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# Components as a Possible Enabler of 'Hobby' Crafters in the Mycenaean World[1]

**Abstract**

That crafting is undertaken by a range of individuals outside of economic necessity is a well-known feature of modern societies. These 'hobby crafters' have a diverse set of motivations, but the phenomenon as a whole has been strongly linked to the Industrial Revolution and associated emergence of distinct 'leisure time', in which craft hobbies can be pursued. Thus a narrative has been established that hobby crafting is a product of the modern era and, with few notable exceptions, little to no attention has been directed towards investigating whether such a mode of production was also present in premodern or even prehistoric communities.

As distinguishing between artefacts made by professional specialists and those produced by hobby crafters is by no means straightforward, this paper explores whether the practical and social conditions essential for hobby crafting could have been present in ancient communities. It demonstrates that, for such a mode of production to exist, intra-cross-craft communication between professional specialists and hobby crafters, materialised through components, is crucial. A particular form of jewellery from the Mycenaean Palatial-era Greek mainland (*c.* 1400–1200 BC) is used as a case study to illustrate how hobby crafting may have been present in an ancient society.

**Keywords:** intra-cross-craft, hobby craft, mode of production, Mycenaean, jewellery, craft

## Introduction

Production and its organisation have always been important topics of investigation for archaeologists. Significant attention has been paid to identifying different modes of production, that is to say the various types of systems for coordinating and controlling artefact manufacture, as these have been considered an important marker of cultural complexity.[2] Each mode of production comprises a specific combination of individuals and their relations, locations for work, types of remuneration, distribution networks, forms of equipment, *etc*., and has wider repercussions for associated factors such as scheduling, bureaucracy, learning frameworks, and gender and/or age-related roles, amongst others.

Most of this discussion has taken place against an assumed backdrop of economic need.[3] The potential existence of a mode of production purely related to social or personal need, within which crafters willingly produce artefacts without direct or indirect economic recompense,

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[2] Clark, Parry 1990, 309, 315, 321.

[3] Although archaeologists have recognised crafting's social benefits (*e.g.*, Brysbaert, Hochscheid 2021), discussion of prehistoric craft, including specialisation and skill, have centred on 'professional' individuals, *i.e.*, those who crafted to meet household needs or received some form of remuneration.

perhaps even incurring expense to do so, has been overlooked for premodern societies. This is despite its presence within our own societies: so-called 'hobby crafting'. Given that scholars have explicitly connected this modern phenomenon to societal changes wrought by the Industrial Revolution,[4] there has been an understandable unwillingness to explore the possibility in order to avoid projecting present-day values back onto the past. Although it is important to refrain from making simplistic links between past and present, it can be argued that assuming the presence or absence of a mode of production based on modern preconceptions is just as problematic.

Detailed consideration of this possibility is needed. However, the most basic analysis of modern hobby crafting reveals that it is as complex a mode of production as every other. Furthermore, and despite certain expectations (especially pertaining to skill), examination of contemporary artefacts demonstrates that there is no straightforward checklist of characteristics that can distinguish between the products of hobby crafters and those manufactured through other modes of production. Similar difficulties should be anticipated within premodern communities. Nevertheless, the surrounding framework that enables the emergence and persistence of hobby crafting can be analysed, and thus used to investigate whether the potential for a similar phenomenon existed in past, perhaps even prehistoric, communities.

## Hobby Crafting as a Modern Mode of Production

A household survey conducted by the Association for Creative Industries (AFCI) in 2016 in the United States found that 64% of respondents had participated in some form of hobby crafting within the last year, which, along with other data from the same survey, led it to estimate that the US hobby crafting sector was worth approximately $44 billion.[5] Despite this, there has been a reluctance to seriously research hobby crafting until relatively recently.[6]

Investigating any mode of production requires developing an understanding of its enabling framework. On the one hand, there are practical considerations; a compatible *chaîne opératoire* (production sequence) is essential, along with other factors including logistics, technology, transportation, knowledge base, *etc*. Social considerations, though, are of equal importance, such as cultural traditions, structures of knowledge transfer, social demand, communities of practice, status-defined roles, *etc*.

### *The Social Framework for Modern Hobby Crafting*

Beginning with the latter, modern hobby crafting is acknowledged as meeting several social needs. The act of making can be, in itself, pleasurable, particularly if the hobby crafter is able to experience 'flow', or full immersion.[7] This enjoyment is often deliberately enhanced through well-made high-quality tools and materials designed to provoke sensory stimulation.[8] Use of acquired skills is also pleasurable,[9] and the ability to exert some degree of control over one's own actions an essential element of the experience.[10] Through making, a sense of selfhood and ownership is developed; it fuels self-identification and deepens the feeling of belonging, especially within the space where crafting takes place.[11] This can be extended by the finished products, which can be used by hobby crafters to improve their immediate environment[12] or as gifts,[13] although it seems the intrinsic rewards of the activities themselves are judged to be higher than the extrinsic ones.[14] Hobby crafting can also appeal to those wishing to connect to the past or with like-minded individuals, through communities of practice, although neither are necessary prerequisites.[15]

Therefore, although the concept of 'work undertaken for pleasure' can be difficult to comprehend,[16] the

[4] See Maines 2009, 11.

[5] https://craftindustryalliance.org/craft-industry-growing-in-dollars-scope/.

[6] Maines 2009, 127. The AFCI 2016 household survey remains the only comprehensive survey of its kind undertaken to date.

[7] Csikszentmihalyi 1975, 36.

[8] Maines 2009, 13. In the realm of knitting, for example, it is not unusual for a yarn brand to be available in at least 10 colours, sometimes more than 100, with rosewood needles marketed as an essential luxury.

[9] Csikszentmihalyi 1975, 14.

[10] Csikszentmihalyi 1975, 25.

[11] Brysbaert, Hochscheid 2021, 13, 15.

[12] Maines 2009, 12–13. Although Maines classifies hobby crafting as a 'hedonising technology', a technology that "privileges the pleasures of production over the value and/or significance of the product" (Maines 2009, 3), such activities can be pursued primarily for the end product, especially by those interested in customisation and/or acquiring objects suited to their idiosyncratic tastes.

[13] Maines 2009, 123–124.

[14] Csikszentmihalyi 1975, 14. This perception is affected by socio-economic factors, gender, and age (Csikszentmihalyi 1975, 20).

[15] Maines 2009, 122–123. The desire for validation through competitive forms of social interaction varies according to individuals and the type of activity undertaken (Csikszentmihalyi 1975, 16).

[16] Maines 2009, 9–10.

idea that modern hobby crafting, offering transcendence through a combination of novelty and challenge,[17] can lead to personal fulfilment and inner peace now commonly forms part of its marketing. Of the AFCI survey respondents, only 10% of those who crafted did so for less than five hours per week, and 40% spent more than 20 hours per week crafting, strongly indicating how valuable such individuals consider their hobby to be.

Most hobby crafts are archaising, by intentionally utilising techniques and skills which have been replaced by industrial processes. Although it could be assumed this would cause difficulties for knowledge transfer, such skill transmission is widely practised, through books, expert-led courses, and now the internet.[18] The formation of communities of practice[19] is often encouraged by smaller craft stores to build their customer base, with public groups (*e.g.*, educational institutions, craftivism) and private groups (*e.g.*, kinship-based, closed circle of friends/colleagues) being common.[20] These also enable skill transmission.

The same household survey assessed the demographic characteristics of American crafters. They tended to be younger than average, with men comprising 40% of the total. Nevertheless, certain crafts demonstrate strong gendered differentiation,[21] not necessarily matching its demographics prior to its adoption as a hobby.[22] In terms of social status, R. Maines has convincingly argued that the Industrial Revolution, rather than allowing hobby crafting to first emerge, in fact drove it to become increasingly democratised.[23] Therefore, it should be expected that socio-economic factors now play a smaller role in determining the likelihood of hobby craft engagement, although they do still impact other aspects. These may include the quantity and quality of materials, tools, and available time, as well as the opportunities for knowledge acquisition.

