Learning from arts and crafts in the Pleistocene

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Abstract

In Palaeolithic research, art is often seen to address meaning and identity whilst craft (usually stone tools) responds to function and planning. We argue, however, that specialists can benefit by dropping this distinction. Using examples from ethnography and experiment we shall show that craft was also rich with meaning in the Pleistocene. There are parallels in the way materials are handled and transformed, the way individuals learn techniques and pass them on, in which expertise is supported at a community level, and in the symbolic and linguistic cultural elements that underpin these activities.

Keywords: craft; skill; teaching; learning; lithics.

In Palaeolithic research, the artistic act has often been seen to be about meaning and identity whilst craft is seen as a response to base matters of function, manufacture and planning. This split has caused the studies of art and craft to develop a vocabulary and history of investigation that are quite different. Following others (e.g. White 1992), we shall argue that this division between art and craft is an artificial one; it hinders the advancement of our understanding of Pleistocene Art. Where we wish to go further, however, is to suggest that the study of art and craft in the Palaeolithic are both faced with the same interpretive gulf: reconciling detailed studies of the making of individual items or images, with grand theoretical narratives that explain how behaviour in this domain works.

So, for example, the study of art has detailed descriptions of the creation of individual images, such as the Chinese Horses at Lascaux (Aujoulat 2005), the spotted horses at Pech-Merle (Lorblanchet 1995a, b), the rhinoceroses at Chauvet (Fritz & Tosello 2007), or the preparation of pigments (Clottes 1993), as well as general theories which suggest that imagery might be related to its use as a teaching aid for specific hunting situations (Mithen 1988), as a mechanism for creating or maintaining alliances (Gamble 1982), as a means of representing altered states of consciousness (Lewis-Williams & Dowson 1988). Likewise, there are classic case studies that set out detailed descriptions of the refitting of prepared cores (Schlanger 1994), the presence of experienced and novice knapping events (Pigeot 1990) or the replication of elaborate bifacial knives (Apel 2001), as well as grand theories about technology and subsistence risk (Torrence 1983, 1989), mobility and technological
organisation (Shott 1986), technological efficiency and tool curation (Bamforth 1986) and so on.

Both approaches result in coherent publications, and yet, it is impossible to reconcile the particular descriptions with the grand narratives. It seems to us, however, that the study of Palaeolithic craft (stone tool-making) has developed further, by finding a way to build up a larger theoretical and behavioural picture from the individual detailed descriptions by investigating the processes of learning and teaching, the knowledge and techniques involved, how and where they are expressed, and the development of individual expertise. They have done this in the context of a long experimental tradition that has facilitated the development of a visual and verbal ‘vocabulary’ to describe what is present. We shall argue that Palaeolithic art studies can gain from this work to stimulate a new series of questions and observations.

1. Distinguishing art from craft

A number of recent papers by Moro Abadia and Gonzalez Morales (Moro Abadia 2006; Moro Abadia & Gonzalez Morales 2003, 2005, 2007) have highlighted the historical and intellectual roots that lie behind some of our theoretical problems in the research of parietal and mobiliary art in the Palaeolithic. Two particular discussions are worth describing in detail.

Moro Abadia (2006) has shown that our contemporary distinction between ‘mobiliary art’ and ‘parietal art’ can be traced back to late 19th century problems recognising the antiquity of parietal images. Early excavations by the likes of Lartet and Christy (1875) had already revealed the existence of a number of decorative images on bone pieces, as well as beads and pendants. These were interpreted as craft items; craft was at that time often portrayed as the product of primitive societies rather than the fine arts of Europe. Consequently it was difficult to recognise the painted and engraved images of animals on cave walls as being Palaeolithic in age. But once recognised as ‘art’, earlier pieces were relegated to mere craft items that were made to a design and determined more by their tools, materials and purposes. The result was a separation between the study of mobiliary and parietal art.

In another paper, Moro Abadia and Gonzalez Morales (2007) reflect on whether we should use the word ‘art’ to describe Palaeolithic images. ‘Art’ brings with it the associated intellectual baggage of the ‘artist’, an individual whose works are primarily formed by and, therefore, express a concern with meaning and higher thought: the sort of ‘artist’ that we have been encouraged to see in the great Renaissance (and later) painters. Unfortunately, this ‘artist’ and the ‘art’ that s/he produces is an intellectual construct created for a specific historical conjuncture of political, social and economic factors; as such it determines a particular form of intellectual enquiry.

