Heritage: Training, Education and Management*. Cambridge, McDonald Institute for Archaeological Research

Hodder, I., Farid, S. 2014: 'Questions, history of work and summary of results' in I. Hodder (ed.), *Çatalhöyük Excavations: The 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 7). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 1–34

Hodder, I., Marciniak, A. (eds) 2015: *Assembling Çatalhöyük*. Leeds, Maney

Hodder, I., Meskell, L. 2011: 'A "curious and sometimes a trifle macabre artistry": some aspects of symbolism in Neolithic Turkey' *Current Anthropology* 52.2: 235–63

Hodder, I., Mol, A.A.A. 2016: 'Network analysis and entanglement' *Journal of Archaeological Method and Theory* 23.1: 1–29

Hodder, I., Pels, P. 2010: 'History houses: a new interpretation of architectural elaboration at Çatalhöyük' in I. Hodder (ed.), *Religion in the Emergence of Civilization: Çatalhöyük as a Case Study*. Cambridge, Cambridge University Press: 163–86

Hodgkiss, T. 2014: 'Cognitive requirements for ochre use in the Middle Stone Age at Sibudu, South Africa' *Cambridge Archaeological Journal* 24: 405–28

Hölling, H. 2017: 'The technique of conservation: on realms of theory and cultures of practice' *Journal of the Institute of Conservation* 40.2: 87–96

Horne, L. 1994: *Village Spaces: Settlement and Society in Northeastern Iran*. Washington, Smithsonian Institution Press

Hosek, L., Robb, J. 2019: 'Osteobiography: a platform for bioarchaeology research' *Bioarchaeology International* 3.1: 1–15

Houben, H., Guillaud, H. 1994: *Earth Construction: A Comprehensive Guide*, London, Intermediate Technology Publication

House, M. 2014a: 'Building 77' in I. Hodder (ed.), *Çatalhöyük Excavations: the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 7). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 485–504

— 2014b: 'The sequence of Buildings 59 and 60' in I. Hodder (ed.), *Çatalhöyük Excavations: the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 7). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 441–74

— 2014c: 'The sequence of Buildings 67 and 47' in I. Hodder (ed.), *Çatalhöyük Excavations: the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 7). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 303–12

Houston, S., Taube, K. 2000: 'An archaeology of the senses: perception and cultural expression in Ancient America' *Cambridge Archaeological Journal* 10: 261–94

Huang, C.-F., Hsu, C.-J., Liu, S.-H., Lin-Shiau, S.-Y. 2012: 'Exposure to low dose of cinnabar (a naturally occurring mercuric sulfide (HgS)) caused neurotoxicological effects in offspring mice' *Journal of Biomedicine and Biotechnology* 2: 1–12

Human, H. 2015: 'Democratising world heritage: the policies and practices of community involvement in Turkey' *Journal of Social Archaeology* 15.2: 160–83

Hunter, R.W. 1961: 'Life cycles of four freshwater snails in limited populations in Loch Lomond, with a discussion of infraspecific variation' *Proceedings of the Zoological Society of London* 137: 135–71

Hussain, K., Wijetunge, D., Grubnic, S., Jackson, I. 1994: 'A comprehensive analysis of craniofacial trauma' *Journal of Trauma-Injury Infection and Critical Care* 36: 34–47

Ingold, T. 2000: *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*. London, Routledge

Institute of Conservation (ICON) 2014: *Code of Conduct*. https://icon.org.uk/system/files/documents/icon_code_of_conduct.pdf

International Council of Monuments and Sites (ICOMOS) 2013: *The Burra Charter: the Australia ICOMOS charter for places of cultural significance 2013*. Australia ICOMOS Incorporated

Ireland, T. 2018: 'Heritage ethics' in S.L. López Varela (ed.), *Encyclopedia of Archaeological Sciences*. New York, Wiley-Blackwell

Irwin, G. 1808: 'An experiment on soap-suds as a manure' *Journal of Natural Philosophy, Chemistry and the Arts* 20: 99–100

Isaac, B. 1987: 'Throwing and human evolution' *The African Archaeological Review* 5: 5–17

Isaksen, L. 2013: '"O what a tangled web we weave": towards a practice that does not deceive' in C. Knappett (ed.), *Network Analysis in Archaeology: New Approaches to Regional Interaction*. Oxford, Oxford University Press: 43–67

Jackson, M.P.C., Moore, S.V. 2018: 'Taphonomies of landscape: investigating the immediate environs of Çatalhöyük from prehistory to the present' *Anatolian Studies* 68: 177–207

Jones, A. 2001: 'Drawn from memory: the archaeology of aesthetics and the aesthetics of archaeology in Earlier Bronze Age Britain and the present' *World Archaeology* 33: 334–56

— 2002: 'A biography of colour: colour, material histories and personhood in the Early Bronze Age of Britain and Ireland' in A. Jones, G. MacGregor (eds), *Colouring the Past*. Oxford, Berg

Jones, A.M., Díaz-Guardamino, M., Crellin, R.J. 2016: 'From artefact biographies to "multiple objects": a new analysis of the decorated plaques of the Irish Sea region' *Norwegian Archaeological Review* 49.2: 113–33

Joyce, R. 2015: 'Transforming archaeology, transforming materiality' *Archaeological Papers of the American Anthropological Association* 26: 181–91

Joyce, R.A., Gillespie, S.D. (eds) 2000: *Beyond Kinship: Social and Material Reproduction in House Societies*. Philadelphia (PA), University of Pennsylvania Press

Judd, C.S. 1970: 'Skull injury from stoning in Western Samoa and in history' *California Medicine* 112.4: 14–18

Kabukcu, C. 2013: 'Fuel experiments with reeds (*Phragmites australis*) at Neolithic Boncuklu, Konya Plain, Central Anatolia' *Conference of the International Workgroup for Paleoethnobotany*. Aristotle University, Thessaloniki, Greece

— 2017: 'Woodland vegetation history and human impacts in south-central Anatolia 15,000–7000 cal BP: anthracological results from five prehistoric sites in the Konya Plain' *Quaternary Science Reviews* 176: 85–100

— 2018: 'Identification of woodland management practices and tree growth conditions in archaeological fuel waste remains: a case study from the site of Çatalhöyük in central Anatolia, Turkey' *Quaternary International* 463: 282–97

Kabukcu, C., Asouti, E. 2014: 'Anthracology' *Çatalhöyük 2014 Archive Report*. http://www.catalhoyuk.com/archive_reports/2014

Kansa, S.W., Gauld, S.C., Campbell, S., Carter, E. 2009: 'Whose bones are those? Preliminary comparative analysis of fragmented human and animal bones in the "Death Pit" at Domuztepe, a Late Neolithic settlement in south-eastern Turkey' *Anthropozoologica* 44.1: 159–72

Karabatı, S., Dogan, E., Pinar, M., Celik, L.M. 2009: 'Socio-economic effects of agri-tourism on local communities in Turkey: the case of Aglasun' *International Journal of Hospitality & Tourism Administration* 10.2:129–42

Karkanas, P., Efstratiou, N. 2009: 'Floor sequences in Neolithic Makri, Greece: micromorphology reveals cycles of renovation' *Antiquity* 83: 955–67

Karul, N. 2011: 'Gusir Höyük' in P. Kuniholm, N. Başgelen, M. Özdoğan (eds), *The Neolithic in Turkey – New Research & New Excavations*. Istanbul, Arkeoloji ve Sanat Yayınları: 1–17

Katifori, A., Perry, S., Vayanou, M., Antoniou, A., Ioannidis, I.-P., McKinney, S., Chrysanthi, A., Ioannidis, Y. 2020: '"Let them talk!": Exploring guided group interaction in digital storytelling experiences' *ACM Journal on Computing and Cultural Heritage*. https://doi.org/10.1145/3382773

Kay, K., 2020a: 'Dynamic houses and communities at Çatalhöyük: a building biography approach to prehistoric social structure' *Cambridge Archaeological Journal*: 1–18

— 2020b: *The Material Politics of Houses at Çatalhöyük, 7000–6300 BCE*. PhD thesis, University of Cambridge, UK

Keefe, L. 2005: *Earth Building: Methods and Materials, Repair and Conservation*. London, Routledge

Kenyon, K.M., Holland, T.A. 1981: *Excavations at Jericho: The Architecture and Stratigraphy of the Tell*. Jerusalem, British School of Archaeology in Jerusalem

Kinzel, M., Duru, G., Barański, M.Z. 2020: 'Modify to last: Near Eastern Neolithic perspective on rebuilding and continuation' in K. Priesker, U. Wulf-Rheidt (eds), *Umgebaut. Umbau-, Umnutzungs- und Umwertungsprozesse in der antiken Architektur*. Berlin, Schell & Steiner: 9–22

Knappett, C. 2005: 'The affordances of things: a post-Gibsonian perspective on the relationality of mind and matter' in E. DeMarrais, C. Gosden, C. Renfrew (eds), *Rethinking Materiality: The Engagement of Mind with the Material World*. Cambridge, McDonald Institute for Archaeological Research: 43–51

— 2006: *Thinking Through Material Culture: An Interdisciplinary Perspective*. Philadelphia (PA), University of Philadelphia Press

— 2011: *An Archaeology of Interaction: Network Perspectives on Material Culture and Society*. Oxford, Oxford University Press

— 2014: What are social network perspectives in archaeology? *Archaeological Review from Cambridge* 29.1: 179–84

— 2016: 'Networks in archaeology: between scientific method and humanistic metaphor' in T. Brughmans, A.Collar, F. Coward (eds), *The Connected Past. Challenges to Network Studies in Archaeology and History*. Oxford, Oxford University Press: 21–33

Knüsel, C.J. 2005: 'The physical evidence of warfare - subtle stigmata?' in M. Parker-Pearson, I.J.N. Thorpe (eds), *Warfare, Violence, and Slavery*. Oxford, Archaeopress: 49–65

Knüsel, C.J., Glencross, B. 2017: 'Çatalhöyük, archaeology, violence' *Contagion: Journal of Violence, Mimesis, and Culture* 23: 23–36

Knüsel, C.J., Glencross, B., Milella, M. 2019: 'A Girardian framework for violent injuries at Neolithic Çatalhöyük in their Western Asian context' in I. Hodder (ed.), *Violence and the Sacred in the Neolithic: Girardian Conversations at Çatalhöyük*. Cambridge, Cambridge University Press: 60–95

Knüsel, C., Haddow, S.D., Sadvari, J.W., Byrnes, J. 2012: 'Çatalhöyük human remains' *Çatalhöyük 2012 Archive Report*. http://www.catalhoyuk.com/archive_reports/2012

Knüsel, C.J., Smith, M.J. 2014a: 'Context is everything' in C.J. Knüsel, M.J. Smith (eds), *The Routledge Handbook of the Bioarchaeology of Human Conflict*. London, Routledge: 1–24

— 2014b: 'The osteology of conflict: what does it all mean?' in C.J. Knüsel, M.J. Smith (eds), *The Routledge Handbook of the Bioarchaeology of Human Conflict*. London, Routledge: 656–94

Köbbing, J.F., Thevs, N., Zerbe, S. 2013: 'The utilisation of reed (*Phragmites australis*): a review' *Mires Peat* 13: 1–14

Korfman, M. 1973: 'The sling as a weapon' *Scientific American* 229.4: 35–42

Koschützki, D., Lehmann, K.A., Peeters, L., Richter, S., Tenfelde-Podehl, D., Zlotowski, O. 2005: 'Centrality indices' in U. Brandes, T. Erlebach (eds), *Network Analysis. Methodological Foundations*. Berlin, Heidelberg, Springer: 16–60

Kossinets, G. 2006: 'Effects of missing data in social networks' *Social Networks* 28.3: 247–68

Krackhardt, D. 1987: 'QAP partialling as a test of spuriousness' *Social Networks* 9: 359–80

Kramer, C. 1982: *Village Ethnoarchaeology: Rural Iran in Archaeological Perspective*. New York, Academic Press

Kranioti, E. 2015: 'Forensic investigation of cranial injuries due to blunt force trauma: current best practice' *Research and Reports in Forensic Medical Science* 5: 25–37

Kremer, C., Racette, S., Dionne, C.A., Sauvageau, A. 2008: 'Discrimination of falls and blows in blunt head trauma: systematic study of the hat brim line rule in relation to skull fractures' *Journal of Forensic Science* 53.3: 716–19

Kremer, C., Sauvageau, A. 2009: 'Discrimination of falls and blows in blunt head trauma: assessment of predictability through combined criteria' *Journal of Forensic Science* 54.4: 923–26

Kuijt, I. (ed.) 2002: *Life in Neolithic Farming Communities: Social Organization, Identity and Differentiation*. London, Springer

Kuijt, I. 2000a: 'Keeping the peace: ritual, skull caching, and community integration in the Levantine Neolthic' in I. Kuijt (ed.), *Life in Neolithic Farming Communities: Social Organization, Identity, and Differentiation*. New York, Kluwer Academic/Plenum Publishers: 137–64

