



HAL
open science

Stone, pots... and now ornaments: Revisiting the Middle-Late Neolithic and the Late-Final Neolithic transitions at Franchthi

Catherine Perlès

► **To cite this version:**

Catherine Perlès. Stone, pots... and now ornaments: Revisiting the Middle-Late Neolithic and the Late-Final Neolithic transitions at Franchthi. Soren Dietz; Fanis Mavridis; Žarko Tankosic; Turan Takaoglu. Communities in transition. The Circum-Aegean Area during The 5Th and 4Th millennia BC, 33, Oxbow Books, pp.331-340, 2018, 978-1-78570-720-9. halshs-03878403

HAL Id: halshs-03878403

<https://shs.hal.science/halshs-03878403v1>

Submitted on 29 Nov 2022

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution 4.0 International License

This pdf of your paper in *Communities in Transition: The Circum-Aegean Area during the 5th and 4th Millennia BC* belongs to the publishers Oxbow Books and it is their copyright.

As author you are licenced to make up to 50 offprints from it, but beyond that you may not publish it on the World Wide Web until three years from publication (January 2021), unless the site is a limited access intranet (password protected). If you have queries about this please contact the editorial department at Oxbow Books (editorial@oxbowbooks.com).

COMMUNITIES IN TRANSITION

AN OFFPRINT FROM
COMMUNITIES IN TRANSITION
THE CIRCUM-AEGEAN AREA DURING THE 5TH AND 4TH MILLENNIA BC

Edited by

SØREN DIETZ,
FANIS MAVRIDIS,
ŽARKO TANKOSIĆ
and
TURAN TAKAOĞLU.

Hardback Edition: ISBN 978-1-78570-720-9

Digital Edition: ISBN 978-1-78570-721-6 (epub)

 **OXBOW** | books

© Oxbow Books 2018
Oxford & Philadelphia
www.oxbowbooks.com

Published in the United Kingdom in 2018 by
OXBOW BOOKS
The Old Music Hall, 106–108 Cowley Road, Oxford OX4 1JE

and in the United States by
OXBOW BOOKS
1950 Lawrence Road, Havertown, PA 19083

© Oxbow Books and the individual authors 2018

Hardback Edition: ISBN 978-1-78570-720-9
Digital Edition: ISBN 978-1-78570-721-6 (epub)

A CIP record for this book is available from the British Library and the Library of Congress

All rights reserved. No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical including photocopying, recording or by any information storage and retrieval system, without permission from the publisher in writing.

Printed in the United Kingdom by Short Run Press
Typeset in India by Lapid Digital Services, Chennai

For a complete list of Oxbow titles, please contact:

UNITED KINGDOM
Oxbow Books
Telephone (01865) 241249, Fax (01865) 794449
Email: oxbow@oxbowbooks.com
www.oxbowbooks.com

UNITED STATES OF AMERICA
Oxbow Books
Telephone (800) 791-9354, Fax (610) 853-9146
Email: queries@casemateacademic.com
www.casemateacademic.com/oxbow

Oxbow Books is part of the Casemate Group

Front cover: Ships carved into a rock from the site of Strophilas on Andros (photograph from the personal archive of C. Televantou); drawing of a rock carving from the main bastion on the wall at the site of Strophilas on Andros representing a procession of ships (drawing by C. Televantou).

Stones, pots ... and now ornaments: Revisiting the Middle–Late Neolithic and the Late–Final Neolithic transitions at Franchthi

Catherine Perlès¹

Introduction

The causes and nature of the transition from the Late to the Final Neolithic (LN, FN)² in Southern Greece, around 4500 cal. BC, have been a matter of debate since C. Renfrew coined the term “Final Neolithic”.³ A large part of the debate centres around the role of pastoralism⁴ and the “secondary products revolution”,⁵ but cultural changes or demic replacement are hardly if ever considered.