Palaeolithic images, we might argue, are not ‘art’ works produced by great ‘artists’; we need a different descriptive terminology, and a different manner of enquiry.

On account of this theoretical entanglement of art and image, artist and craftsman, design and invention, meaning and purpose, it is not surprising that recent studies of Palaeolithic imagery have turned their back on earlier approaches that searched for stylistic continuities and change, or sought the underlying meaning or purpose of Palaeolithic images. In a new ‘Post-Stylistic’ mindset (Lorblanchet & Bahn 1995), they are returning to the basics of recording and description of images (Lorblanchet 1995),
sequencing their construction (Fritz & Tosello 2007; Aujoulat 2005), and identifying the paints used in their making (Clottes 1993; Chalmin 2003, 2004).

Whilst the papers by Moro Abadia and Gonzales Morales add clarity to our own intellectual history, these same theoretical issues have been faced by others (Folklorists, Anthropologists, Philosophers, Art Historians, Ethnographers, Museum specialists) usually in the context of attempting to appreciate the objects (for example: craft items, practical everyday objects), performances (storytelling and folkdance), and images (ethnographic, primitive, tourist arts), that stand in the shadow of Fine Art. These specialists have negotiated their way through some of these problems by making observations about tradition and creativity, technique, skill, design, and language involved in the making of things, and by following the work of individual makers to understand how they have learned their skills and express themselves through their actions. Central to much of this work is a concentration on the act of making rather than on the manufactured outputs, a concern with the technical act, its expression and where it comes from. Excellent examples include work by Jones (1975) on the chairmakers of the Cumberlands, and Carpenter (1961) and Graburn (1976) in their discussion of Inuit craftsmen ‘lost’ in the act of making rather than being engaged in the achievement of a required product.

2. Ethnographic parallels

Stone tool production by living flint knappers is not purely functional, even when the tools are made for a functional purpose. Stone adzes made in Papua New Guinea (Pétrequin & Pétrequin 2000) are used to chop down trees and therefore must be made to specific dimensions, yet despite these constraints, apprentices often make adzes that are too small to be used (Stout 2002). The adze makers of Langda, in the highlands of Papua New Guinea, continued to knap stone adzes in 1999 despite the availability of metal tools, as Stout (2002) reports, as a matter of identity and pride. The activity of knapping itself is enveloped in a rich mythology, mentioning the goddess of the river who produces the boulders of raw material. The Langda knappers employ a large verbal repertoire of terms related to their craft, referring to areas on the adze, types of accidents, types of flakes, and actions. Particular attention can be drawn to one aspect of terminology: there are more than 14 names for different raw materials; each term refers to a specific combination of attributes such as the ease of flaking, the durability of the tool, and other qualities that are dynamically experienced during the knapping activity (Stout 2002). Tentative names may be given at first boulder-collection, but they often change throughout the reduction process until after grinding. This illustrates something of the Langda knappers' perception that the entire life of an adze is one continuous thing, and that craft activity, its meaning, the functional use of the tool, and the artistic enjoyment in knapping, cannot be dissociated from one another. Our proposal is that Palaeolithic art can be included in the larger category of craft activity, without losing any of its artistic focus, since art and craft are not separate activities. This is compatible with Benekendorff's view that "the craft of shaping forms in stone began (art and tool)" at the same time (Benekendorff, pers. comm. 2010; see also Benekendorff 1990).

These studies have had a significant impact on the study of Palaeolithic craft – the interpretation of lithic production – and here we shall suggest that where once it was necessary to separate Palaeolithic Art from craft, now there is as much to be gained...
by repositioning the study of art and image making within that of craft activity in general.