### *The Technical Framework for Modern Hobby Crafting: the Role of Components*

For hobby crafting to take place, it must be technically feasible. Modern industrial nations have advanced communication networks that facilitate logistics and transportation, which the hobby craft market can tap into. The knowledge base for such crafts has been developed over many millennia, with current innovation being driven through communities of practice. Similarly, the required technology, in terms of materials and tools, is mature, and in many cases such essentials are shared with industrial processes. However, the *chaînes opératoires* for hobby crafting do demand special consideration, and fundamental to these is the incorporation of components.

A significant proportion of material culture is formed from components, defined in the Oxford English Dictionary as 'a constituent element or part'.[24] Components are a specific form of semi-product used in composite artefacts; common examples include handles, tool heads, hinges, *etc*. The majority are shaped to the required specification and assembled with little to no further modification. Their design often integrates features to facilitate assembly, such as sockets or rivet holes. In this respect they are distinct from other semi-products like ingots. Exceptions include components such as rivets, the modification of which during assembly is crucial to their functioning, and formless examples like glues, oils, and paints.

Components are necessary to produce artefacts composed of multiple materials, those with moving parts, or to achieve complex forms. Their use can permit greater and finer control over the *chaîne opératoire*. This confers other benefits such as increased scope for standardisation and efficiency, as well as the avoidance or mitigation of risky or complex procedures through simplification of the *chaîne opératoire*. In addition, components are sometimes favoured in market-based economies due to other factors less applicable to premodern societies, such as to smooth supply and/or demand curves.[25]

Although not essential to their usage, the integration of components into a *chaîne opératoire* can be exploited to enable multiple people to contribute. Modern factory production lines, for example, rely on a component-based strategy to bring to bear a greater quantity of

[17] Csikszentmihalyi 1975, 30, 33. This is common to all activities initiated primarily for their own sake. Other scholars have also commented on how physical and mental challenges contribute to crafting pleasure (*e.g.*, Bamforth, Finlay 2008, 3).

[18] For example, the YouTube video "How to Crochet for Absolute Beginners: Part 1", uploaded by simplydaisy on March 16th 2015, had (on June 26th 2023) been viewed 30417606 times, was part of a channel with 432000 subscribers, and had attracted 13419 comments.

[19] Following the original definition, summarised as "relatively stable communities of face-to-face interaction between members working in close proximity to one another, in which identity formation through participation and the negotiation of meaning are central to learning and knowledge generation" (Amin, Roberts 2008, 355). Note that their conclusions on 'craft/task knowing' and its relationship to communities of practice are completely drawn from professional craft practitioners, and are not applicable to hobby crafting.

[20] See, for instance, Brysbaert, Hochscheid 2021.

[21] Maines 2009, 14.

[22] Brewing, previously a female household task and now a hobby pursued mainly by men, is a good example (Maines 2009, 85).

[23] Maines 2009, 31, 63–64, 126.

[24] Meaning no. 2a. https://www.oed.com/view/Entry/37759?redirectedFrom=component#eid.

[25] Ulrich, Ellinson 2005, 317–318, 322.

labour (both human- and machine-based) upon the manufacture of a single artefact, thus greatly decreasing production time. Components can open up new approaches to the division of labour that encourage deeper individual specialisation. This allows artefacts to become a focal point for actions carried out by different craftspeople with diverse background expertise. They also enable production to take place at more than one location.

Both hobby crafting and the 'do-it-yourself' (DIY) industry[26] take advantage of the capacity of components to concentrate or minimise complexity at different stages of the *chaîne opératoire*, allowing the end consumer to successfully complete activities with only a restricted skill-set, basic tools, and a selection of components. Thus, the end consumer possesses a specific set of skills geared towards the use of these components, rather than their production. The components themselves may be designed differently to those present in professional settings to support these changes. Especially for hobby crafting, elements of the *chaîne opératoire* can be cherry-picked to include only those considered the most rewarding or exclude those deemed too risky with regard to successful completion of an object.[27] As with DIY, for hobby crafting to be a successful mode of production it is the last stages of the *chaîne opératoire* that must be suitable for the involvement of hobby crafters. This may entail changes to the *chaîne opératoire* that simplifies or removes the need for specialist equipment during the final stages, but which can also make it less efficient, demand different components, or otherwise appear illogical within a professional setting. Certain objects are, therefore, inherently less suitable for hobby crafting as their final stages comprise tasks such as electroplating.[28] Community-based resources, like specialist institutions offering their equipment or expertise to the general public, can help circumvent this difficulty; generally such arrangements are contingent on cultural factors and traditions.[29]

The entry requirements for both DIY and hobby crafting activities can be lowered through the provision of kits.[30] Although varying in completeness, their purpose is to provide all the specialist components, tools, and know-how, leaving the end consumer only needing to provide skill and some basic components, tools, and/or labour. Certain stages of the *chaîne opératoire* are significantly simplified, such as sourcing the necessary materials, whilst others are completely outsourced to specialist crafting units, such as design. The potential for certain other difficulties is also reduced. For instance, one of the most time-consuming aspects of craft production is learning how to deal with unexpected problems,[31] but kits effectively outsource this by testing the entire *chaîne opératoire* beforehand. Craft kit designers often indicate the required skill level, allowing the end consumer to roughly match their ability against the range on offer. Thus, although kits can be used to lower skill requirements, they also enable hobby crafters to employ much more advanced techniques than possible without this support, specifically allowing them to concentrate on developing their practical crafting abilities.

An excellent modern example are the component crafting kits produced by the beading company Spellbound, established by Julie Ashford in 1984 (Fig. 1). End consumers use these kits to create complex three-dimensional ornaments and trinkets using little more than beads and thread. The exact path taken by the needle through the beads determines their position, and even minor path adjustments lead to radically different outcomes. The design process is therefore complex, encompassing the concept, aesthetic appearance, and pre-determining the required needle pathway, and relies upon specialist knowledge of stitches and techniques unique to beading. Manufacture is comparatively easier, requiring both less skill and knowledge. Spellbound's kits thus enable hobby crafters to create complicated objects well beyond their own design capabilities, whilst employing beading techniques appropriate to their current skill level and learning ambitions.

One significant drawback to kits is that they can limit opportunities for personalisation and innovation. Effectively, total control over design is traded for the ability to create something beyond an individual's personal capacity. The use of kits for craft production has been perceived by scholars as a negative development inextricably bound to modern consumerism; artefacts produced this way are regarded as inherently inferior because they lack 'authenticity' or 'artistic value'.[32] In fact, companies such as Spellbound are highly innovative, and additionally

[26] Their end consumers are sometimes labelled 'prosumers'.

[27] In the latter regard it is similar to 'scaffolding', the process of integrating novice apprentices into craft production by giving them basic risk-free tasks (Ferguson 2008, 52).

[28] Such processes do, of course, take place outside modern factory settings, but the individuals involved are often professional or semi-professional artisans who have invested in suitable facilities and use their craft as an income stream.

[29] Art colleges, for instance, may offer space in their ceramic-firing kilns to local hobby crafters and/or artisans, whose circumstances may prevent them from installing or running their own.

[30] Categorised by Atkinson (2006, 3) as 'reactive' DIY.

[31] Bamforth, Hicks 2008, 152.

[32] Hackney 2013, 173; Richmond 2020, 551. Csiksznetmihalyi (1975, 141) emphasised that 'micro-flow', induced by activities requiring lower skill, was still of great personal importance to participants.


Fig. 1. A – contents of Spellbound beading kit, with basic tools lined up across the top; B – sample beading project in various stages of completion (photo by S. Aulsebrook).

offer components for hobby crafters who are interested in personal design and customisation. Not only has their potential as a gateway to building confidence prior to individual experimentation been widely ignored, the possible existence of modes of production based on kits in past communities has been completely overlooked, to an even greater extent than hobby crafting more generally.