The on-going study of the Franchthi ornaments brings new and unexpected perspectives to these issues, provided one takes also into account the Middle (MN) to Late Neolithic transition. As with settlement patterns, pottery, stone and bone tools, sharp breaks are documented in the ornamental assemblages between the MN and the LN on the one hand, and the LN and the FN on the other. The differences are such for both transitions that cultural continuity, even in the context of a new socio-economic organisation, seems difficult to defend: LN ornamental assemblages are conceptually, visually and technically different from earlier and later assemblages. On the other hand, the FN assemblages share many concepts with the earlier EN and MN assemblages, pointing to the LN as “intrusive” in an otherwise continuous sequence of development. This leads us to reconsider the old hypotheses of demic ruptures at the dawn of the LN, supported by parallels between the ceramics and ornaments from Franchthi and from Northern Greece. Conversely, the LN/FN transition may signal the return to Franchthi of groups descending from its former, EN–MN, inhabitants.

The context

The MN/LN transition at Franchthi, dated to *ca.* 5500 cal BC, is characterised, as everywhere else in Greece, by a sharp

break in ceramic traditions. At the beginning of the Late Neolithic (phase FCP 3), the very distinctive “Urf” (akin to the Peloponnesian “urfirnis”) is replaced by carinated “low lime burnished” (akin to the “black burnished” of Central Greece and Thessaly)” as well as “polychrome painted” wares, and later by “lime plus iron”, akin to matt-painted wares.⁶ The status and mode of occupation of the site change in parallel, with the abandonment of the extensive open-air settlement on the Paralia. The Late Neolithic occupation is restricted to the cave itself, and seems to have mostly been of a ritual order.⁷

K. Vitelli discussed at length the striking contrasts between MN and LN settlement patterns and ceramic productions, and what she sees as the “breaking down of the Middle Neolithic alliance” in the Peloponnese.⁸ She concluded in favour of a socio-economic transformation: the regulation of conflicts within and between groups would have ceased to operate successfully. The former MN groups would have split, dispersed into the hills, chosen a new way of life and produced new ceramic styles.⁹ She did not discuss the LN/FN transition, around 4500 cal BC, in similar detail, but again suggests that socio-economic transformations, through more interaction and exchange, would explain the new FN settlement patterns with the reoccupation of the Paralia. In turn, a more sedentary life and new activities would have led to the adoption of the distinctive FN wares, such as the crusted and patterned burnished wares.¹⁰

The flaked stone assemblages show parallel changes: the MN/LN transition is characterised by a transformation in the techniques of preparation of the pressure-flaked obsidian blades and bladelets, associated with the replacement of transverse arrowheads by pointed arrowheads.¹¹ The transformations between LN and FN lithics are perhaps less striking, but they are also significant and embrace

new techniques of retouch (parallel pressure retouch on arrowheads) and new tool types, such as denticulated blades and the characteristic triangular foliates. Unlike K. Vitelli, I had not discussed these transitions in terms of cultural continuity or discontinuity. The hypothesis of production in the hands of itinerant craftsmen, who were not members of the local community, rendered the discussion irrelevant at Franchthi itself. However, from a more general viewpoint, I also considered that the MN/LN transformations in lithic assemblages could be explained in socio-economic terms.¹²

The diachronic changes observed at Franchthi can indeed be traced all over Greece. Carinated black-burnished wares and matt-painted brown-on-brown wares spread all over continental Greece at the beginning of Late Neolithic I, forming a common background to the various idiosyncratic regional styles that emerged after the traditional Middle Neolithic ceramic productions – such as Sesklo, Chaironeia, Lianokladi, Paradimi – had disappeared.¹³

Everywhere also, disruptions in settlement patterns can be observed, with settlements abandoned, new settlements created, the development of very large “flat-sites”, a colonisation of the small Aegean islands and a marked rise in the use of caves.¹⁴ These transformations, associated with what he considered as “destruction levels” – at Servia, Tsangli and Sesklo for instance – led V. Milojčić to view the MN/LN transition as the result of migrations from Anatolia to the Balkans and to Greece.¹⁵ Weinberg concurred on the arrival of new populations, but, contrary to V. Milojčić, viewed their penetration as “peaceful infiltration”.¹⁶ D. Theocharis considered the question unsolved, but underlined the parallelism of the transformations in Greece and Anatolia. Later on, with the demise of the migrationist paradigm,¹⁷ the MN/LN transition was re-interpreted in terms of a local evolution. For instance, Demoule *et al.*¹⁸ defined a transitional MN/LN interphase at Platia Magoula Zarkou, called the Zarko phase. Echoing the “collapse of the Urfirnis alliance”, this phase can be characterised by “a destandardisation of traditional techniques and the exploration of new ones, as though the previous template had been disorganised and a new one was being slowly and rather haphazardly established.”¹⁹