— 2000b: 'Near Eastern Neolithic research: directions and trends' in I. Kuijt (ed.), *Life in Neolithic Farming Communities: Social Organization, Identity, and Differentiation*. New York, Kluwer Academic/Plenum Publishers: 311–22

— 2018: 'Material geographies of house societies: reconsidering Neolithic Çatalhöyük, Turkey' *Cambridge Archaeological Journal* 28.4: 565–90

Kuijt, I., Guerrero, E., Molist, M., Anfruns, J. 2011: 'The changing Neolithic household: household autonomy and social segmentation – Tell Halula, Syria' *Journal of Anthropological Archaeology* 30.4: 502–22

Kuzucuoğlu, C., Bertaux, J., Black, S., Denefle, M., Fontugne, M., Karabıyıkoğlu, M., Kashima, K., Limondin-Lozouet, N., Mourali, S.D., Orth, P. 1999: 'Reconstruction of climatic changes during the Late Pleistocene, based on sediment records from the Konya Basin (Central Anatolia, Turkey)' *Geological Journal* 34: 174–98

Kwiatkowska, M. 2009: 'Byzantine and Muslim cemeteries at Çatalhöyük: an outline' in T. Vorderstrasse, J. Roodenberg (eds), *Archaeology of the Countryside in Medieval Anatolia*. Leiden, Netherlands Institute for the Near East: 129–38

Lancichinetti, A., Fortunato, S. 2009: 'Community detection algorithms: a comparative analysis' *Physical Review E - Statistical, Nonlinear, and Soft Matter Physics* 80.5: 1–11

— 2011: 'Limits of modularity maximization in community detection' *Physical Review E* 84: 066122

Larsen, C.S. 2006: 'The agricultural revolution as environmental catastrophe: implications for health and lifestyle in the Holocene' *Quaternary International* 150: 12–20

Larsen, C.S., Hillson, S.W., Boz, B., Pilloud, M.A., Sadvari, J.W., Agarwal, S.C., Glencross, B., Beauchesne, P., Pearson, J., Ruff, C.B., Garofalo, E.M., Hager, L.D., Haddow, S.D., Knüsel, C.J. 2015: 'Bioarchaeology of Neolithic Çatalhöyük: lives and lifestyles of an early farming society in transition' *Journal of World Prehistory* 28: 27–68

Larsen, C.S., Hillson, S.W., Ruff, C.B., Sadvari, J.W., Garofalo, E.M., 2013: 'The human remains II: interpreting lifestyle and activity in Neolithic Çatalhöyük' in I. Hodder (ed.), *Humans and Landscapes of Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 8). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 397–412

Larsen, C.S., Knüsel, C.J., Haddow, S.D., Pilloud, M.A., Milella, M., Sadvari, J.W., Pearson, J.A., Ruff, C.B., Garofalo, E.M., Bocaege, E., Betz, B.J., Dori, I., Glencross, B. 2019: 'Bioarchaeology of Neolithic Çatalhöyük reveals fundamental transitions in health, mobility, and lifestyle in early farmers' *Proceedings of the National Academy of Sciences of the United States of America* 116: 12615–23

Last, J. 1998: 'A design for life: interpreting the art of Çatalhöyük' *Journal of Material Culture* 3: 355–78

— 2005: 'Art' in I. Hodder (ed.), *Çatalhöyük Perspectives: Themes from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 6). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 197–208

Last, J., Ozdol, S., Kapur, E., Akca, E., Serdem, M., Kyzylarslanoglu, A. 2005: 'Pottery from the East Mound' in I. Hodder (ed.), *Changing Materialities at Çatalhöyük: Reports from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 5). Cambridge: McDonald Institute for Archaeological Research/British Institute for Archaeology at Ankara: 101–38

Latapy, M., Magnien, C., Del Vecchio, N. 2008: 'Basic notions for the analysis of large affiliation networks / bipartite graphs' *Social Networks* 30.1: 31–48

Latour, B. 2005: *Reassembling the Social: An Introduction to Actor-Network Theory*. Oxford, Oxford University Press

Law, J., Mol, A. 2008: 'Globalisation in practice: on the politics of boiling pigswill' *Geoforum* 39.1: 133–43

Lazo, A. 1994: 'Social segregation and the maintenance of social stability in a feral cattle population' *Animal Behaviour* 48: 1133–41

— 1995: 'Ranging behaviour of feral cattle (*Bos taurus*) in Doñana National Park, S.W. Spain' *Journal of Zoology, London* 236: 359–69

Lees, D. 2003: 'Geomatics' *Çatalhöyük 2003 Archive Report*. http://www.catalhoyuk.com/archive_reports/2003

Lercari, N. 2014: 'Dig@IT – An immersive VR app for archaeology' https://www.youtube.com/watch?v=BNCgOLPCCag

— 2016: 'Terrestrial laser scanning in the age of sensing' in M. Forte, S. Campana (eds), *Digital Methods and Remote Sensing in Archaeology: Archaeology in the Age of Sensing*. Cham, Springer: 3–33

— 2019: 'Monitoring earthen archaeological heritage using multi-temporal terrestrial laser scanning and surface change detection' *Journal of Cultural Heritage* 39: 152–65

Lercari, N., Matthiesen, S., Zielinski, D., Kopper, R. 2014: 'Towards an immersive interpretation of Çatalhöyük at DiVE' American School of Oriental Research (ASOR) Annual Meeting 2014, San Diego

— 2018: 'Immersive visualization and curation of archaeological heritage data: Çatalhöyük and the Dig@IT app' *Journal of Archaeological Method and Theory* 25.2: 368–92

Lercari, N., Shiferaw, E., Forte, M., Kopper, R. 2017: Data from 'Immersive visualization and curation of archaeological heritage data: Çatalhöyük and the Dig@IT app' https://doi.org/10.6075/J0CN71VP

Leuzinger, U., Sidell, J., Williams, T. 2016: 'The 5th International Conference on Preserving Archaeological Remains in situ (PARIS5). 12–17 April 2015, Kreuzlingen (Switzerland)' *Conservation and Management of Archaeological Sites* 18.1–3: 1–7

Lévi-Strauss C. 1975: *Le Voie des Masques*. Genève, A. Skira

— 1982: *The Way of the Masks*. Tr. S. Modelski. Seattle, University of Washington Press

Lewis, J.P., Leng, M.J., Dean, J.R., Marciniak, A., Bar-Yosef Mayer, D.E., Wu, X. 2016: 'Early Holocene palaeoseasonality inferred from the stable isotope composition of *Unio* shells from Çatalhöyük, Turkey' *Environmental Archaeology* 22: 79–95

Lingle, A. 2013: 'Conservation archive report 2013' *Çatalhöyük 2013 Archive Report*. http://www.catalhoyuk.com/archive_reports/2013

— 2017: 'Reflexive conservation research at Çatalhöyük' Presented at the 81st Annual Meeting of the Society for American Archaeology, Vancouver, Canada

Lingle, A., Dell'Unto, N., Der, L., Doyle, S., Killackey, K., Klimowicz, A., Meskell, L., Parkes, P., Tung, B. 2015: 'Painted plaster head' *Çatalhöyük 2015 Archive Report*. http://www.catalhoyuk.com/archive_reports/2015

Lingle, A., Lercari, N., Campiani, A., Garcia, M.D., Guillem, A. 2018. 'Terrestrial laser scanning and conservation of at-risk world heritage' Presented at the 83rd Annual Meeting of the Society for American Archaeology. Washington, DC

Liu, J., Shi, J.-Z., Yu, L.-M., Gyoer, R.A., Waalkes, M.P. 2008: 'Mercury in traditional medicines: is cinnabar toxicologically similar to common mercurials?' *Experimental Biology and Medicine* 233: 810–17

Love, S. 2010: *How Houses Build People: An Archaeology of Mudbrick Houses from Çatalhöyük, Turkey*. PhD thesis, Stanford University, Stanford

— 2012: 'The geoarchaeology of mudbricks in architecture: a methodological study from Çatalhöyük, Turkey' *Geoarchaeology: An International Journal* 27: 140–56

— 2013: 'An archaeology of mudbrick houses from Çatalhöyük' in I. Hodder (ed.), *Substantive Technologies at Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 9). London, British Institute of Archaeology at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 81–96

Lucas, G. 2012: *Understanding the Archaeological Record*. Cambridge, Cambridge University Press

— 2013: 'Afterword: archaeology and the science of new objects' in B. Alberti, A.M. Jones, J. Pollard (eds), *Archaeology after Interpretation: Returning Materials to Archaeological Theory*. Walnut Creek, Left Coast Press: 369–80

— 2016: 'Building lives' in M. Bille, T.F. Sørensen (eds), *Elements of Architecture: Assembling Archaeology, Atmosphere and the Performance of Building Spaces*. London, Routledge: 105–20

Luty, J. 2019: 'International tourist arrivals in Turkey 2000–2018' *Statista*, 9 August 2019. https://www.statista.com/statistics/707699/foreign-tourist-arrivals-in-turkey

Lydall, J. 1978 : 'Le symbolisme des couleurs dans le rituel Hamar' in S. Tornay (ed.), *Voir et Nommer les Couleurs*. Nanterre: Labethno

Macdonald, D.A., Chazan, M., Janetski, J.C. 2015: 'The Geometric Kebaran occupation and lithic assemblage of Wadi Mataha, Southern Jordan' *Quaternary International* 396: 105–20

Madea, B., Staak, M. 1988: 'Determination of the sequence of gunshot wounds to the skull' *Journal of the Forensic Science Society* 28: 321–28

Makaske, B. 2001: 'Anastomosing rivers: a review of their classification, origin and sedimentary products' *Earth-Science Reviews* 53: 149–96

Marciniak, A. 2015: 'The Neolithic house as procurement, production and consumption unit. The case of the Late Neolithic at Çatalhöyük' in K. Brink, S. Hydén, K. Jennbert, L. Larsson, D. Olausson (eds), *Neolithic Diversities. Perspectives from a Conference in Lund, Sweden*. Lund, Lund University Publications

— 2019: 'A history of the house at Late Neolithic Çatalhöyük' in A. Marciniak (ed.), *Concluding the Neolithic. The Near East in the Second Half of the Seventh Millennium BCE*. Bristol (CT), Lockwood Press: 137–62

Marciniak, A., Asouti, E., Doherty, C., Henton, E. 2015b: 'The nature of household in the upper levels at Çatalhöyük' in I. Hodder, A. Marciniak (eds), *Assembling Çatalhöyük*. Leeds, Maney Publishing: 151–65

Marciniak, A., Barański, M.Z., Bayliss, A., Czerniak, L., Goslar, T., Southon, J., Taylor, R.E. 2015a: 'Fragmenting times: interpreting a Bayesian chronology for the Late Neolithic occupation of Çatalhöyük East, Turkey' *Antiquity* 89.343: 154–76

Marciniak, A., Czerniak, L. 2008: 'TP Area' *Çatalhöyük 2008 Archive Report*. http://www.catalhoyuk.com/archive_reports/2008

— 2012: 'Çatalhöyük unknown: the late sequence on the East Mound' in R. Matthews, J. Curtis (ed.), *Proceedings of the 7th International Congress on the Archaeology of the Ancient Near East* 1: *Mega-cities and Mega-sites. The Archaeology of Consumption and Disposal, Landscape, Transport and Communication*. Wiesbaden, Harrassowitz: 3–16

— in preparation: *Late Neolithic at Çatalhöyük East: Excavations of Upper Levels in the Team Poznan Area*. Los Angeles, Cotsen Institute of Archaeology Press

Marciniak, A., Filipowicz, P., Hordecki, J., Pettersson, P.E. 2015c: 'Excavations in the TPC Area' *Çatalhöyük Research Project 2015 Archive Report*. http://www.catalhoyuk.com/archive_reports/2015

Marciniak, A., Filipowicz, P., Johansson, E., Mickel, A. 2013: 'The excavations of the TPC Area in the 2013 season' *Çatalhöyük 2013 Archive Report*. http://www.catalhoyuk.com/archive_reports/2013

Martin, L., Russell, N. 2000: 'Trashing rubbish' in I. Hodder (ed.), *Towards Reflexive Method in Archaeology: The Example at Çatalhöyük* (Çatalhöyük Research Project Series Volume 2). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 57–70

Matero, F. 2000: 'The conservation of an excavated past' in I .Hodder (ed.), *Towards Reflexive Method in Archaeology: the Example at Çatalhöyük* (Çatalhöyük Research Project Series Volume 2). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 71–88

— 2006: 'Making archaeological sites: conservation as interpretation of an excavated past' in N. Agnew, J. Bridgland (eds), *Of the Past, for the Future: Integrating Archaeology and Conservation (Proceedings of the Conservation Theme at the 5th World Archaeological Congress, Washington, D.C., 22-26 June 2003)*. Los Angeles: The Getty Conservation Institute: 55–63

— 2015: 'Mud brick metaphysics and the preservation of earthen ruins' *Conservation and Management of Archaeological Sites* 17.3: 209–23