Hobby crafting is, therefore, fundamentally intra-cross-craft. It involves the interaction of at least two modes of production to create a single artefact, but sometimes three: industrial premises producing mass-market components; small-scale businesses designing patterns, creating kits, and/or producing specialist components;[33] and the end consumer, who assembles the final product. Along the *chaîne opératoire*, important linkages are made between hobby crafters, professional experts, and component suppliers, which incorporate the exchange of knowledge as well as providing the framework for production. At the broader scale, that process today is predominantly driven by market forces but also by craft shows, where producers of hobby craft components, designs, and kits meet face-to-face with their end consumers, creating forums for direct feedback and opportunities for skill and knowledge transmission.

## Hobby Crafting as a Premodern Mode of Production

After establishing an understanding of the social and technological conditions that facilitate modern hobby crafting, it is now time to turn to the past and consider whether such conditions were also present. Before doing so, it is necessary to acknowledge that, for the majority of the 20th century, the general scholarly consensus was that hobby crafting emerged as a result of the Industrial Revolution. The reduced number of hours spent in an external workplace, coupled with what was considered the uniquely alienating conditions of modern work, were

[33] There are small-scale suppliers, for instance, who hand-spin and dye high-quality animal fibres from their own livestock; their yarn sells for premium prices.

seen as the essential factors that created hobby crafting, characterised either as an alternative 'opium of the masses' or the manifestation of an unconscious desire to rebel against modern life.[34]

In fact, the derivation of pleasure from hobby crafting is directly documented from the late 17th century AD onwards,[35] and R. Maines has gathered together compelling indirect evidence from historical records that pushes this back further, at least into the medieval era.[36] Indeed, her analysis of medieval female needleworkers finds many overlaps with modern hobby crafting: the use of luxury materials and tools, the commissioning of top artists to supply designs and/or use of images in other media for inspiration, the development of communities of practice sustained internationally through the exchange of samplers[37] as well as in-person group settings, and the gifting of finished items to institutions, such as the church, or as bequests.[38] Although skill levels would have varied, there is no doubt that some of the highest-quality extant textiles from this period were made by skilled noblewomen.[39]

The most fundamental difference to modern hobby crafting is the social status of its participants. These women belonged to the highest echelons of society, as members of the aristocracy and royalty. The Industrial Revolution democratised hobby crafting,[40] with the accompanying development of standardised kits for retail dependent on the newly formed mass market. It is, therefore, more likely that the majority of hobby crafting before the Industrial Revolution was practised by high-status individuals, and that the provision and appearance of kits, if present, was far less standardised.

Within millennia-long trajectories of social stratification, even in prehistory it is possible to identify specific groups of individuals with a privileged position within social hierarchies who, through institutionally sanctioned claims on resources and the labour of others, had time available beyond that required to meet their immediate subsistence needs (food, water, shelter, clothing, *etc*.). Some of this time would have been absorbed meeting culturally determined subsistence needs, which probably varied according to social identity markers, such as age, status, or gender. These could include commodities that are frequently referred to in the archaeological literature as luxuries, such as perfume, wine, or chariots, but which within the prevailing cultural framework were necessary to maintain social position.

Nevertheless, it is clear that, from at least the Upper Palaeolithic onwards, time was available to partake in activities not strictly bound to meeting immediate subsistence needs.[41] It is important not to confuse this 'beyond subsistence time' with our own modern 'leisure time'.[42] Control over its use was not necessarily in the hands of individuals. The activities undertaken during this 'beyond subsistence time' were probably closely tied to social obligations and ideas of correct behaviour, and linked to social identity markers, like those mentioned above. Emically, that is to say from the internal cultural viewpoint, they may have been described as traditional, fitting, or even virtuous.[43] Attending feasts or participating in ritual ceremonies, for instance, may or may not have in themselves been enjoyable activities, but involvement was unlikely to have been directed solely by individual choice.

Taking into account all of the above means that the quantity of this 'beyond subsistence time' cannot be easily calculated. Nor is this necessarily a logical way to characterise time in ancient communities, which perceived time as task-orientated.[44] However, the increase in social inequality that enabled higher-status individuals to

[34] See discussion in Maines 2009, 11–12, 127 and associated list of references. Whilst an overt desire for non-conformity may form the clearly expressed primary reason for certain individuals (see, *e.g.*, Hackney 2013, 170), the so-called 'radical' nature of hobby crafting is exceptionally complex (and should not be reduced to either of those caricatures), which is why it is possible to celebrate its potential for activism whilst simultaneously acknowledging its staid image within the very same article (Hackney 2013).

[35] Maines 2009, 40. See Beck 2002, 40, fig. at bottom, for a contemporary illustration of noblewomen enjoying needlecraft in a high-status surrounding.

[36] See Maines 2009, 22–24 and associated list of references.

[37] Over time, samplers developed into a rite of passage for young girls, becoming formulaic. Originally, samplers were used to test and transmit stitch types; for examples see https://collections.vam.ac.uk/search/?q=sampler&page=1&page_size=50&year_made_from=1000&year_made_to=1700.

[38] Maines 2009, 19–27, 29–31.

[39] See, for example, an embroidery by Mary, Queen of Scots on display at the Palace of Holyroodhouse, https://www.rct.uk/collection/28224/embroidered-panel.

[40] Maines 2009, 20.

[41] Jewellery, made from bone, stone, mammoth ivory, and shell, was already an established element of material culture assemblages from at least the Initial Upper Palaeolithic onwards (see, *e.g.*, Shunkov *et al.* 2020). Whether this represents the very first instance of hobby crafting is a debate for another paper.

[42] An alternative could be 'free time' but, due to the potential double meaning of the word 'free', the intended connotation that it is time devoid of the need to perform other tasks could be confused with the idea that it is time free to be used according to individual choice. Therefore, this paper will continue to use the more descriptive term 'beyond subsistence time'.

[43] Maines 2009, 34. Maines (2009, 14) notes that the ability to take pleasure is affected by societal acceptance.

[44] Damm 2000, 113.

acquire 'beyond subsistence time' also provided a mechanism through which it could be denied to others, perhaps through slavery or other forms of extreme institutionalised inequality. Thus, the right to 'beyond subsistence time' would have become, in itself, a marker of social status, regardless of actual quantity, and, moreover, could be used to develop different types of personhood exclusively associated with elites. The exact nature of this high-status personhood would have depended upon the socially approved activities used to fill this 'beyond subsistence time', including access to self-improvement activities (*e.g.* education, physical training), entertainment (*e.g.* music, dance, recitations), volunteering (*e.g.* for charities, mentoring), or hobby crafting. Fundamentally, within the specific cultural context, all these could have been perceived as contributing to the production of superior individuals: more learned, more fit, more cultured, more moral, and more skilled. Such potent class distinctions would have lent themselves easily to 'othering' and, therefore, not only marked but created social status. Activities such as hunting or hobby crafting could reinforce these hierarchies directly, by forcing lower-status household members to execute more menial, less pleasurable but necessary tasks, as occurred in Medieval Europe.[45]

Evidence of participation was thus important. Certain activities, such as hunting or dancing, happened in groups, creating exclusive communities of practice. For long-term commitments, such as physical training or education, proof lay in the ability to demonstrate the acquired capabilities to others. For hobby crafting, the artefacts themselves constituted evidence, both in terms of their very existence and their embodiment of acquired skill.