In turn, the LN/FN transition is characterised, from Thessaly to the Peloponnese, by the development of crusted and patterned burnished wares²⁰ and by an even more striking reorganisation of settlement patterns. In Thessaly, the FN is characterised by a dramatic decrease in the number of settlements.²¹ Conversely in Central and Southern Greece, small rural settlements spread over marginal areas and hills, while the use of caves increased.²² To my knowledge, these changes have never been interpreted in terms of demic replacement. Following the perceptive lead of C. Renfrew,²³ these transformations have mostly been analysed in economic terms.²⁴

These socio-economic interpretations of the MN/LN and LN/FN transitions raise a number of problems. In particular,

they do not answer the question of why social or economic transformations would induce major transformations in the technical and stylistic domains as well, why traditional pottery shapes, firing techniques and decorative techniques for instance, were abandoned. Nor do they explain why the new categories of wares, such as the LN black-burnished and matt-painted or the FN crusted wares and patterned burnished, rapidly spread over vast areas previously characterised by very distinctive ceramic traditions. They do not explain either the transformation in obsidian blade production or the shift from transverse to pointed arrowheads. In addition, as I will now show, the break concerns not only pottery, lithics or bone tools. At Franchthi at least, it also concerns the ornaments, and, even if the evidence is presently restricted to a single site, it sheds new light on the problem of cultural continuity over these two transitions.

The Franchthi ornaments

The Franchthi ornaments were studied first by P. Schaeffer, then by M. Miller for her doctoral dissertation. Unfortunately, these studies have remained largely unpublished.²⁵ Both studies concentrated on the catalogued artefacts, which are mostly restricted to the Neolithic period. When I became entrusted with the publication of the Palaeolithic and Mesolithic ornaments, and later of the Neolithic ornaments, the first step was to sort, with my collaborators,²⁶ hundreds of mixed bags of land snails and seashells. This re-sorting radically changed the picture of the Franchthi ornaments, including for the Neolithic, by showing that in most periods perforated shells were the dominant categories.

For the sake of brevity, I will not discuss here the very definition of an “ornament”, which is, as I discovered, rather imprecise and problematic. I will thus concentrate here on beads, pendants and perforated shells. Over 1400 Neolithic ornaments were catalogued during the excavation, but the number has more than tripled with our new investigation. Ornaments were found in all trenches, Paralia and cave alike, and all occupational phases. We shall here concentrate on trenches F/A North (FAN) and F/A South (FAS), the only two trenches where Late Neolithic deposits have been found *in situ*. FAS was entirely water-sieved down to a mesh of 1.8 mm, while LN deposits were not water-sieved in FAN. As a consequence, most of the smaller beads, characteristic of the period, were lost in FAN.

Middle Neolithic ornaments

Middle Neolithic ornaments at Franchthi show a clear continuity in the conception of ornaments with the Early Neolithic.²⁷ The major difference pertains to the production of *Cerastoderma glaucum* disc beads, which decreased considerably during the Middle Neolithic. Otherwise, the range and variety are very comparable. The MN ornamental

assemblages (geometric beads and pendants, ear-plugs, annulets, perforated sea-shells, *etc.*) amount to slightly less than 450 pieces, to which a similar number of unperforated specimens of the same ornamental species, clearly selected for their large size and good state of preservation, may be added. They were found in all trenches containing MN deposits, in the cave itself and on the Paralia.²⁸ The presence of blanks and unfinished pieces shows that some ornaments at least were locally manufactured, and use-wear traces show that many have been worn. There are some differences between the earlier and the later phases of the Middle Neolithic, but they will not be addressed here.