Matero, F., Moss, E. 2004: 'Temporary site protection for earthen walls and murals at Çatalhöyük, Turkey' *Conservation and Management of Archaeological Sites* 6.3–4: 213–27

Matthews, R., 1996: 'Surface scraping and planning' in I. Hodder (ed.), *On the Surface: Çatalhöyük 1993–95* (Çatalhöyük Research Project Volume 1). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 79–99

Matthews, W. 2005a: 'Micromorphological and microstratigraphic traces of uses and concepts of space' in I. Hodder (ed.), *Inhabiting Çatalhöyük: Reports from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 4). Cambridge, McDonald Institute for Archaeological Research; London, British Institute at Ankara: 355–98

— 2005b: 'Life-cycle and life-course of buildings' in I. Hodder (ed.), *Çatalhöyük Perspectives: Themes from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 6). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 125–49

— 2005c: 'Microstratigraphy and micromorphology: contributions to interpretation of the Neolithic settlement at Çatalhöyük, Turkey' in D.N. Smith, M.B. Brickley, W. Smith (eds), *Fertile Ground: Papers in Honour of Susan Limbrey*. Oxford, Oxbow Books: 108–14

— 2012: 'Household life-histories and boundaries: microstratigraphy and micromorphology of architectural surfaces in Building 3' in R. Tringham, M. Stevanović, (eds), *Last House on the Hill: BACH Area Reports from Çatalhöyük, Turkey* (Çatalhöyük Research Project Volume 11). Los Angeles, Cotsen Institute of Archaeology Press: 205–22

— 2018: 'Creating settled life: micro-histories of community, ritual, and place – the Central Zagros and Çatalhöyük' in I. Hodder (ed.), *Religion, History, and Place in the Origin of Settled Life*. Boulder (CO), University Press of Colorado: 64–98

Matthews, W., Almond, M.J., Anderson, E., Wiles, J., Williams, H., Rowe, J. 2013: 'Biographies of architectural materials and buildings: integrating high-resolution microanalysis and geochemistry' in I. Hodder (ed.), *Substantive Technologies at Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Volume 9). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 115–36

Matthews, W., Farid, S. 1996: 'Exploring the 1960s' surface: the stratigraphy of Çatalhöyük' in I. Hodder (ed.), *On the Surface: Çatalhöyük 1993–95* (Çatalhöyük Research Project Volume 1). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 271–300

Matthews, W., French, C., Lawrence, T., Cutler, D. 1996: 'Multiple surfaces: the micromorphology' in I. Hodder (ed.), *On the Surface: Çatalhöyük 1993–95* (Çatalhöyük Research Project Volume 1). Cambridge: McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 301–42

Matthews, W., French, C.A.I., Lawrence, T., Cutler, D.F., Jones, M.K. 1997: 'Microstratigraphic traces of site formation processes and human activities' *World Archaeology* 29: 281–308

Matthews, W., Hastorf, C., Ergenkon, B. 2000: 'Ethnoarchaeology: studies in local villages aimed at understanding aspects of the Neolithic site' in I. Hodder (ed.), *Towards Reflexive Method in Archaeology: The Example at Çatalhöyük* (Çatalhöyük Research Project Series Volume 2). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 177–89

Matthews, W., Shillito, L.-M., Elliott, S., Bull, I.D., Williams, J. 2014: 'Neolithic lifeways. Microstratigraphic traces within houses, animal pens and settlements' *Proceedings of the British Academy* 198: 251–79

Mazzucato, C. 2013: 'Sampling and mapping Çatalhöyük' in I. Hodder (ed.), *Humans and Landscapes of Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 8). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 31–64

— 2019: 'Socio-material archaeological networks at Çatalhöyük: a community detection approach' *Frontiers in Digital Humanities* 6: 1–25

McAnany, P. 2011: 'Practices of place-making, ancestralizing, and re-animation within memory communities' *Archaeological Papers of the American Anthropological Association* 20: 136–42

McCormack, J.K. 2000: 'The darkening of cinnabar in sunlight' *Mineralium Deposita* 35: 796–99

McFadyen, L.K. 2016: 'Immanent architecture' in M. Bille, T.F. Sørensen (eds), *Elements of Architecture: Assembling Archaeology, Atmosphere and the Performance of Building Spaces*. London, Routledge: 53–62

McGlade, J., Van Der Leeuw, S.E. 1997: 'Introduction: archaeology and non-linear dynamics – new approaches to long-term change' in J. McGlade, S.E. van der Leeuw (eds), *Time, Process and Structured Transformation in Archaeology*. London, Routledge: 1–31

McKinney, S., Perry, S., Katifori, A., Kourtis, V. 2020: 'Developing digital archaeology for young people: a model for fostering empathy and dialogue in formal and informal learning environments' in S. Hageneuer (ed.), *Communicating the Past in the Digital Age. Proceedings of the International Conference on Digital Methods in Teaching and Learning in Archaeology (12th- 13th October 2018)*. London, Ubiquity: 179–95

Meier, J.S., Goring-Morris, A.N., Munro, N.D. 2017: 'Depositional histories of faunal remains from the Neolithic cultic site of Kfar HaHoresh, Israel' *Journal of Anthropological Archaeology* 25.48: 233–49

Mellaart, J. 1962: 'Excavations at Çatal Hüyük: first preliminary report, 1961' *Anatolian Studies* 12: 41–65

— 1963: 'Excavations at Çatal Hüyük, 1962: second preliminary report' *Anatolian Studies* 13: 43–103

— 1964a: 'Archaeological section no. 2183' *Illustrated London News*, 9 May 1964: 728

— 1964b: 'Excavations at Çatal Hüyük, 1963: third preliminary report' *Anatolian Studies* 14: 39–119

— 1966: 'Excavations at Catal Hüyük, 1965: fourth preliminary report' *Anatolian Studies* 16: 165–91

— 1967: *Çatal Hüyük: A Neolithic Town in Anatolia*. London: Thames and Hudson

Meskell, L.M. 1995: 'Goddesses, Gimbutas and new age archaeology' *Antiquity* 69.262: 74–86

— 1996: 'The somatization of archaeology: institutions, discourses and corporeality' *Norwegian Archaeological Review* 29: 1–16

— 2008: 'The nature of the beast: curating animals and ancestors at Çatalhöyük' *World Archaeology* 40.3: 373–89

Meskell, L., Nakamura, C. 2005: 'Çatalhöyük figurines' *Çatalhöyük 2005 Archive Report*. http://www.catalhoyuk.com/archive_reports/2005

— 2017: 'Figurines and clay stamps' *Çatalhöyük 2017 Archive Report.* http://www.catalhoyuk.com/archive_reports/2017

Meskell, L., Nakamura, C., Der, L., Tsoraki, C., Arntz, M. 2016: 'Figurines' *Çatalhöyük 2016 Archive Report*. http://www.catalhoyuk.com/archive_reports/2016

Meyer, C., Brandt, G., Haak, W. Ganslmeier, R.A., Meller, H., Alt, K.W. 2009: 'The Eulau eulogy: bioarchaeological interpretation of lethal violence in Corded Ware multiple burials from Saxony-Anhalt, Germany' *Journal of Anthropological Archaeology* 28: 412–23

Meyer, C., Lohr, C., Gronenborn, D., Alt, K.W. 2015: 'The massacre mass grave of Schöneck-Kilianstädten reveals new insights into collective violence in Early Neolithic Central Europe' *Proceedings of the National Academy of Sciences of the United States of America* 112.36: 11217–22

Mickel, A. 2013: 'Initial interviews: first steps toward assembling an oral history of excavation at Çatalhöyük' *Çatalhöyük 2013 Archive Report*. http://www.catalhoyuk.com/archive_reports/2013

— 2015: 'Tracing teams, texts, and topics: applying social network analysis to understand archaeological knowledge production at Çatalhöyük' *Journal of Archaeological Method and Theory* 23.4: 1095–26

— 2021: *Why Those Who Shovel are Silent: A History of Local Archaeological Knowledge and Labor.* Louisville: University Press of Colorado.

Milella, M., Knüsel, C.J., Haddow, S.D. 2016: 'A Neolithic case of fibrous dysplasia from Çatalhöyük (Turkey)' *International Journal of Paleopathology* 15: 10–18

Miller, C.E., Conard, N.J., Goldberg, P., Berna, F. 2010: 'Dumping, sweeping and trampling: experimental micromorphological analysis of anthropogenically modified combustion features' *Palethnology* 2: 25–37

Mills, B. 2014: 'Relational networks and religious sodalities at Çatalhöyük' in I. Hodder (ed.), *Religion at Work in a Neolithic Society: Vital Matters*. Cambridge, Cambridge University Press: 159–86

— 2015: 'Unpacking the house: ritual practice and social networks at Chaco' in C.C. Heitman, S. Plog (eds), *Chaco Revisited. New Research on the Prehistory of Chaco Canyon, New Mexico*. Tucson, University of Arizona Press: 249–71

— 2017: 'Social network analysis in archaeology' *Annual Review of Anthropology* 46: 379–97

Mills, B.J., Borck, L., Clark, J.J., Haas, W.R. Jr., Peeples, M., Roberts, J.M. Jr. 2015: 'Multiscalar Perspectives on Social Networks in the Prehispanic Southwest' *American Antiquity* 80.1: 3–24

Mills, B.J., Clark, J.J., Peeples, M., Haas, W.R. Jr., Roberts, J.M. Jr., Hill, B., Huntley, D.L., Borck, L., Breiger, R.L., Clauset, A., Shackley, M.S. 2013b: 'The transformation of social networks in the Late Prehispanic U.S. Southwest' *Proceedings of the National Academy of Sciences of the United States of America* 110.15: 5785–90

Mills, B.J., Roberts, J.M. Jr., Clark, J.J., Haas, W.R. Jr., Huntley, D., Peeples, M.A., Bork, L., Ryan, S.C., Trowbridge, M., Breiger, R.L. 2013a: 'The dynamics of social networks in the late Prehispanic US Southeast' in C. Knappett (ed.), *Network in Analysis in Archaeology: New Approaches to Regional Interaction*. Oxford, Oxford University Press: 181–202

Mills, J., Andrews, D. 2011: *3D Laser Scanning for Heritage: Advice and Guidance to Users on Laser Scanning in Archaeology and Architecture* (2nd edition). Swindon, English Heritage

Milner, G.R. 2005: 'Nineteenth-century arrow wounds and perceptions of prehistoric warfare' *American Antiquity* 170.1: 144–56

Milner, N. 2002: *Incremental Growth of the European Oyster Ostrea edulis. Seasonality Information from Danish Kitchen Middens*. Oxford, British Archaeological Reports

Mirazón Lahr, M., Rivera, F., Power, R.K., Mounier, A., Copsey, B., Crivellaro, F., Edung, J. E., Maillo Fernandez, J.M., Kiarie, C., Lawrence, J., Leakey, A., Mbua, E., Miller, H., Muigai, A., Mukhongo, D.M., Van Baelen, A., Wood, R., Schwenninger, J.-L., Grün, R., Achyuthan, H., Wilshaw, A., Foley, R.A. 2016: 'Inter-group violence among early Holocene hunter-gatherers of West Turkana, Kenya' *Nature* 529: 394–98

Mitrović, S., Vasić, M. 2013: 'An integrated perspective on the uses of materials at Çatalhöyük based on the analysis of heavy residues' in I. Hodder (ed.), *Substantive Technologies at Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 9). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 27–50

Mol, A. 2002: *The Body Multiple: Ontology in Medical Practice*. Durham (NC), Duke University Press

Mol, A.A.A. 2014: *The Connected Caribbean: A Socio-material Network Approach to Patterns of Homogeneity and Diversity in the Pre-colonial Period*. Leiden, Sidestone Press

Molist, M., Anfruns, J., Bofill, M., Borrell, F., Buxó, R., Clop, X., Walter, C., Faura, J.M., Ferrer, A., Gómez, A. 2013: 'Tell Halula (Euphrates valley, Syria): new data from the late Neolithic settlement' in O. Nieuwenhuyse, R. Bernbeck, J. Rogasch, P.M.M.G. Akkermans, (eds), *Interpreting the Late Neolithic of Upper Mesopotamia*. Turnhout, Brepols: 443–53

Monks, G.G. 1981: 'Seasonality studies' *Advances in Archaeological Method and Theory* 4: 177–240

Moody, J., White, D.R. 2003: 'Structural cohesion and embeddedness: a hierarchical concept of social groups' *American Sociological Review* 68: 103–26

Moore, S., Jackson, M. 2014: 'Late burials from the 4040 Area of the East Mound' in I. Hodder (ed.), *Çatalhöyük Excavations: The 2000–2008 Seasons* (Çatalhöyük Research Project Volume 7). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 603–20

Morris, C., Bebeau, N.P., Brockhoff, H., Tandon, R., Tiwana, P. 2015: 'Mandibular fractures: an analysis of the epidemiology and patterns of injury in 4,143 fractures' *Journal of Oral Maxillofacial Surgery* 73: 951.e1-95.e12