Currently, there is no space within mainstream archaeological theory for hobby crafters, especially highly skilled hobby crafters. The basic premise that high skill is invariably linked to economic specialisation has meant that crafting for any other reason than economic necessity is absent from standard typologies.[46] Indeed, M. Kuijpers has directly linked skill with professionalism, by categorising craftspeople associated with low-skill products as 'amateur'.[47]

It has thus been necessary to start from scratch. This exploration of modern hobby crafting, coupled with R. Maines' analysis of elite medieval female needleworkers, has provided the basis upon which the following criteria have been identified as potential markers for the involvement of past elite individuals in the hobby crafting of particular forms of artefacts:

1) the practical potential, facilitated through components, to meaningfully contribute to the final production stages of certain objects which were already economically accessible;

2) the use of high-status materials, especially during the stages identified as suitable for hobby crafting, comparable to those that constituted their day-to-day material environment;

3) the possible existence of a shared community of elite peers within which crafting knowledge and know-how could be communicated;

4) the potential to create objects with distinctive biographies that made them suitable for gift exchange, heirlooms, and use within socially important settings.

It is now time to put these ideas into action and test them against an archaeological case study.

## Gilding and Assembling Mycenaean Glass Jewellery – a Potential Hobby Craft?

Metal foil production technology was present in the Aegean from the Early Bronze Age (third millennium BC) onwards, and metal foils were already used during this period not only to make objects but also to cover other materials, for example through gilding.[48] Metal foil usage continued into the second millennium BC,[49] and within the Mycenaean culture, which developed on the Greek mainland, their exploitation expanded significantly, involving both a wider range of materials and new classes of objects.

One of those novel materials was glass. Appearing in the Aegean from the end of the Middle Bronze Age, its primary use in this region was for small jewellery components, particularly individual beads, plaques, and more complex three-dimensional ornaments, with Aegean-specific designs that followed traditional forms already produced in gold, as well as for seals, which again followed traditional Aegean forms produced in other materials.[50] These glass jewellery components were incorporated into larger composite objects for use, such as necklaces, bracelets, and even diadems[51] (Fig. 2). However, the Aegean itself did not manufacture glass, and it had to be imported

[45] Maines 2009, 26–27.

[46] Such as Clark, Parry 1990. The absence of hobby crafting may be justifiable in terms of its importance and impact on past societies, as well as its archaeological visibility. However, regarding these typologies as fully comprehensive could be potentially misleading.

[47] Kuijpers 2018, 561. This, again, may be fully justifiable in terms of the overall assessment of production in a society, but has the unfortunate side effect of discouraging investigation into high-skill hobby crafting.

[48] For examples see E. Davis 1977, 95; Hickman 2012, 525.

[49] E. Davis 1977, 96–97.

[50] Nightingale 2008, 68; Eder 2015, 233. Most glass seals had a stringing hole, and should also be classed as potential jewellery components.

[51] Yalouris 1968.

Fig. 2. The 'Mykenaia' fresco, from the Cult Centre at Mycenae, depicts a woman bedecked in necklaces and bracelets of different hues. Elite men also wore jewellery during this period (photo by M. Łapińska/P. Jurkowska).

as raw material ingots from glass production centres based elsewhere in the Eastern Mediterranean.[52] Archaeological evidence for this trading activity has been found on the Ulu Burun shipwreck: its cargo included an estimated 350 kg of glass ingots.[53]

During the Mycenaean Palatial Period (*c.* 1400–1200 BC),[54] mould-based 'mass production' of small glass jewellery components and seals was developed;[55] such moulds have been recovered from multiple sites[56] (Fig. 3), and the glass jewellery components produced in this way became widely distributed.[57] Gilded versions of these glass jewellery components are not an uncommon find in Mycenaean contexts (Fig. 3), generally funerary, with the gold usually completely covering at least one face. Less frequent were glass relief ornaments inlaid with gold foil (partial gilding), some of which also had holes to enable the insertion of gold wires to hang miniature gold foil and glass circles for additional decoration.[58]

Bronze Age Aegean scholars have tended to approach the gilding of all materials, including glass, predominantly from a socio-economic perspective, considering its primary motivation to have been a cost-effective use of a scarce resource.[59] This 'scarcity', however, was to a great extent artificial: a continuation of a widespread long-term socio-political trend to ensure that gold was primarily concentrated in the hands of a few, who employed it liberally.[60]

The gold jewellery component prototypes, upon which the glass versions were based, were hollow rather than solid and, therefore, did not incorporate significantly more gold than their gilded glass equivalents,[61] even though their overall visual effect was similar (Fig. 3). The latter, though, were far easier to produce and, perhaps more importantly, amenable to 'mass production' through the technique of moulding, as mentioned above. For instance, granulation, one of the most complex, intricate,

[52] Shortland 2016, 101.
[53] Pulak 2010, 867.
[54] Manning 2010, tab. 2.2.
[55] Müller 2012, 465. Moulds were also used for producing gold jewellery components, but were not necessary for the gilding of glass jewellery components (see discussion below).
[56] Tournavitou 1997, 213; Boulotis 2005.
[57] Eder 2015, 233.
[58] For an example, see Xenaki-Sakellariou 1985, 138 Γ 2293(3) pl. 39α, β.
[59] See, *e.g.*, Vermeule 1975, 29; E. Davis 1977, 95–98; Sherratt 2008, 218; Müller 2012, 466; Kaparou, Oikonomou 2022, 2.
[60] Schoenberger 2011. This may have been reinforced, for example, through sumptuary laws: see Aulsebrook 2020, 254–255.
[61] The difference is measured in fractions of a gram per ornament; only at scale would this have become apparent. It is worth reflecting that the efficient use of luxury materials may not have been a primary concern during production, especially considering that jewellery is often associated with conspicuous consumption.


Fig. 3. A – damaged gilded glass double argonaut bead, revealing the glass substrate below (photo by: M. Łapińska/P. Jurkowska); B – comparison of granulated hollow gold bead (left) against two gilded glass beads with faux granulation (right) (photo by M. Łapińska/P. Jurkowska); C – Mycenaean jewellery mould (photo by S. Aulsebrook).

and time-consuming goldworking techniques known to Mycenaean craftspeople,[62] was frequently used to decorate gold jewellery components. Yet its visual and haptic impact was replicable in glass with only a little additional carving of the initial mould. This meant that 'faux-granulated' glass jewellery components were effectively as easy to make as those without this form of decoration, once the mould had been appropriately modified. It is, therefore, more plausible that the gilding of glass jewellery components was not intended as a cost-effective use of a scarce resource, namely gold, but rather to allow the production output of gold-based jewellery components to be increased, just as moulding had achieved for glass-based jewellery.

Generally, since scarcity (real or artificial) is linked to perceived worth, a substantial increase in the production output of a particular object would be expected to correlate with a decrease in its individual value. Nevertheless, it is clear that, despite the introduction of moulding, glass retained its high social and economic value,[63] as demonstrated by the burial assemblages which prove that gold, glass, and both completely and partially gilded glass jewellery components were combined together, alongside versions made from precious stones like carnelian and amethyst.[64] The increased production output of both glass- and gold-based jewellery components was thus mainly absorbed by members of the highest echelons of Mycenaean palatial societies, and should not be interpreted as indicative of substantially widened access to this form of jewellery by a broader range of status groups.[65] Rather than challenging or undermining Mycenaean elite identity, moulding and gilding glass jewellery were apparently quickly accepted and rapidly assimilated into it. The increased production output was not seen as a threat, but instead actively encouraged.