The first characteristic of the Middle Neolithic ornaments is the numerical dominance of perforated shells, *Columbella rustica*, *Cyclope neritea* and, to a lesser extent, *Cerastoderma glaucum* and *Luria lurida*. Interestingly, two of these species, *Cyclope* and *Columbella*, are also the dominant species in the Palaeolithic and Mesolithic, although the techniques of perforation differ. Naturally perforated shells are present in a smaller proportion: *Antalis* sp. (*Dentalium* sp.), sea-worn *Cerithium vulgatum* and *Hexaplex trunculus*.²⁹

Alongside perforated shells, geometric beads and pendants are found in approximately equal proportion, together with rarer V-buttons, “ear-plugs”, “anthropomorphic pendants”, “zoomorphic masks”, annulets and uniquely shaped ornaments. They are mostly made of stone, especially steatite, but also serpentinite, marble, limestone, chlorite and chrysocolle, as well as shell (*Spondylus gaederopus*, *Pinna* sp.) and baked clay.

Middle Neolithic beads and pendants are characterised by the variety in shapes and dimensions – no two beads and pendants are exactly alike – the variety in colours – light green, dark green, black, white, brown, red, yellow – the variety in texture – linked to the raw material and degree of polishing, and, finally, the presence of unique, elaborate pieces. Most types are found in other regions of Greece at the same period, and the absence of standardisation has also been noted for Thessaly.³⁰

For both perforated shells and geometric beads and pendants, identification of the natural taxon or of the raw material is easy, and rarely requires microscopic examination. The raw material and its origin are part of the visual code, as much as the shape and colour.³¹

Figure 33.1 illustrates a variety of MN ornaments from the different trenches of the cave and Paralia. Figure 33.2 is restricted to trenches FAN and FAS, to allow meaningful comparisons with the following phases. It is complete, except for additional perforated *Columbella rustica*, *Cyclope neritea* and *Cerastoderma glaucum*.³²

Late Neolithic ornaments

Late Neolithic ornaments, taken as a whole, present a marked contrast (Fig. 33.3). Despite the fact that Late

Neolithic deposits are restricted to trenches FAS and FAN and the lack of water-sieving in FAN, they are abundant: *ca.* 300 specimens. The typological range is much narrower: discoid beads and short cylindrical beads heavily dominate. There are almost no pendants (2%), none of the unique and fancy ornaments that were present in the Early and Middle Neolithic. Perforated shells (*Cyclope*, *Columbella*) and *Antalis* (*Dentalium*) are also rare, and their percentage, on the order of 7%, is well within the percentage of contaminant Middle Neolithic “Urf” sherds.³³ Their relative abundance in the lower LN units, where the percentage of “Urf” sherds varies from 20 to 50%, suggests that they too are intrusive.

There is no definite evidence in the LN that the beads were produced *in situ*, but analyses of the raw materials with a portable XRF spectrometer show that the composition of the steatites and serpentinites are compatible with a local origin. The beads themselves are far more standardised than in the MN, as also noted for the Late Neolithic in Thessaly.³⁴ Their colours are also uniform: the large variety that was sought in the Middle Neolithic, including the bright green of the steatites, is now replaced by monotonous series of black and white or light beige beads³⁵. The beads are of very small size, and the smallest, the “tiny black” for instance, can only be produced in series, strung together on a thin reed or a string.³⁶ Grinding them down to a diameter of 2–2.4 mm requires skills and practice, and their very small size may well have been part of the value attached to these beads.

Despite the homogeneity in shape and colour, the range of raw materials remains very diversified, especially in the later LN sub-phases (Fig. 33.4). It includes unfired and fired steatites,³⁷ serpentinite, marble, limestone, marls, baked clay, *Spondylus gaederopus*, *Cerastoderma glaucum*, *Pinna* sp., *Conus mediterraneus*. In most cases, however, the identification of the raw material is almost impossible with the naked eye, and requires 30 to 40X magnification. The raw material and its provenience, either from the sea or the earth, are no longer part of the visual code. The latter is restricted to size and colour, and the colour itself can even be artificially modified. A large series of black or green steatite beads have been transformed under high heat (on the order of 1000° C) into beige/white – and much harder – enstatite. In contrast, almost half of the *Spondylus* beads have been turned dark brown or black by heating under a reduced atmosphere.³⁸

These general characteristics are consistent throughout the early Late Neolithic (Neolithic pottery FCP 3 and lithic phase III, *ca.* 5500–5300 cal BC) and the three sub-phases of the later Late Neolithic (Neolithic pottery FCP 4 and lithic phase IV, beginning around 5300 cal BC), although some minor variations can be documented. Thus, the striking homogeneity of the Late Neolithic ornaments holds true for several centuries, and cannot be the result of a single necklace or two deposited in the cave.