Mortimore, J.L., Marshall, L.-J.R., Almond, M.J., Hollins, P., Matthews, W. 2004: 'Analysis of red and yellow ochre samples from Clearwell Caves and Çatalhöyük by vibrational spectroscopy and other techniques' *Spectrochimica Acta A* 60: 1179–88

Morton, C. 2007: 'Remembering the house. Memory and materiality in northern Botswana' *Journal of Material Culture* 12: 157–79

Moser, S., Atalay, S., Çamurcuoğlu-Cleere, D., Hodder, I., Orbasli, A., Pye, E. 2010: 'Protecting and exhibiting Çatalhöyük' *Turkish Academy of Sciences Journal of Cultural Inventory* 8: 155–66

Moser, S., Perry, S. 2009: 'Southampton visualisation team' *Çatalhöyük 2009 Archive Report*. http://www.catalhoyuk.com/archive_reports/2009

Motealleh, P., Zolfaghari, M., Parsaee, M. 2018: 'Investigating climate responsive solutions in vernacular architecture of Bushehr city' *HBRC Journal* 14. 2: 215–23

Muñoz Viñas, S. 2005: *Contemporary Theory of Conservation*. Oxford, Elsevier Butterworth Heinemann

Munro, N. D., Bar-Oz, G. 2005: 'Gazelle bone fat processing in the Levantine Epipalaeolithic' *Journal of Archaeological Science* 32: 223–39

Munson, J. 2019: 'Epistemological issues for archaeological networks: mechanisma, mapping flows, and considering causation to build better argumenta' in T. Kerig, C. Mader, K. Ragkou, M. Reinfeld, T. Zachar (eds), *Social Network Analysis in Economic Archaeology – Perspectives from the New World*. Bonn, Verlag Dr. Rudolf Habelt GmbH: 37–50

Murphy, C., zur Nedden, D., Gostner, P., Knapp, R., Recheis, W., Seidler, H. 2003: 'The Ice Man discovery and imaging' *Radiology* 226.3: 614–24

Myers, C. 1999: *Wall Painting Conservation Program at Çatalhöyük: Field Report and Recommendations 1997–1998*. Unpublished document. University of Pennsylvania

Nakamura, C. 2010: 'Magical deposits at Catalhoyuk: a matter of time' in I. Hodder (ed.), *Religion in the Emergence of Civilization: Çatalhöyük as a Case Study*. Cambridge, Cambridge University Press: 300–31

Nakamura, C., Meskell, L. 2009: 'Articulate bodies: forms and figures at Çatalhöyük' *Journal of Archaeological Method and Theory* 16: 205–30

— 2013: 'The Çatalhöyük burial assemblage' in I. Hodder (ed.), *Humans and Landscapes of Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 8). London, British Institute at Ankara; London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 441–66

Nakamura, C., Pels, P. 2014: 'Using "magic" to think from the material: tracing distributed agency, revelation, and concealment at Çatalhöyük' in I. Hodder (ed.), *Religion at Work in a Neolithic Society: Vital Matters*. Cambridge, Cambridge University Press: 187–224

Nanson, G.C., Knighton, A.D. 1996: 'Anabranching rivers: their cause, character and classification' *Earth Surface Processes and Landforms* 21: 217–39

Neff, D., Reguer, S., Dillmann, P. 2013: 'Analytical techniques for the study of corrosion of metallic heritage artefacts: from micrometer to nanometer scales' in P. Dillmann, D. Watkinson, A. Adriaens (eds), *Corrosion and Conservation of Cultural Heritage Metallic Artefacts. European Federation of Corrosion (EFC) Series*. Cambridge, Woodhead: 53–81

Newman, M.E.J. 2003: 'Mixing patterns in networks' *Physical Review E – Statistical Physics, Plasmas, Fluids, and Related Interdisciplinary Topics* 67.2: 13

— 2004: 'Analysis of weighted networks' *Physical Review E* 056131

— 2006: 'Modularity and community structure in networks' *Proceedings of the National Academy of Sciences of the United States of America* 103.23: 8577–82

— 2010: *Networks: An Introduction*. Oxford: Oxford University Press

— 2016: 'Community detection in networks: modularity optimization and maximum likelihood are equivalent' *Physical Review E* 94: 052315

Newman, M., Girvan, M. 2004: 'Finding and evaluating community structure in networks' *Physical Review E* 69.2: 1–16

Nöller, R. 2015: 'Cinnabar reviewed: characterisation of the red pigment and its reactions' *Studies in Conservation* 60: 79–87

North, C.P., Nanson, G.C., Fagan, S.D. 2007: 'Recognition of the sedimentary architecture of dryland anabranching (anastomosing) rivers' *Journal of Sedimentary Research* 77.11: 925–38

O'Grady, C., Luke, C., Mokrišová, J., Roosevelt, C. 2018: 'Interdisciplinary approaches to understanding and preserving mudbrick architecture in regional and diachronic contexts' *Cogent Arts & Humanities* 5: 1

Öğütçu, Z., Horasan, G., Kalafat, D. 2011: 'Investigation of microseismic activity sources in Konya and its vicinity, central Turkey' *Natural Hazards* 58: 497–509

Olivier, P. 1997: *Encyclopedia of Vernacular Architecture of the World*. Cambridge: Cambridge University Press

Olsen, B. 2010: *In Defense of Things: Archaeology and the Ontology of Objects*. Lanham, AltaMira Press

Opitz, R., Limp, W.F. 2015: 'Recent developments in high-density survey and measurement (HDSM) for archaeology: implications for practice and theory' *Annual Review of Anthropology* 44: 347–64

Opsahl, T. 2009: *Structure and Evolution of Weighted Networks*. PhD thesis, Queen Mary College, University of London, UK

Opsahl, T., Agneessens, F., Skvoretz, J. 2010: 'Node centrality in weighted networks: generalizing degree and shortest paths' *Social Networks* 32.3: 245–51

Opsahl, T., Panzarasa, P. 2009: 'Clustering in weighted networks' *Social Networks* 31.2: 155–63

Orton, D., Anvari, J., Gibson, C., Last, J., Bogaard, A., Rosenstock, E., Biehl, P.F. 2018: 'A tale of two tells: dating the Çatalhöyük West Mound' *Antiquity* 92.363: 620–39

Östborn, P., Gerding, H. 2014: 'Network analysis of archaeological data: a systematic approach' *Journal of Archaeological Science* 46.1: 75–88

Outram, A.K., Knüsel, C.J., Knight, S., Harding, A.F. 2005: 'Understanding complex fragmented assemblages of human and animal remains: a fully integrated approach' *Journal of Archaeological Science* 32: 1699–1710

Özbaşaran, M. 2000: 'The Neolithic site of Musular, Central Anatolia' *Anatolica* 26: 129–51

— 2012: 'Aşıklı' in M. Özdoğan, N. Başgelen, P. Kuniholm (eds), *The Neolithic in Turkey* 3: *New Excavations, New Research. Central Turkey*. Istanbul, Arkeoloji ve Sanat Yayınları: 135–58

Özbaşaran, M., Duru, G. 2011: 'Akarçay Tepe: a PPNB and PN settlement in Middle Euphrates – Urfa' in M. Özdoğan, N. Başgelen, P. Kuniholm (eds), *The Neolithic in Turkey. New Excavations, New Research – The Euphrates Basin*. Istanbul: Arkeoloji ve Sanat Yayınları: 165–202

Özbaşaran, M., Duru, G., Kayacan, N., Erdoğu, B., Buitenhuis, H. 2012: 'Musular. The 8th millennium cal. BC satellite site of Aşıklı' in M. Özdoğan, P. Kuniholm, N. Başgelen (eds), *The Neolithic in Turkey* 3*: New Excavations, New Research. Central Turkey*. Istanbul, Arkeoloji ve Sanat Yayınları: 159–80

Özbaşaran, M., Molist, M. 2006: 'Akarçay Tepe 2005' *Anatolia Antiqua. Eski Anadolu* 14.14: 245–49

Özbek, M. 2009: 'Remodelled human skulls in Köşk Höyük (Neolithic age, Anatolia): a new appraisal in view of recent discoveries' *Journal of Archaeological Science* 36: 379–86

Özdoğan, M. 2011: 'Mezraa-Teleilat' in M. Özdoğan, P. Kuniholm, N. Başgelen (eds), *The Neolithic in Turkey. New Excavations, New Research – The Euphrates Basin*. Istanbul, Arkeoloji ve Sanat Yayınları: 203–60

Özkaya, V., Coşkun, A. 2009: 'Körtik Tepe, a new Pre-Pottery Neolithic A site in south-eastern Anatolia' *Antiquity* 83.320: http://www.antiquity.ac.uk/projgall/ozkaya320/

Öztürk, M., Joost, J., Hilton, A. 2014: 'Commodification and the social commons: smallholder autonomy and rural-urban kinship communalism in Turkey' *Agrarian South: Journal of Political Economy* 3.3: 337–67

Palaver, W. 2019: 'Death in Çatalhöyük' in I. Hodder (ed.), *Violence and the Sacred in the Ancient Near East*. Cambridge, Cambridge University Press: 41–59

Parker Pearson, M. 1999: *The Archaeology of Death and Burial*. Stroud, Sutton Publishing Limited

— 2016: 'From corpse to skeleton: dealing with the dead in prehistory' *Bulletins et Mémoires de la Société d'Anthropologie de Paris* 28: 4–16

Parker Pearson, M., Regnier, D. 2018: 'Collective and single burial in Madagascar' in A. Schmitt, S. Déderix, I. Crevecoeur (eds), *Gathered in Death: Archaeological and Ethnological Perspectives on Collective Burial and Social Organisation*. Louvain, Presses Universitaires de Louvain: 41–62

Parker Pearson, M., Richards, C. 1994: *Architecture and Order: Approaches to Social Space*. London, Routledge

Parry, J., Bloch, M. 1982: 'Introduction' in M. Bloch, J. Parry (eds), *Death and the Regeneration of Life*. Cambridge, Cambridge University Press: 1–44

Pawłowska, K. 2014: 'The smells of Neolithic Çatalhöyük, Turkey: time and space of human activity' *Journal of Anthropological Archaeology* 36: 1–11

— 2018: 'Animal diseases in Neolithic societies: Çatalhöyük (Turkey) in the spotlight' in L. Bartosiewicz, E. Gál (eds), *Care or Neglect? Evidence of Animal Disease in Archaeology. Proceedings of the Sixth ICAZ Animal Paleopathology Working Group Conference*. Oxford, Oxbow Book: 5–23

— 2020: 'Time of change: cattle in the social practices of Late Neolithic Çatalhöyük' *Archaeological and Anthropological Sciences* 12: 39

— in press a: 'Animals at Late Neolithic Çatalhöyük: subsistence, food processing and depositional practices' in L. Czerniak, A. Marciniak (eds), *Late Neolithic at Çatalhöyük East: Excavations of Upper Levels in the Team Poznan Area*. Los Angeles, Cotsen Institute of Archaeology Press