Given that control over this industry was exercised by the ruling classes themselves, what could have motivated this increased elite-driven demand? From both iconography (Fig. 2)[66] and tomb assemblages,[67] it is evident that

[62] Konstantinidi-Syvridi *et al.* 2019.
[63] Hughes-Brock 2011.
[64] Nightingale 2008, 68.
[65] Although the distribution of glass objects within the cemeteries at certain sites, such as Thebes, show that this material did reach beyond the upper echelons of Mycenaean societies, the same is true for other high-status materials, like gold, and the more restricted range and quantity supports the interpretation of the imposition of sumptuary regulations (Dakouri-Hild 2012, 476).
[66] Other examples include the well-known 'Procession of Women' from Thebes (for close-up colour images of the latest reconstructions, which show the jewellery in excellent detail, see Aravantinos *et al.* 2018, figs 6–8) and recently published wall-painting fragments, also from Thebes, depicting three female figures wearing multiple bracelets on their forearms (Kountouri 2018, fig. 1).
[67] For example, jewellery components numbering in the hundreds excavated together as a cluster were found in Chamber Tombs 2, 11, and 91 at Mycenae (Xenaki-Sakellariou 1985, 54–57, 71–73, 254–262).

these Palatial-era jewellery components were intended to be used *en masse*, with multiple finished objects, such as necklaces and bracelets, being worn simultaneously, each made of tens or sometimes hundreds of components. This, though, was a continuation of trends already in evidence at the beginning of the Mycenaean era,[68] and cannot by itself explain the increased demand during the Palatial Period. However, with the formalisation of the social hierarchy that accompanied the emergence of the Mycenaean palatial system, perhaps the number of people who required these jewellery components, which would have acted as markers of social status and insignia, rapidly increased.[69] The frequency and variety of events at which such objects were worn may have grown as well,[70] the latter in particular perhaps necessitating the ownership of a broader range of jewellery types. It has also been suggested that the palatial authorities themselves sought to reinforce their dominant position in Mycenaean societies by direct production of objects, such as glass jewellery components, that visually materialised relations of dependence between palatial and non-palatial elites.[71] Is it conceivable that another social factor, hobby crafting, also had a role in this increased demand?

There is no question that the production of glass jewellery components must have taken place in specialist workshops. However, to manufacture finished objects incorporating gilded glass jewellery components, the production of the glass components themselves is only one stage in the overall *chaîne opératoire*, as can be seen in the simplified model presented in Fig. 4. Analysing this breakdown of the production process through an intra-cross-craft perspective reveals a number of reasons why its two final stages, namely gilding and assembly, were potentially suitable and desirable candidates for elite hobby crafting.

First, these finishing stages were less complex and risky than the majority of the other stages of the *chaîne opératoire*, which instead required specialist knowledge and equipment, a suitable workshop facility, skilled manipulation of tools, high physical activity, and included the potential for personal injury, especially for those unfamiliar with handling the materials and tools. In contrast, the gilding of glass jewellery components and their assembly into finished objects required:

- *knowledge and skill*: the necessary know-how comprised a limited series of simple gestures easily achievable even by a novice and transmissible through observation alone. These tasks' inherent repetition would improve hand-eye coordination, leading to increased speed and quality without extensive training or practice. Some glass jewellery components were gilded on just one side, which would have significantly reduced the skill requirement.[72]
- *equipment (materials)*: all essential materials could have been supplied as ready-to-use components (gold foil, glass components, other finished jewellery components, technical textile (thread, cord)/wire).[73] They required minimal further manipulation and would have been identical to the components already used by professional specialists working in the palatial workshops; the foil and/or cord/wire may have been supplied pre-cut to size (effectively presented as a kit).
- *equipment (tools)*: gilding required a miniature cutting tool and small tools of soft material, such as bone or wood, with smooth blunt ends to push the foil against the substrate.[74] Assembly can additionally

[68] Large-scale assemblages of jewellery components from the dawn of the Mycenaean era are known from tombs such as Tholos A at Kakovatos, which contained almost 600 amber beads arranged into three large collars, as well as numerous beads of gold, amethyst, and lapis lazuli (de Vreé 2021, 96–97, especially fig. 3).

[69] For an overview of the various formal offices attested in the Mycenaean Linear B documents, see Shelmerdine 2008, 128–139.

[70] The Mycenaean Linear B archives mention specific named festivals, such as the 'festival of the new wine', which appear to have been formal occasions at which offerings were made and provisions supplied by the palatial authorities, as part of a strategy of legitimisation (Lupack 2011, 208, 211).

[71] Bennet 2008, 151.

[72] The material saving amounted to a few milligrams and, therefore, similar to the difference between gilded and hollow gold jewellery components discussed above, is unlikely to have provided the primary motivation.

[73] Metal foils are known from outside workshop contexts (Konstantinidi 2001, 236). Specialised clasps were sometimes used for necklaces (J. Davis, Stocker 2018, 621), but many jewellery components originally deposited as complete pieces, such as necklaces, lack evidence for their fastening; it is possible the cord was simply knotted. Little is known about Mycenaean goldworking adhesives (Konstantinidi-Syvridi *et al.* 2019, 45), but they are not necessary for gilding (see Papadimitriou *et al.* 2016). Analysis of other media has revealed organic binding agents including egg and vegetable gums (Brecoulaki *et al.* 2012, 2873). These are simple to prepare and were probably already present in elite households for other domestic tasks.

[74] Konstantinidi-Syvridi *et al.* 2019. If necessary, also an adhesive applicator, which would most probably have been rather similar in appearance and material. A mould was not required, as the gold foil would be stretched over and shaped directly onto the glass jewellery component itself (see Papadimitriou *et al.* 2016 for this technique). The foil used for gilding, although not as fragile as modern gold leaf, was thinner and more delicate than the thicker metal plate used for hollow gold jewellery components shaped in stone moulds. The use of the latter to 'pre-shape' the gold foil beforehand would have introduced a wholly unnecessary and highly risky step with limited practical benefit, given that the glass jewellery component would have contracted when cool, and the exact shape of each varied slightly due to inconsistencies during the moulding and post-moulding processes.