Figure 33.1. Sample of Middle Neolithic ornaments from various Cave and Paralia trenches. Fifth row: *Columbella rustica*. Sixth row: *Cyclope neritea*. Bottom row, from left to right: *Antalis* sp. (*Dentalium*), *Phorcus marginatus* (*Monodonta*), *Cerithium vulgatum*, *Luria lurida* and *Cerastoderma glaucum*.

Final Neolithic ornaments

With about 75 pieces altogether, plus a “necklace” of sea worn *Cerithium vulgatum* fragments, Final Neolithic ornaments are far less abundant than in any other period (Fig. 33.5). The quantitative diminution is significant since Final Neolithic deposits were excavated both in the cave

(trenches FAS and FAN) and on the Paralia (trenches L5 and L5NE). This small assemblage shows, nevertheless, a drastic conceptual change *vis-à-vis* the Late Neolithic: pendants and perforated shells again dominate, natural colours, textures and morphological diversity are again valued. The raw materials and their origin can be identified with the naked

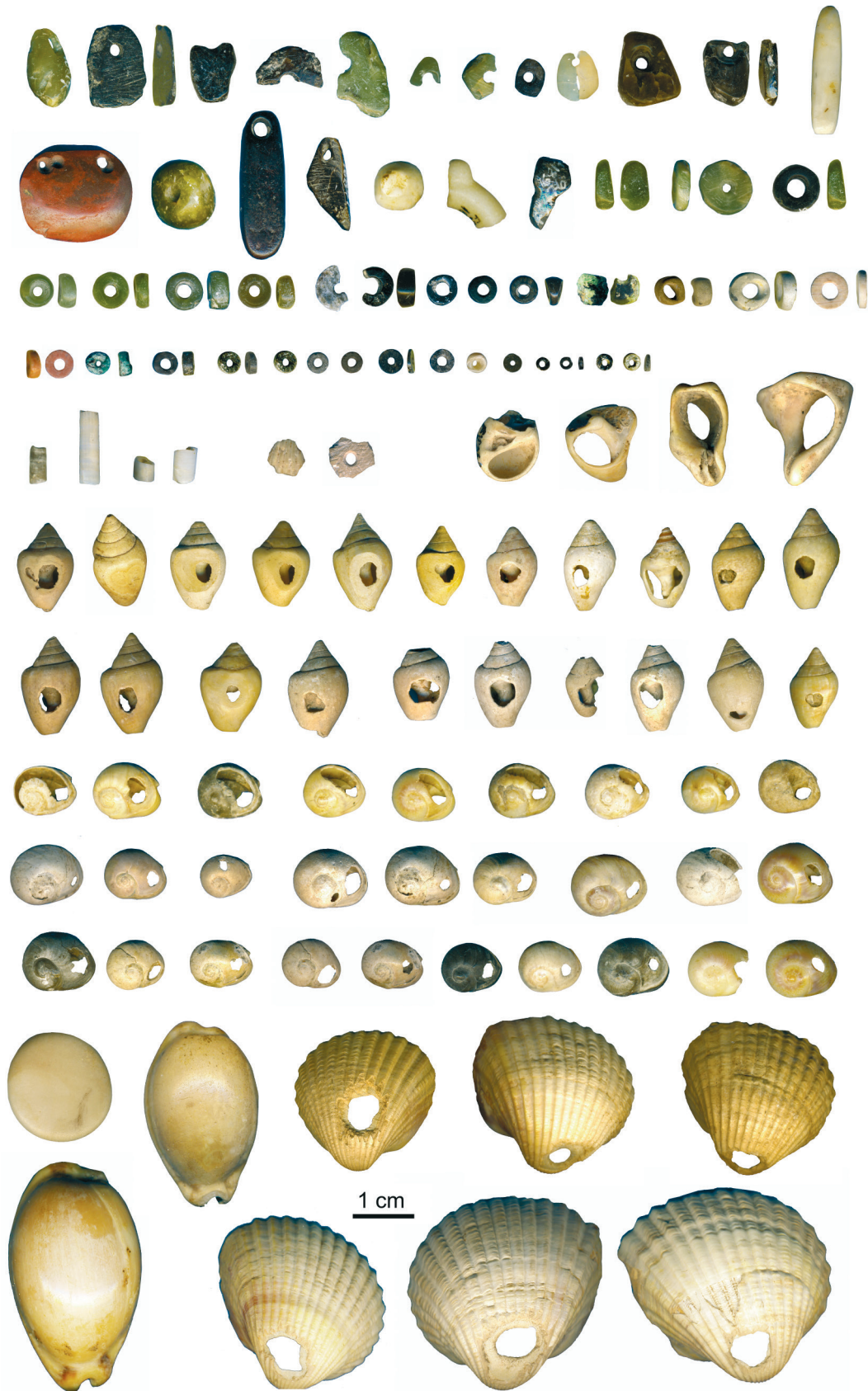


Figure 33.2. Middle Neolithic ornaments from trenches FAN and FAS. Perforated sea shells are underrepresented on this plate.



Figure 33.3. Representative sample of Late Neolithic ornaments from trenches FAN and FAS.

eye, and are again part of the visual code. Final Neolithic ornaments are, in all respects, very close in conception to Middle Neolithic ones. However, the possibility that all these ornaments would represent Middle Neolithic contaminations can be excluded: the majority come from trenches FAN and FAS, overlying the Late Neolithic levels, and both the pottery and lithic assemblage show no evidence of Middle Neolithic contamination. Some contamination in trenches L5 and L5NE is nevertheless possible, and I suspect that the three fired steatite beads and “tiny blacks” from FAN and FAS, which could point at some continuity

with the Late Neolithic, are contaminant since they were found in units just overlying the Late Neolithic deposits.

Conclusion

Two opposite conceptions of the ornaments are exemplified in the Neolithic sequence of Franchthi. The first conception embraces the Initial Neolithic, Early Neolithic, Middle Neolithic and Final Neolithic. It combines the natural shapes of perforated seashells with non-standardised pendants and beads, as well as a few exceptional specimens,



Figure 33.4. Variety of raw materials in Late Neolithic beads from FAN and FAS.

such as anthropomorphic pendants, of especially high craftsmanship. It plays with the variety of shapes, sizes, colours and textures. The second conception, restricted to the Late Neolithic, obliterates all natural shapes in favour of uniform, standardised discoid and cylindrical beads.

Raw materials, whether stone, shell or clay, are completely transformed to the point of being impossible to identify with the naked eye. The range of colours is restricted to black and beige/white and, for perhaps half of the beads, the colours themselves are artificially manipulated.



Figure 33.5. Final Neolithic ornaments from trenches FAN, FAS, L5 and L5NE. Sea worn *Cerithium vulgatum* are underrepresented.

Late Neolithic ornaments thus stand out as singular in an otherwise homogenous conception of ornaments. How can we explain this conceptual break?