— in press b: ‘Contextual zooarcheology: depositional pathways in post-Neolithic Çatalhöyük’ in L. Czerniak, A. Marciniak (eds), *The Other Çatalhöyük. Proto-historic Settlements and Historic Cemeteries*. Los Angeles, Cotsen Institute of Archaeology Press
— in preparation: *An Integrated Zooarchaeological and Micromorphological Perspective on Midden Taphonomy at Late Neolithic Çatalhöyük*
Pawłowska, K., Barański, M.Z. 2020: ‘Conceptualization of the Neolithic world in incised equid phalanges: anthropomorphic figurine from Çatalhöyük (GDN Area)’ *Archaeological and Anthropological Sciences* 12: 18
Pawłowska, K., García-Diaz, V., Wolfhagen, J. 2017: ‘Faunal remains from the GDN Area’ *Çatalhöyük 2017 Archive Report*. http://www.catalhoyuk.com/archive_reports/2017
Pawłowska, K., Marciszak, A. 2018: ‘Small carnivores from a Late Neolithic burial chamber at Çatalhöyük, Turkey: pelts, rituals, and rodents’ *Archaeological and Anthropological Sciences* 10: 1225–1243
Pawłowska, K., Pyzel, J., Barański, M.Z. in preparation: ‘Detecting commensality in Late Neolithic Çatalhöyük using faunal, architectural and pottery approaches’
Pearson, J. 2013: ‘Human and animal diet as evidenced by stable carbon and nitrogen isotope analysis’ in I. Hodder (ed.), *Humans and Landscapes of Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 8). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 271–79
Pearson, J., Meskell, L.M. 2015: ‘Isotopes and images: fleshing out bodies at Çatalhöyük’ *Journal of Archaeological Method and Theory* 22.2: 461–82
Pearson, J.A., Bogaard, A., Charles, M., Hillson, S.W., Larsen, C.S., Russell, N., Twiss, K. 2015a: ‘Stable carbon and nitrogen isotope analysis at Neolithic Çatalhöyük: evidence for human and animal diet and their relationship to households’ *Journal of Archaeological Science* 57: 69–79
Pearson, J.A., Meskell, L., Nakamura, C., Larsen, C.S. 2015b: ‘Reconciling the body: signifying flesh, maturity, and age at Çatalhöyük’ in I. Hodder, A. Marciniak (eds), *Assembling Çatalhöyük*. Leeds, Maney Publishing: 75–86
Pedelì, C., Pulga, S., Riser, E. 2014: *Conservation Practices on Archaeological Excavations: Principles and Methods*. Los Angeles, The Getty Conservation Institute
Peeples, M.A. 2018: *Connected Communities: Networks, Identity, and Social Change in the Ancient Cibola World*. Tucson, The University of Arizona Press
Peeples, M.A., Roberts, J.M. 2013: ‘To binarize or not to binarize: relational data and the construction of archaeological networks’ *Journal of Archaeological Science* 40.7: 3001–10
Peeples, M., Mills, B.J., Haas, R.J., Clark, J., Roberts, J. 2016: ‘Analytical challenges for the application of social network analysis in archaeology’ in T. Brughmans, A. Collar, F. Coward (eds), *The Connected Past. Challenges to Network Studies in Archaeology and History*. Oxford, Oxford University Press: 59–84
Pels, P. 2010: ‘Temporalities of “religion” at Çatalhöyük’ in I. Hodder (ed.), *Religion in the Emergence of Civilization: Çatalhöyük as a Case Study*. Cambridge, Cambridge University Press: 220–67
Perkins, D. 1969: ‘Fauna of Çatal Hüyük: evidence for early cattle domestication in Anatolia’ *Science* 164.3876: 177–79
Perry, S. 2015: ‘Crafting knowledge with (digital) visual media in archaeology’ in R. Chapman, A. Wylie (eds), *Material Evidence: Learning from Archaeological Practice*. London, Routledge: 189–210
Perry, S., Apaydin, V., McKinney, S., Katifori, A. 2019b: ‘Emotions across borders: applying affective heritage interpretation methodologies in intercultural settings’ Paper presented at the 25th annual meeting of the European Association of Archaeologists, Bern, Switzerland, 4–7 September 2019
Perry, S., Gargett, K., Dennis, M., Fisher, A., Chatburn, J., Batchelor, E., Elderton, H., Pujol, L., Kirkpatrick, I. 2017: ‘Site visualisation and presentation’ *Çatalhöyük 2017 Archive Report*. http://www.catalhoyuk.com/archive_reports/2017
Perry, S., Roussou, M., Mirashrafi, S.S., Katifori, A., McKinney, S. 2019a: ‘Shared digital experiences supporting collaborative meaning-making at heritage sites’ in H. Lewi, W. Smith, D. vom Lehn, S. Cooke (eds), *The Routledge International Handbook of New Digital Practices in Galleries, Libraries, Archives, Museums and Heritage Sites*. London, Routledge: 143–56
Phillips, C., Allen, H. (eds) 2010: *Bridging the Divide: Indigenous Communities and Archaeology into the 21st Century*. Walnut Creek, Left Coast Press
Pilloud, M.A. 2009: *Community Structure at Neolithic Çatalhöyük: Biological Distance Analysis of Household, Neighborhood, and Settlement*. PhD thesis, Ohio State University, Columbus

Pilloud, M.A., Haddow. S.D., Knüsel, C.J., Larsen, C.S. 2016: 'A bioarchaeological and forensic re-assessment of vulture defleshing and mortuary practices at Neolithic Çatalhöyük' *Journal of Archaeological Science: Reports* 10: 735–43

Pilloud, M.A., Larsen, C.S. 2011: '"Official" and "practical" kin: inferring social and community structure from dental phenotype at Neolithic Çatalhöyük, Turkey' *American Journal of Physical Anthropology* 145.4: 519–30

Pitter, S. 2013: *Molecular and Stable Isotopic Analyses of the Fatty Acyl Components of the Pottery of Çatalhöyük, Turkey: Understanding the Relationships between Animal Domestication, Ceramic Technology, Environmental Variation and their Roles in the Secondary Products*. PhD thesis, Stanford University, California

Pitter, S., Yalman, N., Evershed, R. 2013: 'Absorbed lipid residues in the Çatalhöyük pottery' in I. Hodder (ed.), *Substantive Technologies at Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 9). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 193–200

Podany, J. 2006: 'Introduction' in N. Agnew, J. Bridgland (eds), *Of the Past, for the Future: Integrating Archaeology and Conservation (Proceedings of the Conservation Theme at the 5th World Archaeological Congress, Washington, D.C., 22–26 June 2003)*. Los Angeles, Getty Publications: 201–03

Pöllath, N., Dietrich, O., Notroff, J., Clare, L., Dietrich, L., Köksal-Schmidt, Ç., Schmidt, K., Peters, J. 2018: 'Almost a chest hit: an aurochs humerus with hunting lesion from Göbekli Tepe, south-eastern Turkey, and its implications' *Quaternary International* 495: 30–48

Prell, C. 2012: *Social Network Analysis. History, Theory & Methodology*. London, SAGE

Pumain, D. 1997: 'City-size dynamics in urban systems' in J. McGlade, S.E. van der Leeuw (eds), *Time, Process and Structured Transformation in Archaeology*. London, Routledge: 97–117

Puppe, G. 1914: 'Über Priorität der Schädelbrüche' *Ärztliche Sachverständigen Zeitung* 20: 307–09

Pyburn, K.A. 2011: 'Engaged archaeology: whose community? Which public?' in K. Okamura, A. Matsuda (eds), *New Perspectives in Global Public Archaeology*. New York, Springer: 29–41

Pye, E. 2006: 'Authenticity challenged? The 'plastic house' at Çatalhöyük' *Public Archaeology* 5.4: 237–51

Pye, L., Cleere, D.C. 2009: 'Conserving Çatalhöyük, a Neolithic site in Anatolia' *Archaeology International* 12: 42–46

Pyzel, J. in press. 'Pottery' in L. Czerniak, A. Marciniak (eds), *Late Neolithic at Çatalhöyük East: Excavations of Upper Levels in the Team Poznan Area*. Los Angeles, Cotsen Institute of Archaeology Press

Radivojević, M., Grujić, J. 2018: 'Community structure of copper supply networks in the prehistoric Balkans: an independent evaluation of the archaeological record from the 7th to the 4th millennium BC' *Journal of Complex Networks* 6.1: 106–24

Radivojević, M., Rehren, T., Farid, S., Pernicka, E., Çamurcuoğlu, D. 2017: 'Repealing the Çatalhöyük extractive metallurgy: the green, the fire and the "slag"' *Journal of Archaeological Science* 86: 101–22

Ræder Knudsen, L., Wollesen, L., Kjerulff, A. 2014: 'A fully preserved red and white Iron Age dress: excavation, stabilisation and local community engagement' in J. Bridgland (ed.), *ICOM-CC 17th Triennial Conference Preprints, Melbourne, 15–19 September*. Paris, ICOM Committee for Conservation

Reese, D.S. 2005 'The Çatalhöyük shells' in Hodder I. (ed.), *Inhabiting Çatalhöyük: Reports from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 4). Cambridge, McDonald Institute for Archaeological Research; London, British Institute at Ankara: 123–26

Regan, R. 2014: 'The sequence of Buildings 75, 65, 56, 69, 44 and 10 and external Spaces 119, 129, 130, 144, 299, 314, 319, 329, 333, 339, 367, 371 and 427' in I. Hodder (ed.), *Çatalhöyük Excavations: The 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 7). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 131–89

Regan, R., Taylor, J. 2009: 'Building 80 – Spaces 135 & Sp.373, Building 86 – Spaces 375 & Sp.376, external areas Space 344, Sp.367, Sp.329 and Building 75 – Space 140' *Çatalhöyük Research Project 2009 Archive Report*. http://www.catalhoyuk.com/archive_reports/2009

Rentzel, P.C., Nicosia, A., Gebhardt, D., Brönnimann, C., Pümpin, C., Ismail-Meyer, K. 2017: 'Trampling, poaching and the effect of traffic' in C. Nicosia, G. Stoops (eds), *Archaeological Soil and Sediment Micromorphology*. Chichester, John Wiley & Sons: 281–98

Revuelta-Acosta, J.D., Garcia-Diaz, A., Soto-Zarazua, G.M., Rico-Garcia, E. 2010: 'Adobe as a sustainable material: a thermal performance' *Journal of Applied Sciences (Faisalabad)* 10.19: 2211–16

Richardson, T. 1998: 'The ballistics of the sling' *Royal Armouries Yearbook* 3: 44–49

Richter, T., Bocaege, E., Ilsoe, P., Ruter, A., Pantons, A., Pedersen, P., Yeomans, L. 2019 'Ochre, ground stone, and wrapping the dead in the Late Epipalaeolithic (Natufian) Levant: revealing the funerary practices at Shubayqa 1, Jordan' *Journal of Field Archaeology* 44: 440–57

Rifkin, R.F., Dayet, L., Queffelec, A., Summers, B., Lategan, M., D'Errico, F. 2015: 'Evaluating the photoprotective effects of ochre on human skin by in vivo SPF assessment: implications for human evolution, adaptation and dispersal' *PloS ONE* 10: e0136090

Ritchey, T. 1996: 'Note: building complexity' in I. Hodder (ed.), *On the Surface: Çatalhöyük 1993–95* (Çatalhöyük Research Project Volume 1). Cambridge: McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 7–18

Rizzolatti, G., Fogassi, L., Gallese, V. 2002: 'Motor and cognitive functions of the ventral premotor cortex' *Current Opinion in Neurobiology* 12.2: 149–54

Robb, J. 2010: 'Beyond agency' *World Archaeology* 42.4: 493–520

— 2013: 'Material culture, landscapes of action, and emergent causation: a new model for the origins of the European Neolithic' *Current Anthropology* 54.6: 657–83

— 2015: 'What do things want? Object design as a middle range theory of material culture' *Archaeological Papers of the American Anthropological Association* 26.1: 166–80

Roberts, N., Rosen, A.M. 2009: 'Diversity and complexity in early farming communities of southwest Asia: new insights into the economic and environmental basis of Neolithic Çatalhöyük' *Current Anthropology* 50: 393–402

Roberts, N., Black, S., Boyer, P., Eastwood, W.J., Griffiths, H.I., Lamb, H.F., Leng, M.J., Parish, R., Reed, J.M., Twigg, D., Yiğitbaşioğlu, H. 1999: 'Chronology and stratigraphy of Late Quaternary sediments in the Konya Basin, Turkey: results from the KOPAL Project' *Quaternary Science Reviews* 18: 611–30

Roberts, N., Boyer, P., Merrick, J. 2007: 'The KOPAL on-site and off-site excavations at Çatalhöyük 1996–2001' in I. Hodder (ed.), *Excavating Çatalhöyük: South, North and KOPAL Area reports from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 3). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 553–72

Roberts, N., Erol, O., De Meester, T., Uerpmann, H.P. 1979: 'Radiocarbon chronology of the Late Pleistocene Konya Lake' *Nature* 281: 362–65

Robins, G. 2016: 'Exponential random graph models for social networks' in J. Scott, P.J. Carrington (eds), *The SAGE Handbook of Social Network Analysis*. London, SAGE: 1–27

Roffet-Salque, M., Marciniak, A., Valdes, P.J., Pawłowska, K., Pyzel, J., Czerniak, L., Krüger, M., Roberts, C.N., Pitter, S., Evershed, R.P. 2018: 'Evidence for the impact of the 8.2-ky BP climate event on Near Eastern early farmers' *Proceedings of the National Academy of Sciences of the United States of America* 115.35: 8705–09

Roffet-Salque, M., Marciniak, A., Valdes, P.J., Roberts, C.N., Pawłowska, K., Pyzel, J., Czerniak, L., Krüger, M., Pitter, S., Evershed, R.P. 2019: 'Reply to Wainwright and Ayala: synchronicity of climate and cultural proxies around 8.2 kyBP at Çatalhöyük' *Proceedings of the National Academy of Sciences* 116.9: 3345–46

Rogers, T. 2004: 'Recognizing inter-personal violence: a forensic perspective' in M. Roksandic (ed.), *Violent Interactions in the Mesolithic: Evidence and Meaning*. Oxford, Archaeopress: 9–21

Rollefson, G. 2000: 'Ritual and social structure at Neolithic Ain Ghazal' in I. Kuijt (ed.), *Life in Neolithic Farming Communities*. New York, Springer: 163–88

— 2015: ''Ain Ghazal' in G. Barker, C. Goucher, (eds), *The Cambridge World History* 2: *A World with Agriculture, 12,000 BCE–500 CE*. Cambridge: Cambridge University Press: 243–60

Romanowska, I. 2015: 'So you think you can model? A guide to building and evaluating archaeological simulation models of dispersals' *Human Biology* 87.3: 169–92

Rosenberg, D. 2009: 'Flying stones – the slingstones of the Wadi Rabah Culture of the southern Levant' *Paléorient* 35.2: 99–112

Rosenberg, M. 2011: 'Hallan Çemi' in M. Özdoğan, P. Kuniholm, N. Başgelen (eds), *The Neolithic in Turkey: New Excavations & New Research – The Tigris Basin.* Istanbul, Arkeoloji ve Sanat Yayınları: 61–78