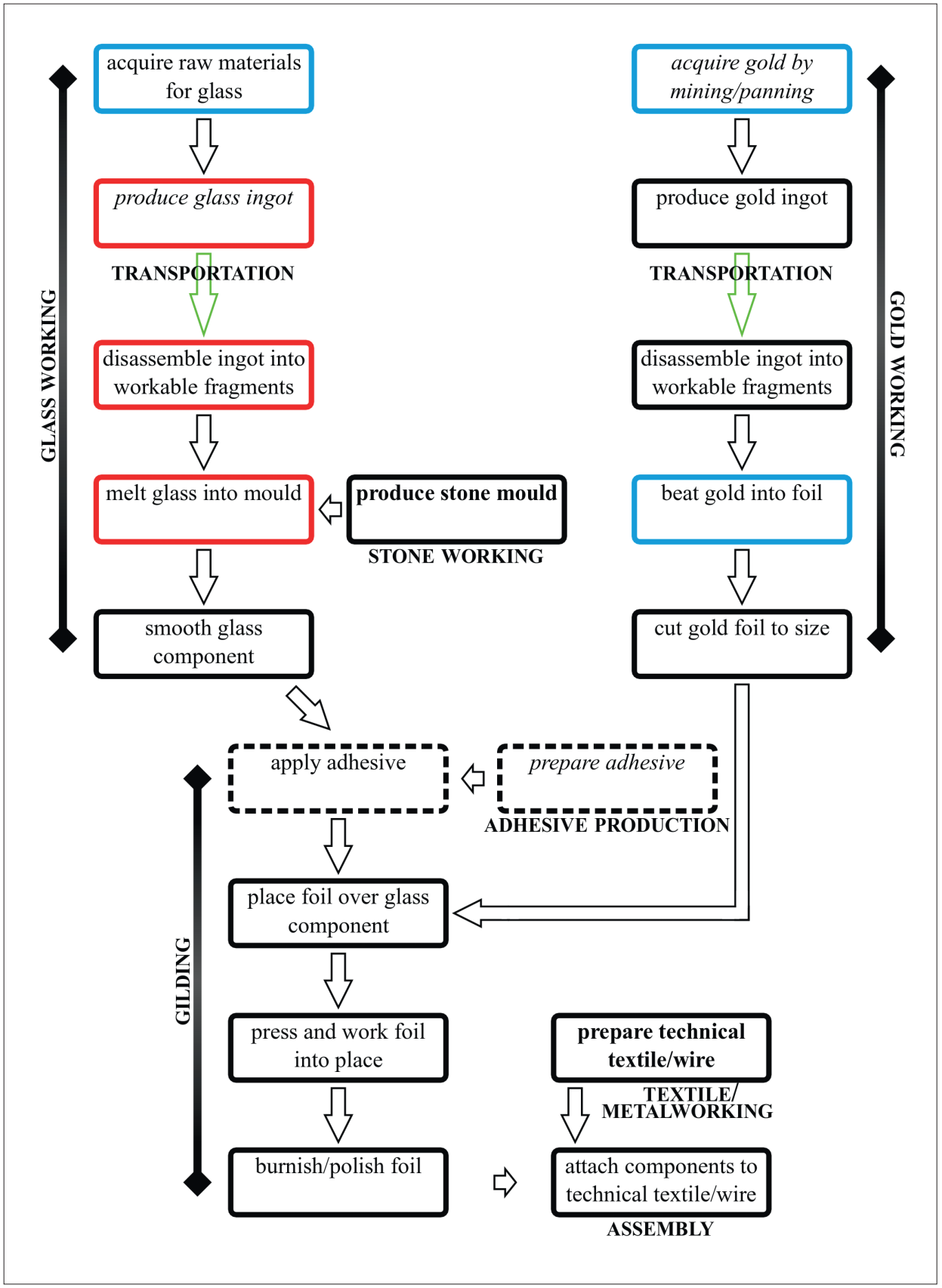


Fig. 4. Direct *chaîne opératoire* for the production of Mycenaean objects that incorporated gilded glass jewellery components. Risky tasks are highlighted in red, physically strenuous tasks in blue. Tasks requiring specialist knowledge are in italics, tasks requiring specialist skill in bold. Optional tasks are marked by broken lines (diagram by S. Aulsebrook).

require a needle. These tools are all of simple design, and suitable candidates were probably already present in elite households for other domestic tasks. Versions made from high-status materials may have enhanced the experience.[75]

- *equipment (facilities)*: the majority of these two processes can take place within the hands; components and equipment could have been stored on a flat surface or held by another household member.[76] Good lighting was essential, and readily available in Mycenaean elite residences. Therefore, a dedicated workshop facility was not required for either of these two stages.
- *physical activity*: both are delicate, quiet, repetitive, and absorbing tasks, needing only moderate concentration that would decrease with proficiency, allowing attention to be simultaneously directed towards other non-manual activities, such as conversation.
- *personal risk*: if used, adhesive could potentially cause mess; however, this stage is relatively quick and performed only once per item. This task was suitable for delegation to a lower-status household member. Cutting of the foil and technical textile/wire (if not provided as a pre-cut kit) would not have involved strenuous effort and, therefore, the risk of harm was low.
- *outcome risk*: gilding responds well to increased investment of time and patience, as it can be steadily reworked using successively finer and softer tools to improve its visual appearance. Minor tears could have been repaired by more skilled practitioners. Only a single jewellery component was ever 'at risk' at any one time, minimising the impact of mistakes. Problems that may have been encountered during assembly (*e.g.*, damaging components by dropping them) were comparable to those associated with the handling of the finished objects.

Every practical aspect of these two stages, gilding and assembly, was therefore compatible with the involvement of elite hobby crafters.

Secondly, there is a good fit between gilding and assembling Mycenaean glass jewellery components and the criteria for elite hobby craft involvement listed above. Glass and gold were highly valued imports with attractive visual and haptic qualities. Both tasks are amenable to collaboration, suitable within social settings, and can be easily learnt through observation and communication of discursive knowledge. Elite Mycenaean households were economically able to access comparable objects, like hollow gold and precious stone jewellery components (Fig. 2). The range of available jewellery component types meant that the completed pieces were highly customisable, imbuing individualised personal effort that could provide a suitable foundation for distinctive object biographies. Jewellery is a highly intimate possession eminently suitable for gift exchange and curation for future generations as heirlooms. The appearance of gilded glass jewellery in Mycenaean graves demonstrates it was considered appropriate for socially and emotionally charged actions. It must also be acknowledged that both gilding and the assembly of jewellery are activities pursued by modern hobby crafters, demonstrating that neither task is so complex that they should be regarded as suitable for professionals only.

Thirdly, detailed microscopic analysis of gilded glass jewellery components has shown that a range of quality outcomes was tolerated.[77] Folds, puckering, gaps between the foil and glass, and other minor flaws, created during the production process and not resulting from post-depositional damage,[78] are clearly evident on a small proportion of examples (Fig. 5). These would have been rather visible due to the way such flaws distort the reflectivity of the gold. Nevertheless, these poorly gilded glass jewellery components were not excluded from burial assemblages. One possible explanation for this was that the identity of the person who gilded those particular glass components was considered more meaningful than the visual appearance of the gilding itself.

Finally, the assembly of jewellery components into composite objects is likely to have occurred multiple times. Breakage[79] and sagging of the cord/wire must have been common, especially for heavier necklaces. Within the overarching framework of acceptable cultural practice, which was of especial relevance as these jewellery pieces would have played an important role in communicating aspects of status and social identity, their composite nature would have also provided opportunities for integrating newly acquired components, updating older pieces to fit changing tastes, and experimentation with decorative schemes. It is notable that, although based upon a limited repertoire of jewellery components that demonstrate substantial uniformity in terms of form, decorative motifs, and size,[80] the precise selection of

[75] Suitable ivory tools are known from Mycenaean contexts, *e.g.*, Konstantinidi-Syvridi *et al.* 2020, fig. 6.2.

[76] Tools and components in unexpected contexts should, therefore, be considered potentially indicative of hobby crafting.

[77] Aulsebrook forthcoming.

[78] The criteria for making this assessment will be presented in detail in the forthcoming paper. The presence of such flaws has also been identified by other scholars, *e.g.*, Xenaki-Sakellariou 1985, 267, Γ 4547(1–3), pl. 132, ANM 4547.

[79] J. Davis, Stocker 2018, 616.

[80] See the catalogue of forms presented in Xenaki-Sakellariou 1985.

Fig. 5. Four poorly gilded Mycenaean glass jewellery components with ivy-leaf decoration. Because the gold foil was not thoroughly pressed into the contours of the underlying design, the details have only been partially and vaguely transferred onto the foil (it is not possible for such traces to be erased by post-depositional damage), and consequently the foil itself has peeled away from the bead; excess folds are also visible (photo by M. Łapińska/P. Jurkowska).

jewellery components varies significantly between burial assemblages during the Mycenaean Palatial Period, including by quantity and material, as well as the three characteristics listed already.[81] Their use as status markers or insignia, therefore, did not rely upon consistent repetition of pre-determined sets. This would have provided an opening for individualisation, design collaboration, and the exchange of individual components as well as finished pieces. Moreover, the acknowledged physical and conceptual proximity between specialist workshops for jewellery components and the elite palatial authorities[82] should be considered, from an intra-cross-craft perspective, as providing the necessary linkage to potentially foster the development of hobby crafting. At the very least, design input from the patrons of these workshops cannot be precluded, and may help explain the curious conservatism observable in the moulded glass industry.[83]

## Discussion

It is unlikely that hobby crafting could ever be proven to exist from archaeological evidence alone as, even though certain signs, such as variability in the quality of gilding, could indicate such a possibility, they can also be interpreted in alternative ways, such as the involvement of apprentices, or the need to meet time constraints. As noted during the discussion of modern hobby crafting, for certain categories of objects there are no reasons why those made by professional specialists and those made by highly skilled hobby crafters should not look alike. Furthermore, iconographic evidence to support this hypothesis is unlikely to be recovered. Certain other high-status 'beyond subsistence time' activities, like hunting,[84] are shown, and the archaeological remains of socially stratified feasting events have been uncovered.[85] However, Mycenaean iconography, although clearly geared towards the concerns of the elite, depicted only a limited repertoire of subjects, and no examples of production scenes are known.