1. A change in raw material availability can be excluded: whether or not the beads were locally made, all raw materials could be found locally in abundance.
2. Late Neolithic ornaments correspond to the period when the occupation of the cave appears to have been mainly of a ceremonial and ritual order.³⁹ They might thus represent ornaments conceived and deposited for ritual purposes, as opposed to accidentally discarded personal ornaments in the other phases of occupation. However, the high frequency of use-wear deformations and the fact that, according to K. Vitelli,⁴⁰ the cave was also occupied for ritual purposes during the FN, do not fit well with this hypothesis.
3. A similar shift from large ornaments to numerous small discoid beads has been observed around 5000 BC in Hungary. These small beads are almost exclusively found in female and child burials, and the authors suggest that the “expression of prestige”, formerly marked in male burials by large *Spondylus* ornaments, was now expressed by the wealth of female family members and descendants.⁴¹ In turn, prominent leaders were buried with status items such as mace-heads, boar tusks and pendants. Given the absence of burials at Franchthi (and their rarity in the Greek LN as a whole), a relation to gender is impossible to support or disprove. This model, in any case, leaves unsolved the question of the origin of such a conceptual and social change.
4. To understand the transformations in ornamental assemblages, a broader perspective might be required. These changes are, at Franchthi, concomitant with equally marked transformations in the pottery, bone tool and stone tool assemblages, which concern both techniques and style. This denotes a major cultural break, which, in terms of evolutionary archaeology,⁴² is a clear case of discontinuous change, normally associated with demic replacement. All the available data indicate that the Late Neolithic groups at Franchthi had different technical, stylistic and symbolic traditions than the previous Middle Neolithic inhabitants. In addition, both the pottery and the ornaments- in particular the fired steatite beads- point to connections with Northern Greece.⁴³ We should thus consider the possibility that the Late Neolithic groups were not autochthonous to the Peloponnese (or to the Argolid), and that their arrival was responsible for the “collapse of the Urfirnis alliance”.

I know, however, that no site in Northern Greece shows the restricted range of ornaments that Franchthi shows.⁴⁴ But statistically relevant comparisons are rendered impossible by

two sampling biases. First, the area excavated at Franchthi for the LN is absolutely minute – less than 8 sq m on 0.65 to 0.80 m depth – when compared with rich LN sites such as Dimini, Dispilio, Makriyalos, Dikili Tash, Makri, *etc.* This can easily explain the absence at Franchthi of other characteristic LN types. Conversely, the systematic use of water-sieving down to a mesh of 1.8 mm has dramatically inflated the proportion of small beads compared to dry-sieved sites.⁴⁵ One should thus rely more on the common presence of highly elaborate types such as fired steatites or heated *Spondylus* beads than on the relative proportions of the different types of ornaments.

The contrast between Late and Final Neolithic ornaments is as strong as the contrast between Middle and Late Neolithic ones. However, while the MN/LN transition evokes the occupation of the cave by groups of a different – northern – tradition, to the contrary, the marked parallels between the Middle and Final Neolithic ornaments suggest the return to the site of groups descending from its former inhabitants. The conception of ornaments can indeed be shown to be far more resilient to change than, say, lithics or pottery and can certainly be perpetuated over a millennium.⁴⁶ K. Vitelli suggested that the Middle Neolithic inhabitants of the cave had left to the hills to live a different – and much less visible – life at the end of the Middle Neolithic. What the ornaments suggest is that their descendants came back – sporadically – during the Final Neolithic, once Late Neolithic newcomers had themselves left the region or, rather, merged with autochthonous populations since some continuity can be observed in the ceramic production.⁴⁷ There is no need indeed to revive V. Milošević’s old model of “invasions”: historical Greece, with many interacting pastoralist and farming groups of different practices, languages and cultures, certainly provides a more fruitful model for a multicultural country, and one which may well fit with the later phases of the Neolithic if we start to look at it this way.

Notes

- 1 Research on the Franchthi ornaments was funded by a grant from the INSTAP (2006–2010), which is gratefully thanked, and by grant ANR-06-Blan-0273 from the French Agence Nationale de la Recherche (National Agency for Research).
- 2 In the chronological scheme used here, the Late Neolithic spans the mid-6th to mid-5th millennium (*ca.* 5500–4500 BC), and the Final Neolithic spans the mid-5th to mid-4th millennium. The Final Neolithic corresponds to the “Late Neolithic II” of Sampson (1989), Coleman (1992) or to the “Chalcolithic” (Aslanis 1992).
- 3 Renfrew 1972.
- 4 *e.g.* Branigan 1999; Cavanagh 1999; Halstead 1987; Halstead 2000; Halstead 2008; Johnson 1996a; Renfrew 1972; Renfrew 1973b; Sampson 1992; Sampson *et al.* 1999; van Andel and Runnels 1988.