Rosso, D. 2017: 'Ochre use and hair treatment among the Hamar (Ethiopia): an ethnoarchaeological approach' *Journal of Western Mediterranean Prehistory and Antiquity* 48: 123–49

Rountree, K. 2007: 'Archaeologists and goddess feminists at Çatalhöyük: an experiment in multivocality' *Journal of Feminist Studies in Religion* 23.2: 7–26

Roussou, M., Perry, S., Katifori, A., Vassos, S., Tzouganatou, A., McKinney, S. 2019: 'Transformation through provocation? Designing a "bot of conviction" to challenge conceptions and evoke critical reflection' in *CHI '19 Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems, Glasgow, Scotland, 4–9 May*. New York, ACM: Paper No. 627

Ruggieri, N., Tampone, G., Zinno, R. (eds) 2015: *Historical Earthquake-Resistant Timber Frames in the Mediterranean Area*. New York, Springer

Russell, M. 1993: 'Are households universal? On misunderstanding domestic groups in Swaziland' *Development and Change* 24.4: 755–85

Russell, N. 2005: 'The Çatalhöyük worked bone' in I. Hodder (ed.), *Changing Materialities at Çatalhöyük: Reports from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 5). Cambridge, McDonald Institute for Archaeological Research; London, British Institute at Ankara: 339–67

— 2012: 'Worked bone from the BACH Area at Çatalhöyük' in R. Tringham, M. Stevanović (eds), *Last House on the Hill: BACH Area Reports from Çatalhöyük, Turkey* (Çatalhöyük Research Project Series Volume 11). Los Angeles, Cotsen Institute of Archaeology Press: 349–61

— 2016: Anatolian bone tools' *Der Anschnitt* 31: 125–34

— 2019a: 'Feathers and talons: birds at Neolithic Çatalhöyük, Turkey' *Archaeological and Anthropological Sciences* 11: 6393–6410

— 2019b: 'Spirit birds at Neolithic Çatalhöyük' *Environmental Archaeology* 24: 377–86

Russell, N., Düring, B. 2006: 'Worthy is the lamb: a double burial at Neolithic Çatalhöyük (Turkey)' *Paléorient* 32.1: 73–78

Russell, N., Griffitts, J.L. 2013: 'Çatalhöyük worked bone: South and 4040 Areas' in I. Hodder (ed.) *Substantive Technologies at Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 9). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 277–306

Russell, N., McGowan, K.J. 2003: 'Dance of the cranes: crane symbolism at Çatalhöyük and beyond' *Antiquity* 77: 445–55

— 2005: 'The Çatalhöyük bird bones' in I. Hodder (ed.), *Inhabiting Çatalhöyük: Reports from the 1995–1999 Seasons* (Çatalhöyük Research Project Volume 4). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 99–110

Russell, N., Martin, L. 2005: 'The Çatalhöyük mammal remains' in I. Hodder (ed.), *Inhabiting Çatalhöyük: Reports from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 4). Cambridge, McDonald Institute for Archaeological Research; London, British Institute at Ankara: 33–98

Russell, N., Martin, L., Twiss, K.C. 2009: 'Building memories: commemorative deposits at Çatalhöyük' *Anthropozoologica* 44: 103–25

Russell, N., Meece, S. 2006: 'Animal representations and animal remains at Çatalhöyük' in I. Hodder (ed.), *Çatalhöyük Perspectives: Themes from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 6). Cambridge, McDonald Institute for Archaeological Research; London, British Institute at Ankara: 209–30

Russell, N., Twiss, K.C., Orton, D.C., Demirergi, A. 2013a: 'More on the Çatalhöyük mammal remains' in I. Hodder (ed.), *Humans and Landscapes of Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 8). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 213–58

— 2013b: 'Changing animal use at Neolithic Çatalhöyük, Turkey' in E. de Cupere, V. Linseele, S. Hamilton-Dyer (eds), *Archaeology of the Near East X. Proceedings of the Tenth International Symposium on the Archaeozoology of South-Western Asia and Adjacent Areas*. Leuven, Peeters: 45–68

Russell, N., Wright, K.I., Carter, T., Ketchum, S., Ryan, P., Yalman, N., Regan, R., Stevanović, M., Milić, M. 2014: 'Bringing down the house: house closing deposits at Çatalhöyük' in I. Hodder (ed.), *Integrating Çatalhöyük: Themes From the 2000–2008 Season* (Çatalhöyük Research Project Series Volume 10). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 109–22

Ryan, P. 2013: 'Plant exploitation from household and landscape perspectives: the phytolith evidence' in I. Hodder (ed.), *Humans and Landscapes of Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 8). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 163–90

Sadarangani, F. 2014: 'The sequence of Buildings 53 and 42 and external Spaces 259, 260 and 261' in I. Hodder (ed.), *Çatalhöyük Excavations: The 2000–2008 Seasons* (Çatalhöyük Research Project Volume 7). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 191–220

Sadvari, J.W., Tsoraki, C., Dogiama, L., Knüsel, C.J. 2015: 'Reading the bones, reading the stones: an integrated approach to reconstructing activity patterns at Neolithic Çatalhöyük' in I. Hodder, A. Marciniak (eds), *Assembling Çatalhöyük*. Leeds, Maney Publishing: 59–74

Sala, N., Arsuaga, J.L., Pantoja-Pérez, A., Pablos, A., Martínez, I., Quam, R.M., Gómez-Olivencia, A., Bermúdez de Castro, J.M., Carbonell, E. 2015: 'Lethal interpersonal violence in the Middle Pleistocene' *PLoS ONE* 10.5: e0126589

Samuelian, N., Khalaily, H., Valla, F.R. 2006: 'Final Natufian architecture at Eynan (Ain Mallaha). Approaching the diversity behind uniformity' in E.B. Banning, M. Chazan (eds), *Domesticating Space: Construction, Community, and Cosmology in the Late Prehistoric Near East*. Berlin, ex oriente: 35–42

Scarre, C. 2002: 'Epilogue: colour and materiality in prehistoric society' in A. Jones, G. MacGregor (eds), *Colouring the Past: The Significance of Colour in Archaeological Research*. Oxford: Berg: 227–42

Schiefenhövel, W. 2001: *Begegnung und Konflikt - eine Kulturanthropologische Bestandsaufnahme*. München, Verlag der Bayerischen Akademie der Wissenschaften in Kommission beim Verlag C.H. Beck: 169–86

Schmandt-Besserat, D. 1977: 'The beginnings of the use of clay in Turkey' *Anatolian Studies* 27: 133–50

Schmidt, K., 2010: 'Göbekli Tepe – the Stone Age sanctuaries. New results of ongoing excavations with a special focus on sculptures and high reliefs' *Documenta Praehistorica* 37: 239–56

Schmitt, A., Danisik, M., Aydar, E., Şen, E., Ulusoy, İ., Lovera, O.M., 2014: 'Identifying the volcanic eruption depicted in a Neolithic painting at Çatalhöyük, Central Anatolia, Turkey' *PLoS ONE* 9.1: e84711

Schotsmans, E.M.J., Busacca, G., Bennison-Chapman, L., Lingle, A., Milella, M., Tibbetts, B., Tsoraki, C., Vasić, M., Veropoulidou, R., 2020: 'Pigment use in Neolithic Çatalhöyük' *Near Eastern Archaeology* 83: 156–67

Schotsmans, E.M.J., Busacca, G., Lin, S., Vasić, M., Lingle, A.M., Veropoulidou, R., Mazzucato, C., Tibbetts, B., Haddow, S.D., Somel, M., Toksoy-Köksal, F., Knüsel, C.J., Milella, M. forthcoming: 'New insights on commemoration of the dead through mortuary and architectural use of pigments at Neolithic Çatalhöyük, Turkey' *Scientific Reports*

Schotsmans, E.M.J., Denton, J., Fletcher, J.N., Janaway, R.C., Wilson, A.S. 2014: 'Short-term effects of hydrated lime and quicklime on the decay of human remains using pig cadavers as human body analogues: laboratory experiments' *Forensic Science International* 238: 142.e1–142e.10

Schotsmans, E.M.J., Tibbetts, B., Vasić, M., Haddow, S.D., Knüsel, C.J., Milella, M. 2018: 'Gender differences and the funerary use of pigments at Neolithic Çatalhöyük' *Abstract Book of the 11th International Congress on the Archaeology of the Ancient Near East*: 168

Schulting, R.J. 2013:'War without warriors? The nature of interpersonal conflict before the emergence of formalized warrior elites' in S. Ralph (ed.), *The Archaeology of Violence: Interdisciplinary Approaches*. Albany (NY), State University of New York Press: 19–36

Schulting, R.J., Fibiger, L. (eds) 2012: *Sticks, Stones and Broken Bones: Neolithic Violence in a European Perspective*. Oxford, Oxford University Press

Scott, J. 2013: *Social Network Analysis*. London, SAGE

Sert, G. 2006: 'Childrens' archaeological summer school' *Çatalhöyük Archive Report 2006*. http://www.catalhoyuk.com/archive_reports/2006

— 2009: '2009 Çatalhöyük summer school workshop report' *Çatalhöyük Archive Report 2009*. http://www.catalhoyuk.com/archive_reports/2009

— 2011: 'Çatalhöyük excavation workshop 2011' *Çatalhöyük 2011 Archive Report*. http://catalhoyuk.com/archive_reports/2011

Service, E.R. 1962: *Primitive Social Organization, an Evolutionary Perspective*. New York, Random House

Severson, K. 1999: 'Artifact conservation final report' *Çatalhöyük 1999 Archive Report*. http://www.catalhoyuk.com/archive_reports/1999

Sewell, A. 2018: 'Photos reveal Turkey's lonely landscapes' *National Geographic*, 4 September 2018. https://www.nationalgeographic.com/travel/destinations/asia/turkey/rise-fall-changing-tourism-industry/

Shahack-Gross, R., Albert, R.M., Gilboa, A., Nagar-Hilman, O., Sharon, I., Weiner, S. 2005: 'Geoarchaeology in an urban context: the uses of space in a Phoenician monumental building at Tel Dor (Israel)' *Journal of Archaeological Science* 32: 1417–31

Shane, O., Küçük, M. 1998: 'Public presentation at Çatalhöyük' *Çatalhöyük 1998 Archive Report*. http://www.catalhoyuk.com/archive_reports/1998

Shankland, D. 1996: 'Çatalhöyük: the anthropology of an archaeological presence' in I. Hodder (ed.) *On the Surface: Çatalhöyük 1993–95* (Çatalhöyük Research Project Volume 1). Cambridge: McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 349–58

— 1999: 'Integrating the past: folklore, mounds and people at Çatalhöyük' in A. Gazin-Schwartz, C. Holtorf (eds), *Archaeology and Folklore*. London, Routledge: 139–57
— 2000: 'Villagers and the distant past: three seasons' work at Küçükköy, Çatalhöyük' in I. Hodder (ed.) *Towards Reflexive Method in Archaeology: The Example at Çatalhöyük* (Çatalhöyük Research Project Volume 2). Cambridge, McDonald Institute of Archaeological Research; London: British Institute of Archaeology at Ankara: 167–76

Shanks, M. 2007: 'Symmetrical archaeology' *World Archaeology* 39.4: 589–96

Shennan, S. 1997: *Quantifying Archaeology*. Iowa City, University of Iowa Press

Shennan, S., Downey, S.S., Timpson, A., Edinborough, K., Colledge, S., Kerig, T., Manning, K., Thomas, M.G., 2013: 'Regional population collapse followed initial agriculture booms in mid-Holocene Europe' *Nature Communications* 4: 2486

Shewry, P.R., Halford, N.G., Belton, P.S., Tatham, A.S., 2002: 'The structure and properties of gluten: an elastic protein from wheat grain' *Philosophical Transactions of the Royal Society of London*. *Series B: Biological Sciences* 357.1418: 133–42

Shillito, L-M., Matthews, W. 2013: 'Geoarchaeological investigations of midden-formation processes in the Early to Late Ceramic Neolithic levels at Çatalhöyük, Turkey ca. 8550–8370 cal BP' *Geoarchaeology* 28.1: 25–49

Shillito, L-M., Matthews, W., Almond, M.J., Bull, I.D. 2011a: 'The microstratigraphy of middens: capturing daily routine in rubbish at Neolithic Çatalhöyük, Turkey' *Antiquity* 85.329: 1024–38

Shillito, L-M., Bull, I.D., Matthews, W., Almond, M.J., Williams, J.M., Evershed, R.P. 2011b: 'Biomolecular and micromorphological analysis of suspected faecal deposits at Neolithic Çatalhöyük, Turkey' *Journal of Archaeological Science* 38.8: 1869–77

Shillito, L.-M., Matthews, W., Almond, M.J. 2013a: 'Ecology, diet and discard practices: new interdisciplinary approaches to the study of middens through integrating micromorphological, phytolith and geochemical analyses' in I. Hodder (ed.), *Humans and Landscapes of Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 8). London, British Institute at Ankara; Los Angeles: Cotsen Institute of Archaeology Press: 65–76