Nevertheless, the gilding and assembly of Mycenaean Palatial-era glass jewellery components have provided an opportunity to examine how the distinctive characteristics of hobby crafting may be visible in the archaeological record. These processes meet the four criteria that form the enabling framework for elite hobby crafting as identified in the first half of this paper: 1) glass jewellery

[81] This also applies at the same site and even within the same cemetery; compare, for instance, the jewellery components from Chamber Tombs 93, 94, and 95 in the Asprochoma/Agriosykia cemetery at Mycenae, which differ considerably by form and proportion of materials present (Xenaki-Sakellariou 1985, 267–273).

[82] Bennet 2008.

[83] Kaparou, Oikonomou 2022, 2. Significant innovation may have also threatened the hypothesised involvement of hobby crafters.

[84] Immerwahr 1989, 129–133.

[85] Bendall 2004.

was strongly associated with elite individuals during the Mycenaean Palatial Period, and the two finishing stages of gilding and assembly were both practically suitable for hobby crafting; 2) high-status materials were used, particularly gold and glass, which was, at the time, an exotic import; 3) textual and iconographical evidence point to the existence of elite social gatherings, which would provide the potential to develop shared crafting communities, and the techniques themselves were highly transmissible; 4) the infusion of personal effort through gilding and combining jewellery components into individualised objects that acted as Aegean-specific cultural identity markers would have made it possible to build distinctive biographies for these jewellery pieces, which were used for socially significant actions (status signalling, funerary gifts, *etc*.).

Therefore, the apparently quick acceptance and rapid assimilation of moulded glass jewellery components into Mycenaean elite identity may have, at least in part, been stimulated by their potential to contribute to the process of forming and maintaining elite identity during the Palatial Period through their integration into elite hobby crafting. This does not mean that professional specialists based in palatial workshops would not have also continued to gild and assemble jewellery components; as in the modern world, even if this form of hobby crafting did occur, it would have accounted for only a small proportion of the total production output. Moreover, although jewellery has formed the focal point for this discussion, this does not, of course, preclude active elite participation in other craft activities within the Mycenaean world or beyond.

However, the purpose of this paper is not to prove beyond doubt that certain elements of Mycenaean Palatial-era jewellery production were elite hobby crafts – an all but impossible task – but to raise awareness of this mode of production as a viable prospect within past societies. Indeed, the consideration of hobby crafting in such societies should complement, not undermine, existing models of craft production. It has been argued that craft practice is, and always will be, a necessary marker of the human condition.[86] Yet, the unwillingness to examine craft beyond economic necessity, due to preconceptions about the Industrial Revolution and its re-framing of relations between producers and consumers, has effectively led to interpretations that exclude certain social groups, namely high-status individuals, from being active craft practitioners, simply because they lacked an economic incentive. Ultimately, this is rooted in the age-old intellectual preference for art over craft which, despite acknowledgement and lamentation, lingers on in academic discourse. It is necessary to make room in our interpretations for elite individuals who were not only patrons of master craftspeople and commissioners of great works of art, but also potential producers of artefacts themselves. Perhaps not all of the objects they crafted will necessarily meet our expectations in terms of aesthetic merit, but it is conceivable that these high-status practitioners may have numbered amongst their ranks some of the foremost specialists of their time. Although it is unlikely that hobby crafting in premodern societies, whatever form it took, had a substantial economic impact, at certain moments its social importance, therefore, may have been considerable.

**Bibliography:**

Amin A., Roberts J. 2008, Knowing in action: beyond communities of practice, *Research Policy* 37, 353–369.

Aravantinos V. L., Fappas I., Angelidis P., Louka M.-P., Sepetzoglou N. 2018, The female figure in the pictorial tradition of Mycenaean Boeotia: critical overview and technical observations, in: A. G. Vlachopoulos (ed.), *Χρωστήρες. Paintbrushes. Wall-Painting and Vase-Painting of the Second Millennium BC in Dialogue: Proceedings of the International Conference on Aegean Iconography Held at Akrotiri, Thera, 24–26 May 2013*, Athens, 426–449.

Atkinson P. 2006, Do it yourself: democracy and design, *Journal of Design History* 19.1: 1–10.

Aulsebrook S. 2020. Understanding the role of metal within the Late Bronze Age community at Mycenae: challenges and potential approaches, *Polish Archaeology in the Mediterranean* 29.2, 237–264.

Aulsebrook S. Forthcoming. Placing gilding under the microscope: observations on Mycenaean gilded glass beads.

Bamforth D. B., Finlay N. 2008, Introduction: archaeological approaches to lithic production skill and craft learning, *Journal of Archaeological Method and Theory* 15, 1–27.

Bamforth D. B., Hicks K. 2008, Production skill and Paleoindian workshop organization in the Medicine Creek drainage, Southwest Nebraska, *Journal of Archaeological Method and Theory* 15, 132–153.

[86] Brysbaert, Hochscheid 2021, 16.

Beck T. 2002 [1997], *Gardening with Silk and Gold: a History of Gardens in Embroidery*, Newton Abbot.

Bendall L. 2004, Fit for a king? Hierarchy, exclusion, aspiration and desire in the social structure of Mycenaean banqueting, in: P. Halstead, J. C. Barrett (eds), *Food, Cuisine and Society in Prehistoric Greece*, Sheffield Studies in Aegean Archaeology 5, Oxford, 105–135.

Bennet J. 2008, PalaceTM: speculations on palatial production in Mycenaean Greece with (some) reference to glass, in: C. M. Jackson, E. C. Wager (eds), *Vitreous Materials in the Late Bronze Age Aegean,* Sheffield Studies in Aegean Archaeology 9, Oxford, 151–172.

Boulotis Ch. 2005, Οι δυναμική της μρτρας στην τυποποίηση και μαζικοποίηση «εικόνων» κατά την αιγαιακή Υστερη Χαλκοκρατία, *Αρχαιολογία και Τέχνες* 94, 83–93.

Brecoulaki H., Andreotti A., Bonaduce I., Colombini M. P., Lluveras A. 2012, Characterization of organic media in the wall-paintings of the "Palace of Nestor" at Pylos, Greece: evidence for *a secco* painting techniques in the Bronze Age, *Journal of Archaeological Science* 39, 2866–2876.

Brysbaert A., Hochscheid H. 2021, Craft, ownership, and identity: making, thinking, and being (together), in: H. Hochscheid, B. Russell (eds), *The Value of Making: Theory and Practice in Ancient Craft Production*, Studies in Classical Archaeology 13, Turnhout, 13–34.

Clark J. E., Parry W. 1990, Craft specialization and cultural complexity, *Research in Economic Anthropology* 12, 289–346.

Csikszentmihalyi M. 1975, *Beyond Boredom and Anxiety*, San Francisco.

Dakouri-Hild A. 2012, Making la différence: the production and consumption of ornaments in Late Bronze Age Boeotia, in: M.-L. Nosch, R. Laffineur (eds), *Kosmos: Jewellery, Adornment and Textiles in the Aegean Bronze Age. Proceedings of the 13th International Aegean Conference/13e Rencontre égéenne internationale, University of Copenhagen, Danish National Research Foundation's Centre for Textile Research, 21–26 April 2010*, Aegaeum 33, Leuven, Liege, 471–481.

Damm C. 2000, Time, gender and production: a critical evaluation of archaeological time concepts, in: M. Donald, L. Hurcombe (eds), *Gender and Material Culture in Archaeological Perspective*, Houndmills, 110–122.

Davis E. N. 1977, *The Vapheio Cups and Aegean Gold and Silver Ware*, Outstanding Dissertations in the Fine Arts, Second Series, New York.

Davis J. L., Stocker S. R. 2018, The gold necklace from the grave of the Griffin Warrior at Pylos, *Hesperia* 87.4, 611–632.

de Vreé C. 2021, The tholos tombs of Kakovatos: their place in Early Mycenaean Greece, in B. Eder, M. Zavadil (eds), *(Social) Place and Space in Early Mycenaean Greece: International Discussions in Mycenaean Archaeology, October 5–8, 2016, Athens*, Mykenische Studien 35, Vienna, 85–106.