- 5 Sherratt 1981.
- 6 Vitelli 1993; Vitelli 1999.
- 7 Vitelli 1999.
- 8 Vitelli 1999, 103.
- 9 Vitelli 1999, 99–101.
- 10 Vitelli 1999, 103.
- 11 Perlès 2004.
- 12 Perlès 2004, 170.
- 13 Andreou *et al.* 1996; Demoule *et al.* 1988; Papathanasopoulos (ed.) 1996; Theocharis 1973.
- 13 Cherry 1990; Broodbank 2000; Halstead 1984; Halstead 2000; Halstead 2008; Zachos 1999; Johnson and Perlès 2004; Mavridis this volume; Pappa and Besios 1999a; Sampson *et al.* 1999.
- 14 Miložčić 1949; Miložčić 1960.
- 15 Weinberg 1970, 600.
- 16 Theocharis 1973, 89–90.
- 17 Anthony 1990.
- 18 Demoule *et al.* 1988.
- 19 Demoule and Perlès 1993, 387.
- 20 Coleman 1992; Papathanasopoulos (ed.) 1996; Phelps 2004; Theocharis 1973; Zachos 2008.
- 21 Halstead 1984; Johnson and Perlès 2004.
- 22 Bintliff *et al.* 2006; Cavanagh *et al.* 2002; Johnson 1996a; Johnson 1996b; Runnels and van Andel 1987; Runnels *et al.* 1995; Sampson *et al.* 1999; Wickens 1986.
- 23 Renfrew 1972.
- 24 Cavanagh 1999; Demoule and Perlès 1993; Diamant 1974; Halstead 2007; Jacobsen 1984; Johnson 1996a; Sampson 1992; Sampson *et al.* 1999; Tomkins 2010; Wells *et al.* 1990; Wickens 1986; but see Halstead 2000; Halstead 2008; Tomkins 2010 for sociological interpretations.
- 25 But see Miller 1996; Miller 1997; Miller 2003; Perlès 2001.
- 26 M. Vanhaeren, S. Bonnardin, P. Pion, J. Beck, A. Blin.
- 27 This appears to be a general trend in Greece, see Kyparissi-Apostolika 2005.
- 28 They cannot, consequently, be considered as special ritual deposits linked with a sacred use of the cave for these periods, see Tomkins 2009.
- 29 A cluster of 66 sea worn *Cerithium vulgatum* was uncovered in the Final Neolithic of FAS, suggesting they were strung together. The use of unworked shells as ornaments is also mentioned at Makriyalos, Pappa and Veropoulidou 2011.
- 30 Kyparissi-Apostolika 2001.
- 31 See Bar-Yosef Mayer and Porat 2008 for the importance of the green colour.
- 32 Despite the fact that perforated *Cerastoderma glaucum* are commonly used as ornament, this is debatable at Franchthi where the perforations often lack use wear.
- 33 Vitelli 1999, tabs 1–8.
- 34 Kyparissi-Apostolika 2001.
- 35 See similar black and white necklaces from Dimini (Kyparissi-Apostolika 2001, pl. 42) and Dispilio (Chourmouziadis 2002, fig. 3).
- 36 Miller 2003, 374–5.
- 37 Miller 2003.
- 38 See Chapman *et al.* 2011 for intentional burning of *Spondylus* bracelets at Late Neolithic Dimini.
- 39 Vitelli 1999, 102.
- 40 Vitelli 1999.
- 41 Siklósi and Cesengeri 2011.
- 42 Roux and Courty 2013; Shennan, 2009.
- 43 Miller 2003; Vitelli 1999, 97.
- 44 *i.e.* Ifantidis 2004; Ifantidis 2011; Kyparissi-Apostolika 2001; Kyparissi-Apostolika 2011; Miller 2003; Nikolaidou 2003; Pappa and Veropoulidou 2011; Veropoulidou and Ifantidis 2004.
- 45 Since conditions of recovery are the same for the MN, LN and FN in trench FA, the contrasts between the three phases cannot be attributed to such sampling biases.
- 46 See Perlès 2013; Stiner 1999; Stiner *et al.* 2013 for Palaeolithic instances.
- 47 Vitelli 1999, 102.