Shillito, L-M., Matthews, W., Bull, I.D., Almond, M.J., Williams, J.M., Evershed, R.P. 2013b: 'Integrated geochemical and microscopic analysis of human coprolites, animal dung and organic remains in burials' in I. Hodder (ed.), *Humans and Landscapes of Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 8). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 77–80

Shillito, L-M., Ryan, P. 2013. 'Surfaces and streets: phytoliths, micromorphology and changing use of space at Neolithic Çatalhöyük (Turkey)' *Antiquity* 87.337: 684–700

Sidell, E.J., Scudder, C. 2005: 'The eggshell from Çatalhöyük: a pilot study' in I. Hodder (ed.), *Inhabiting Çatalhöyük: Reports from the 1995–1999 Seasons* (Çatalhöyük Research Project Volume 4). Cambridge, McDonald Institute for Archaeological Research; London, British Institute of Archaeology at Ankara: 117–22

Sillar, B., Tite, M.S. 2000: 'The challenge of "technological choices" for materials science approaches in archaeology' *Archaeometry* 42: 2–20

Simon, N. 2010: *The Participatory Museum*. Santa Cruz, Museum 2.0

Skinner, L., Rogge, C., Shaheen, I., Ikram, S. 2016: 'Conservation and investigation of an ancient human burial at Abydos, Egypt' in E. Hamilton, K. Dodson (eds), *Proceedings of the Objects, Architecture, and Wooden Artifacts Specialty Group Sessions May 13–17 Montreal, Quebec, Canada*. American Institute for Conservation: 256–77

Skipper, C.E., Haddow, S.D., Pilloud, M.A. 2020: 'Thermal alterations to human remains in Çatalhöyük' *Near Eastern Archaeology* 83.2: 120–28

Slon, V., Sarig, R., Hershkovitz, I., Khalaily, H., Milevski, I. 2014: 'The plastered skulls from the Pre-Pottery Neolithic B site of Yiftahel (Israel): a computed tomography-based analysis' *PloS ONE* 9.2: e89242

Smith, M.J. 2014: 'The war to begin all wars? Contextualizing violence in Neolithic Britain' in C.J Knüsel, M.J. Smith (eds), *The Routledge Handbook of the Bioarchaeology of Human Conflict*. London, Routledge: 90–108

Smith, M.J., Brickley, M.B., Leach, S.L. 2007: 'Experimental evidence for lithic projectile injuries: improving identification of an under-recognised phenomenon' *Journal of Archaeological Science* 34: 540–53

Snijders, T.A.B., van de Bunt, G.G., Steglich, C.E.G. 2010: 'Introduction to stochastic actor-based models for network dynamics' *Social Networks* 32: 44–60

Sobott, R. 2018: *Chemical and Mineralogical Phase Composition of Mortar and Wall Plaster Samples from Çatalhöyük: the GDN Area*. Unpublished specialist report

Sørensen, T.F. 2015: 'More than a feeling: towards an archaeology of atmosphere' *Emotion, Space and Society* 15: 64–73

Souvatzi, S.G. 2008: *A Social Archaeology of Households in Neolithic Greece: An Anthropological Approach*. Cambridge, Cambridge University Press

— 2012: 'Between the individual and the collective: household as a social process in Neolithic Greece' in B.J. Parker, C.P. Foster (eds), *New Perspectives on Household Archaeology*. Winona Lake, Indiana, Eisenbrauns: 15–44

Spencer-Wood, S.M 2013: 'Nonlinear systems theory, feminism, and postprocessualism' *Journal of Archaeology* doi:10.1155/2013/540912

St. George, I. 2012: 'Çatalhöyük murals: a snapshot of conservation and experimental research' in R. Tringham, M. Stevanović (eds), *Last House on the Hill: BACH Area Reports from Çatalhöyük, Turkey* (Çatalhöyük Research Project Series Volume 11). Los Angeles, Cotsen Institute of Archaeology Press: 473–80

Stahl, A. B. 1989: 'Plant-food processing: implications for dietary quality' in: D. Harris and G.C. Hillman (eds), *Foraging and Farming: The Evolution of Plant Exploitation*. London, Unwin Hyman

Stein, G. 1991 [1935]: *Stein: Writings 1932–1946*. New York, Penguin

Stevanović, M. 1997: '1997 Report on experimental archaeology at Çatal: manufacturing bricks for the house replica' *1997 Çatalhöyük Archive Report*. http://www.catalhoyuk.com/archive_reports/1997

— 1999: 'Report on experimental archaeology at Çatalhöyük' *Çatalhöyük Archive Report 1999*. http://www.catalhoyuk.com/archive_reports/1999

— 2012a: 'Building and caring for the house at Çatalhöyük' in R. Tringham, M. Stevanović (eds), *Last House on the Hill: BACH Area Reports from Çatalhöyük, Turkey* (Çatalhöyük Research Project Series Volume 11). Los Angeles: Cotsen Institute of Archaeology Press: 173–204

— 2012b: 'Summary of results from the excavation of the BACH Area (Building 3 and Spaces 87, 88, 89)' in R. Tringham, M. Stevanović (eds), *Last House on the Hill: BACH Area Reports from Çatalhöyük, Turkey* (Çatalhöyük Research Project Series Volume 11). Los Angeles: Cotsen Institute of Archaeology Press: 81–171

— 2013: 'New discoveries in house construction at Çatalhöyük' in I. Hodder (ed.), *Substantive Technologies at Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Volume 9). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 97–114

Stock, J., Pfeiffer, S., Chazan, M., Janetski, J. 2005: 'F-81 skeleton from Wadi Mataha, Jordan, and its bearing on human variability in the Epipaleolithic of the Levant' *American Journal of Physical Anthropology* 128.2: 453–65

Stordeur, D. 2000: 'New discoveries in architecture and symbolism at Jerf el Ahmar (Syria), 1997–1999' *Neo-lithics* 1: 1–4

— 2015: *Le Village de Jerf el Ahmar (Syrie, 9500–8700 av. J.-C.): L'Architecture, Miroir d'une Société Néolithique Complexe*. Paris, CNRS Éditions

Stordeur, D., Brenet, M., Der Aprahamian, G., Roux, J.C. 2000: 'Les bâtiments communautaires de Jerf el Ahmar et Mureybet Horizon PPNA (Syrie)' *Paléorient* 26.1: 29–44

Stordeur, D., Helmer, D., Willcox, G. 1997: 'Jerf el Ahmar: un nouveau site de l'horizon PPNA sur le moyen Euphrate Syrien' *Bulletin de la Société Préhistorique Française* 94.2: 282–85

Su, Y., Hui-Lin, L. 2014: 'Analysis of international tourists worldwide: the role of world heritage status' *Tourism Management* 40: 46–58

Swan, S.C., Gambone, L.J., Caldwell, J.E., Sullivan, T.P., Snow, D.L. 2008: 'A review of research on women's use of violence with male intimate partners' *Violence and Victims* 23.3: 301–14

Taylor, J. 2016: 'Excavations in the South Area' *Çatalhöyük 2016 Archive Report*. http://www.catalhoyuk.com/archive_reports/2016

— 2017: 'Excavations in the South Area' *Çatalhöyük 2017 Archive Report*. http://www.catalhoyuk.com/archive_reports/2017

Taylor, J., Bogaard, A., Carter, T., Charles, M., Haddow, S.D., Knüsel, C.J., Mazzucato, C., Mulville, J., Tsoraki, C., Tung, B., Twiss, K.C. 2015: '"Up in flames": a visual exploration of a burnt building at Çatalhöyük in GIS' in I. Hodder, A. Marciniak (eds), *Assembling Çatalhöyük*. Leeds: Maney: 127–49

Taylor, J., Issavi, J., Berggren, Å., Lukas, D., Mazzucato, C., Tung, B., Dell'Unto, N. 2018: '"The rise of the machine": the impact of digital tablet recording in the field at Çatalhöyük' *Internet Archaeology* 47: https://doi.org/10.11141/ia.47.1

Taylor, J.S. 2016: *Making Time for Space at Çatalhöyük: GIS as a Tool for Exploring Intra-site Spatiotemporality within Complex Stratigraphic Sequences*. PhD thesis, University of York, UK

Tecirli, B. 2014: 'How effectively do "top-down" participatory management initiatives for Turkey's archaeological areas merge with "bottom-up" management practices? A Çatalhöyük case study' in I. Hodder (ed.) *Integrating Çatalhöyük: Themes from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 10). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 37–46

Teschler-Nicola, M., Gerold, F., Bujatti-Narbeshuber, M., Prohaska, T., Latkoczy, C., Stingeder, G., Watkins, M. 1999: 'Evidence of genocide 7000 BP – Neolithic paradigm and geo-climatic reality' *Collegium Antropologicum* 23: 437–50

Thoms, A.V. 2009: 'Rocks of ages: propagation of hot-rock cookery in western North America' *Journal of Archaeological Science* 36.3: 573–91

Thorne, M.J., Thompson, L.U., Jenkins, D.J. 1983: 'Factors affecting starch digestibility and the glycemic response with special reference to legumes' *The American Journal of Clinical Nutrition* 38.3: 481–88

Tieszen, L.L. 1991: 'Natural variations in the carbon isotope values of plants: implications for archaeology, ecology, and paleoecology' *Journal of Archaeological Science* 18: 227–48

Todd, I. 1976: *Çatal Hüyük in Perspective*. New York, Cummings

Tooth, S., Nanson, G. 1999: 'Anabranching rivers on the northern plains of arid central Australia' *Geomorphology* 29: 211–33

Tooth, S., Nanson, G.C. 2000: 'The role of vegetation in the formation of anabranching channels in an ephemeral river, northern plains, arid central Australia' *Hydrological Processes* 14: 3099–117

Tornero, C., Saña Segui, M. 2011: 'Integrating stable isotopes to the study of the origin of management strategies for domestic animals: $\delta^{13}C$ and $\delta^{18}O$ results from bioapatite enamel of cattle from the Tell Halula site, Syria (7800–7000 BC)' in I. Turbanti-Memmi (ed.), *Proceedings of the 37th International Symposium on Archaeometry, Siena, Italy*. New York, Springer: 435–40

Torun, E., Poblome, J. 2014: 'Sagalassos – Ağlasun: a case of transforming and transformative heritage' Paper presented at *Public Archaeology: Theoretical Approaches & Current Practices in Turkey Workshop*, Research Center for Anatolian Civilizations, Istanbul

Triat, J.-M. 2010: *Les Ocres*. Paris, CNRS Editions

Tringham, R. 1991: 'Households with faces: the challenge of gender in prehistoric architectural remains' in J.M. Gero, M.W. Conkey (eds), *Engendering Archaeology: Women and Prehistory*. Oxford, Basil Blackwell: 93–131

— 1995: 'Archaeological houses, households, housework and the home' in D.N. Benjamin, D. Stea (eds), *The Home: Words, Interpretations, Meanings and Environments*. Aldershot, Avebury: 79–107

Tringham, R., Stevanović, M. (eds) 2012: *Last House on the Hill: BACH Area Reports from Çatalhöyük, Turkey* (Çatalhöyük Research Project Series Volume 11). Los Angeles: Cotsen Institute of Archaeology Press

Trinkaus, E., Buzhilova, A.P. 2012: 'The death and burial of Sunghir I' *International Journal of Osteoarchaeology* 22: 655–66

Tsirogiannis, C., Tsirogiannins, C. 2016: 'Uncovering the hidden roots : algorithms for identifying paths and missing links in trade networks' in T. Brughmans, A. Collar, F. Coward (eds), *The Connected Past. Challenges to Network Studies in Archaeology and History*. Oxford, Oxford University Press: 103–22

Tsoraki, C. 2011: 'Stone-working traditions in the prehistoric Aegean: the production and consumption of edge tools at Late Neolithic Makriyalos' in V. Davis, M. Edmonds (eds), *Stone Axe Studies* 3. Oxford, Oxbow Books: 231–44

— 2016: 'Ground stone technologies' *Çatalhöyük 2016 Archive Report*. http://www.catalhoyuk.com/archive_reports/2016

— 2018: 'The ritualization of daily practice: exploring the staging of ritual acts at Neolithic Çatalhöyük, Turkey' in I. Hodder (ed.), *Religion, History and Place in the Origin of Settled Life*. Louisville, University of Colorado Press: 238–62

— forthcoming: 'Stone technology under the microscope: the contribution of microwear analysis of ground stone tools to the understanding of daily activities' in A. Baysal (ed.), *Lithic Studies: Anatolia and Beyond*. Oxford, Archaeopress

Tsoraki, C., García-Granero, J.J., Madella, M. 2015a: 'Houses and households at Neolithic Çatalhöyük: the contribution of microwear and microbotanical analyses of ground stone tools to the understanding of household activities' Paper presented at the EAA 21st Annual Meeting, Glasgow, September 2015

— 2015b: 'Microwear and microbotanical analyses of ground stone tools: towards an understanding of household activities at Neolithic Çatalhöyük, Turkey' Paper presented at the Association of Archaeological Wear & Residue Analysts (AWRANA) Meeting. Leiden, May 2015