Eder B. 2015, Stone and glass: the ideological transformation of imported materials and their geographic distribution in Mycenaean Greece, in: B. Eder, R. Pruzsinszky (eds), *Policies of Exchange: Political Systems and Modes of Interaction in the Aegean and the Near East in the 2nd Millennium B.C.E. Proceedings of the International Symposium at the University of Freiburg Institute for Archaeological Studies, 30th May–2nd June 2012*, Oriental and European Archaeology 2, Wien, 221–242.

Ferguson J. R. 2008, The when, where, and how of novices in craft production, *Journal of Archaeological Method and Theory* 15: 51–67.

Hackney F. 2013, Quiet activism and the new amateur: the power of home and hobby crafts, *Design and Culture* 5, 169–193.

Hickman J. 2012, Gold and silver jewelry production in Prepalatial Crete, in: M.-L. Nosch, R. Laffineur (eds), *Kosmos: Jewellery, Adornment and Textiles in the Aegean Bronze Age. Proceedings of the 13th International Aegean Conference/13e Rencontre égéenne internationale, University of Copenhagen, Danish National Research Foundation's Centre for Textile Research, 21–26 April 2010*, Aegaeum 33, Leuven, Liege, 523–529.

Hughes-Brock H. 2011, Exotic materials and objects sent to – and from? – the Bronze Age Aegean. Some recent work and some observations, in: A. Vianello (ed.), *Exotica in the Prehistoric Mediterranean,* Oxford and Oakville, 99–114.

Immerwahr S. A. 1989, *Aegean Painting in the Bronze Age*, University Park, PA.

Kaparou M., Oikonomou A. 2022, Mycenaean through Hellenistic glass in Greece: where have we got to?, *Archaeological and Anthropological Sciences* 14.92, 1–15.

Konstantinidi E. M. 2001, *Jewellery Revealed in the Burial Contexts of the Greek Bronze Age*, British Archaeological Reports International Series 912, Oxford.

Konstantinidi-Syvridi E., Papadimitriou N., Goumas A., Philippa-Touchais A., Prévalet R. 2019, Experimenting on Mycenaean goldworking techniques: the case of the granulated cone, in: C. Souyoudzoglou-Haywood, A. O'Sullivan (eds), *Experimental*

*Archaeology: Making, Understanding, Story-telling. Proceedings of a Workshop in Experimental Archaeology: Irish Institute of Hellenic Studies at Athens with UCD Centre for Experimental Archaeology and Material Culture, Dublin, Athens 14th–15th October 2017*, Oxford, 43–52.

Konstantinidi-Syvridi E., Papadimitriou N., Goumas A. 2020, Reviving the techniques of the Mycenaean goldsmith, in: M. Panagiotaki, I. Tomazos, F. Papadimitrakopoulos (eds), *Cutting-Edge Technologies in Ancient Greece: Materials Science Applied to Trace Ancient Technologies in the Aegean World. Proceedings of Two Conferences Held in Rhodes, 12–14 January 2018 and 11–13 January 2019*, Oxford and Philadelphia, 55–61.

Kountouri E. 2018, Part of an iconographic "koine"? Discussing new wall-paintings from Thebes, in: A. G. Vlachopoulos (ed.), *Χρωστήρες. Paintbrushes. Wall-Painting and Vase-Painting of the Second Millennium BC in Dialogue: Proceedings of the International Conference on Aegean Iconography Held at Akrotiri, Thera, 24–26 May 2013*, Athens, 450–463.

Kuijpers M. H. G. 2018, The Bronze Age, a world of specialists? Metalworking from the perspective of skill and material specialisation, *European Journal of Archaeology* 21, 550–571.

Lupack S. 2011, A view from outside the palace: the sanctuary and the damos in Mycenaean economy and society, *American Journal of Archaeology 115(2),* 207–217.

Maines R. P. 2009, *Hedonizing Technologies. Paths to Pleasure in Hobbies and Leisure*, Baltimore.

Manning S. W. 2010, Chronology and terminology, in: E. H. Cline (ed.), *The Oxford Handbook of the Bronze Age Aegean (ca. 3000–1000 BC)*, Oxford, 11–28.

Müller W. 2012, Concepts of value in the Aegean Bronze Age: some remarks on the use of precious materials for seals and finger rings, in: M.-L. Nosch, R. Laffineur (eds), *Kosmos: Jewellery, Adornment and Textiles in the Aegean Bronze Age. Proceedings of the 13th International Aegean Conference/13e Rencontre égéenne internationale, University of Copenhagen, Danish National Research Foundation's Centre for Textile Research, 21–26 April 2010*, Aegaeum 33, Leuven, Liege, 463–469.

Nightingale G. 2008, Tiny, fragile, common, precious. Mycenaean glass and faience beads and other objects, in: C. M. Jackson, E. C. Wager (eds), *Vitreous Materials in the Late Bronze Age*, Sheffield Studies in Aegean Archaeology 9, Oxford, 64–104.

Papadimitriou N., Konstantinidi-Syvridi E., Goumas A. 2016, Technological study and interpretation of rhomboid accessories from Grave Circle A, Mycenae, in: J. Driessen (ed.), *Ra-pi-ne-u: Studies on the Mycenaean World Offered to Robert Laffineur for His 70th Birthday*, Aegis 10, Louvain-la-Neuve, 245–262.

Pulak C. 2010, Uluburun shipwreck, in: E. H. Cline (ed.), *The Oxford Handbook of the Bronze Age Aegean (ca. 3000–1000 BC)*, Oxford, 862–876.

Richmond S. 2020, Aleene and Hazel: tacky ladies and handicrafts for fun, *The Journal of Popular Culture* 53, 547–578.

Schoenberger E. 2011, Why is gold valuable? Nature, social power and the value of things, *Cultural Geographies* 18(1), 3–24.

Shelmerdine C. W. 2008, Mycenaean society, in: Y. Duhoux, A. Morpurgo Davies (eds), *A Companion to Linear B: Mycenaean Greek Texts and their World*, Bibliothèque des cahiers de l'Institut de Linguistique de Louvain 120, Leuven, 115–158.

Sherratt S. 2008, Vitreous materials in the Bronze and Early Iron Ages: some questions of values, in: C. M. Jackson, E. C. Wager (eds), *Vitreous Materials in the Late Bronze Age*, Sheffield Studies in Aegean Archaeology 9, Oxford, 209–232.

Shortland A. J. 2016, Towards an understanding of the origin of Late Bronze Age Greek glass, in: E. Kiriatzi, C. Knappett (eds), *Human Mobility and Technological Transfer in the Prehistoric Mediterranean*, British School at Athens Studies in Greek Antiquity, Cambridge, 94–101.

Shunkov M. V., Fedorchenko A. Yu., Kozlikin M. B., Derevianko A. P. 2020, Initial Upper Palaeolithic ornaments and formal bone tools from the East Chamber of Denisova Cave in the Russian Altai, *Quaternary International* 559, 47–67.

Tournavitou I. 1997, Jewellers moulds and jewellers workshops in Mycenaean Greece. An archaeological utopia, in: C. Gillis, C. Risberg, B. Sjöberg (eds), *Trade and Production in Premonetary Greece: Production and the Craftsman, Proceedings of the 4th and 5th International Workshops, Athens 1994 and 1995*, Studies in Mediterranean Archaeology Pocket Book 143, Jonsered, 209–256.

Ulrich K. T., Ellison D. J. 2005, Beyond make-buy: internalization and integration of design and production, *Production and Operations Management* 14, 315–330.

Vermeule E. T. 1975, *The Art of the Shaft Graves of Mycenae,* Norman, OK.

Xenaki-Sakellariou A. 1985, *Oi Thalamotoí Táfoi ton Mykinón, Anaskafís Chr. Tsoúnta (1887–1898)*, Paris.

Yalouris N. 1968, An unreported use for some Mycenaean glass paste beads, *Journal of Glass Studies* 10, 9–16.