Tung, B. 2008: *Making Place, Doing Tradition: Exploring Intimate Knowledge at Neolithic Çatalhöyük*. PhD thesis, University of California, Berkeley

— 2012: 'Excavations in the North Area' *Çatalhöyük 2012 Archive Report 2012*. http://www.catalhoyuk.com/archive_reports/2012

— 2013: 'Building with mud: an analysis of architectural materials at Çatalhöyük' in I. Hodder (ed.) *Substantive Technologies at Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 9). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 67–80

Twiss, K.C. 2008: 'Transformations in an early agricultural society: feasting in the southern Levantine Pre-Pottery Neolithic' *Journal of Anthropological Archaeology* 27: 418–42

— 2012: 'The complexities of home cooking: public feasts and private meals inside the Çatalhöyük house' *eTopoi. Journal for Ancient Studies* Special Volume 2: 53–73

— 2015: 'The complexities of home cooking: public feasts and private meals inside the Çatalhöyük house' *Berlin Studies of the Ancient World* 30: 63–85

Twiss, K.C., Bogaard, A. 2017: 'Coping with abundance: the challenges of a good thing' in M.L. Smith (ed.), *Abundance: The Archaeology of Plenitude*. Boulder (CO), University Press of Colorado: 165–79

Twiss, K.C., Bogaard, A., Bogdan, D., Carter, T., Charles, M.P., Farid, S., Russell, N., Stevanović, M., Nurcan Yalman, E., Yeomans, L. 2008: 'Arson or accident? The burning of a Neolithic house at Çatalhöyük, Turkey' *Journal of Field Archaeology* 33: 41–57

Twiss, K.C., Russell, N. 2009: 'Taking the bull by the horns: ideology, masculinity, and cattle horns at Çatalhöyük (Turkey)' *Paléorient* 35.2: 17–29

Ucko, P.J. 1969: 'Ethnography and archaeological interpretation of funerary remains' *World Archaeology* 1.2: 262–80

van Duijn, M.A.J., Huisman, M. 2015: 'Statistical models for ties and actors' in J. Scott, P. Carrington (eds), *The SAGE Handbook of Social Network Analysis*. London, SAGE: 459–83

Van Neer, W., Gravendeel, R., Wouters, W., Russell, N. 2013: 'The exploitation of fish at Çatalhöyük' in I. Hodder (ed.), *Humans and Landscapes of Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 8). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 317–27

van Oyen, A. 2016a: 'Networks or work-nets? Actor network theory and multiple social topologies in the production of Roman terra sigillata' in T. Brughmans, A. Collar, F. Coward (eds), *The Connected Past. Challenges to Network Studies in Archaeology and History*. Oxford, Oxford University Press: 35–56

— 2016b: *How Things Make History. The Roman Empire and its Terra Sigillata Pottery.* Amsterdam, Amsterdam University Press

Van Vuure, C. 2005: *Retracing the Aurochs: History, Morphology and Ecology of an Extinct Wild Ox*. Sofia, Pensoft

Vasić, M. 2018: *Personal Adornment in the Neolithic Middle East: A Case Study of Çatalhöyük*. PhD thesis, Freie Universität, Berlin

Vasić, M., Bains, R., Russell, N. 2014: 'Dress: a preliminary study of bodily ornamentation at Çatalhöyük' in I. Hodder (ed.), *Integrating Çatalhöyük. Themes from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 10). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 197–220

Vedder, J.F. 2005: 'The obsidian mirrors of Çatalhöyük' in I. Hodder (ed.), *Changing Materialities at Çatalhöyük: Reports from the 1995–99 Seasons* (Çatalhöyük Research Project Series Volume 5). Cambridge, McDonald Institute for Archaeological Research; London, British Institute at Ankara: 597–620

Veropoulidou, R. 2017: 'Shells' *Çatalhöyük 2017 Archive Report*. http://www.catalhoyuk.com/archive_reports/2017

Veropoulidou, R., Leng, M.J., Lewis, J.P. in preparation: 'Seasonality of freshwater mussel harvesting at Çatalhöyük'

Versteegh, E.A.A., Vonhof, H.B., Troelstra, S.R., Kaandorp, R.J.G., Kroon, D. 2010: 'Seasonally resolved growth of freshwater bivalves determined by oxygen and carbon isotope shell chemistry' *Geochemistry, Geophysics, Geosystems* 11: 1–16

Wadley, L. 2010: 'Compound-adhesive manufacture as a behavioral proxy for complex cognition in the Middle Stone Age' *Current Anthropology* 51: S111–19

Wahl, J., König, H.G. 1987: 'Anthropologisch-traumatologische Unter-suchung der menschlichen Skelettreste aus dem bandkeramischen Massengrab bei Talheim, Kreis Heilbronn' *Fundberichte aus Baden-Württemberg* 12: 65–193

Wainwright, J., Ayala, G. 2019: 'Teleconnections and environmental determinism: was there really a climate-driven collapse at Late Neolithic Çatalhöyük?' *Proceedings of the National Academy of Sciences of the United States of America* 116.9: 3343–44

Walker, P.L. 2001: 'A bioarchaeological perspective on the history of violence' *Annual Review of Anthropology* 30: 573–96

— 2008: 'Sexing skulls using discriminant function analysis of visually assessed traits' *American Journal of Physical Anthropology* 136: 39–50

Wallace, M., Jones, G., Charles, M., Fraser, R., Heaton, T.H.E., Bogaard, A. 2015: 'Stable carbon isotope evidence for Neolithic and Bronze Age crop water management in the Eastern Mediterranean and Southwest Asia' *PLoS ONE* 10: e0127085

Walrath, D.E., Turner, P., Bruzek, J. 2004: 'Reliability test of the visual assessment of cranial traits for sex determination' *American Journal of Physical Anthropology* 125: 132–37

Waselkov, G.A. 1987: 'Shellfish gathering and shell midden archaeology' *Advances in Archaeological Method and Theory* 10: 93–210

Wason, P.K. 2004: *The Archaeology of Rank*. Cambridge, Cambridge University Press

Wasserman, S., Faust, K. 1994: *Social Network Analysis: Methods and Applications*. Cambridge, Cambridge University Press

Watkins, T. 2004: 'Architecture and "theatres of memory" in the Neolithic of southwest Asia' in E. Demarrais, C. Gosden, C. Renfrew (eds), *Rethinking Materiality: The Engagement of Mind with the Material World*. Cambridge, McDonald Institute for Archaeological Research: 97–106

Watson, A., Keating, D. 1999: 'Architecture and sound: an acoustic analysis of megalithic monuments in prehistoric Britain' *Antiquity* 73: 325–36

Watts, I. 2002: 'Ochre in the Middle Stone Age of southern Africa: ritualised display or hide preservative?' *South African Archaeological Bulletin* 57: 1–14

Weismantel, M.J. 2014: 'The *hau* of the house' in I. Hodder, (ed.), *Religion at Work in a Neolithic Society: Vital Matters*. Cambridge, Cambridge University Press: 259–79

Weiss-Kejci, E. 2008: 'Unusual life, unusual death and the fate of the corpse: a case study from dynastic Europe' in E.M. Murphy (ed.), *Deviant Burial in the Archaeological Record*. Oxford, Oxbow Books: 169–90

— 2013: 'Unburied dead' in L. Nilsson Stutz, S. Tarlow (eds), *The Oxford Handbook of the Archaeology of Death and Burial*. Oxford, Oxford University Press: 281–301

Wendrich, W., Ryan, P. 2012: 'Phytoliths and basketry materials at Çatalhöyük (Turkey): timelines of growth, harvest and objects life histories' *Paléorient* 38.1-2: 55–63

Weninger, B., Alram-Stern, E., Bauer, E., Clare, L., Danzeglocke, U., Jöris, O., Kubatzki, C., Rollefson, G., Todorova, H., van Andel, T. 2006: 'Climate forcing due to the 8200 cal yr BP event observed at Early Neolithic sites in the Eastern Mediterranean' *Quaternary Research* 66.3: 401–20

Whitehouse, H., Lanman, J.A. 2014: 'The ties that bind us' *Current Anthropology* 55.6: 674–95

Wiessner, P. 2019: 'Collective action for war and for peace' *Current Anthropology* 60.2: 224–44

Wilk, R.R. 1983: 'Little house in the jungle: the causes of variation in house size among modern Kekchi Maya' *Journal of Anthropological Archaeology* 2: 99–116

Wilk, R.R., Rathje, W.L. 1982: 'Household archaeology' *American Behavioral Scientist* 25.6: 617–39

Willett, P.T., Franz, I., Kabukcu, C., Orton, D., Rogasch, J., Stroud, E., Rosenstock, E., Biehl, P.F. 2016: 'The aftermath of the 8.2kya event. Cultural and environmental effects in the Anatolian Late Neolithic and Early Chalcolithic' in P.F. Biehl, O.P. Nieuwenhuyse (eds), *Climate and Cultural Change in Prehistoric Europe and the Near East*. Albany (NY), State University of New York Press: 95–115

Williams, T. 2018: 'The conservation and management of archaeological sites: a twenty-year perspective' *Conservation Perspectives: The GCI Newsletter* 33.1: 4–9

Wolfhagen, J. 2019: *Rethinking Human-Cattle Interactions at Çatalhöyük (Turkey) through Bayesian Analysis of Cattle Biometry and Behavior*. PhD thesis, Stony Brook University, New York

Wollstonecroft, M.M., Hroudová, Z., Hillman, G.C., Fuller, D.Q. 2011: '*Bolboschoenus glaucus* (Lam.) SG Smith, a new species in the flora of the ancient Near East' *Vegetation History and Archaeobotany* 20.5: 459–70

Wright, K.I. 2000: 'The social origins of cooking and dining in early villages of western Asia' *Proceedings of the Prehistoric Society* 66: 89–121

— 2013: 'The ground stone technologies of Çatalhöyük' in I. Hodder (ed.), *Substantive Technologies at Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 9). London, British Institute at Ankara; Los Angeles: Cotsen Institute of Archaeology Press: 365–416

— 2014: 'Domestication and inequality? Households, corporate groups and food processing tools at Neolithic Çatalhöyük' *Journal of Anthropological Archaeology* 33: 1–33

Wright, K.I., Baysal, A. 2012: 'Ground stone tools and technologies associated with Building 3 at Çatalhöyük' in R. Tringham, M. Stevanović (eds), *Last House on the Hill: BACH Area Reports from Çatalhöyük, Turkey* (Çatalhöyük Research Project Series Volume 11). Los Angeles, Cotsen Institute of Archaeology Press: 421–28

Yalman, N. 1996: 'Çatalhöyük ethnoarchaeological field study summer 1996' *Çatal News* 3. http://www.catalhoyuk.com/newsletters/03/ethnoarch.html

— 2001: 'Ethnoarchaeological field work' *Çatal News* 8. http://www.catalhoyuk.com/newsletters/08/ethnoarch01.html

Yalman, N., Tarkan, D., Gültekin, H. 2013: 'The Neolithic pottery of Çatalhöyük: recent studies' in I. Hodder (ed.), *Substantive Technologies at Çatalhöyük: Reports from the 2000–2008 Seasons* (Çatalhöyük Research Project Series Volume 9). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 147–82

Yang, Z., Algesheimer, R., Tessone, C.J. 2016: 'A comparative analysis of community detection algorithms on artificial networks' *Scientific Reports* 6: 1–16

Yartah, T. 2004: 'Tell'Abr 3, un village du néolithique précéramique (PPNA) sur le Moyen Euphrate. Première approche' *Paléorient* 30.2: 141–58

Yeomans, L. 2014: 'External Spaces 60, 133, 145, 240, 241, 242, 291 and 426' in I. Hodder (ed.), *Çatalhöyük Excavations: The 2000–2008 Seasons* (Çatalhöyük Research Project Volume 7). London, British Institute at Ankara; Los Angeles, Cotsen Institute of Archaeology Press: 515–25

YerelNET. 2018: 'KÜÇÜKKÖY Köyü.' https://www.yerelnet.org.tr/koyler/koy.php?koyid=252412

York, R., York, G. 2011: *Slings and Sling Stones: The Forgotten Weapons of Oceania and the Americas*. Kent (OH), The Kent State University Press

Young, D. 2006: 'The colours of things' in C. Tilley, W. Keane, M. Rowlands, S. Spyer (eds), *Handbook of Material Culture*. London: SAGE Publications Ltd: 173–85

Zhai, Z.J., Previtali, J.M. 2010: 'Ancient vernacular architecture: characteristics categorization and energy performance evaluation' *Energy and Buildings* 42.3: 357–65

Zielinski, D., Shiferaw, E. 2018: 'Dig@IT 2018'. https://gitlab.oit.duke.edu/djzielin

Zieliński, T. 2014: *Sedimentology: River and Lake Sediments [Sedymentologia: osady rzek i jezior]*. Poznan, Wydawnictwo Naukowe Uniwersytetu im. Adama Mickiewicza