3. Language and terminology for describing and analysing art/craft

3.1. Cognigrams

In lithic technology, the chaîne opératoire approach has recently been updated with new methods of description that bring together all levels of analysis, from the basic elementary gestures of the individual up to the environment and society in which the activity is taking place. These new methods are ideal for crossing the gap between the grand theoretical narratives and the detailed descriptions, at least for tool-making and -using. Here we argue they are perfectly suited to studying Pleistocene art. The method of Karlin and Julien (1994) is called the ‘techno-psychological approach to the knapping process’. As applied to Magdalenian blade production, it includes intentions, phases (preparation, material procurement, testing, reorienting the core, etc.), sequences of actions which can be iterative, operations on materials, and gestures. The levels of analysis are clearly indicated, with a hierarchy from the concepts to the phases of subgoals to ordered operations to basic gestures. Haidle's (2006, 2009) method of ‘cognigrams’ incorporates the individual's basic motivation (such as hunger), his/her perception of the problem and the related subproblems that need to be solved, the action units, the effects of the actions, and the elements involved in the whole process. This ‘thought-and-action process’ is structured according to phases (Haidle 2009: 63), grouping together the different levels of analysis into temporal units of activity.

We propose that Haidle's (2009) cognigrams can be a useful way to study the clustering of activity that we see in Palaeolithic cave art. By using the concept of ‘phases’ we can distinguish units of activity that might correspond to spatial organisation of finds. For example, following Haidle's (2009: 68) cognigram of ‘Hunting of Galago senegalensis by chimpanzee’, we briefly outline a very simplified version of cave painting. The activity might begin with the perception of a basic desire to produce an image of a bison on a wall. This leads to several sub-goals: need of paintbrushes, need of a suitable cave, need of pigments, and so on. The first phase would be to select a suitable potential cave wall to paint on. The second phase might involve producing the tools needed for painting. This requires many sub-goals in which different raw materials are selected and worked. The next phase might be to produce the pigments, which again involves complex sub-goals and ordered actions to mine, grind, mix, and test the pigments. Next is the tool-use phase, in which the tools and pigments are combined to begin producing the bison image on the selected cave wall. Of course, there would be an intermediate phase where suitable lighting is identified and prepared. Finally several series of actions complete the bison image, to satisfy the initial basic desire. Although this is an extremely simplified description, we believe it shows how the concept of cognigrams can effectively separate the different activity units according to spatial location and temporal order. At the same time, it joins together the cognitive psychological aspect of the cave painting with the motor execution of the task. This leads to our proposal about the importance of the terms technique and method for helping us understand the conceptual and motor learning of that any kind of craft activity.
3.2. Technique and method

Important and useful concepts for understanding skill acquisition are declarative and procedural memory, which relate to a distinction between technique and method. Teaching can take many forms, and is only rarely declarative, as for example in the European school classroom. Ethnographic examples show us that human teaching can be procedural (Hewlett 2010; de Beaune 2002; Pearce 2005), and is not necessarily about verbal reasoning; it can draw on imagery (Steele 1997). Learning is a process experienced by anybody who does an activity. Whether the person consciously intends to improve their performance or not, the simple act of repeating an action causes learning to occur. Learning can be declarative or procedural (Star 2000).

Motor skill results from motor learning. In neuroscience, learning is defined as a permanent neuronal reorganisation of motor cortex in the brain, which depends on changes at the molecular level (Sanes & Donoghue 2000; Thomas et al. 2000; Weissman & Compton 2003; Wu et al. 2004).

The distinction between method and technique must be stressed here, since it is frequently ignored in English-language archaeological publications. Inizan et al. (1995, 1999: 13) divide technology into its two parts, method and technique:

METHOD: an orderly set of rational procedures devised for the purpose of achieving an end. The method followed to create a prehistoric tool is thus an orderly sequence of actions carried out according to one or more techniques, and guided by a rational plan.

TECHNIQUE: the physical modality according to which raw material is transformed. The practical manner of accomplishing a task, i.e. one of the procedures of the knapping craft (e.g. direct percussion, anvil percussion, use of hard or soft hammer or a punch, pressure-flaking, aspects of body position, etc.)

These two levels of analysis can be seen to correspond to the two levels of learning that characterise art/craft skill. As proposed by authors reviewed in Gibson (1991), these refer to 'techniques' as procedural knowledge and 'technology' as declarative knowledge. Techniques encompass sensorimotor skills and action sequences (which correspond to the techniques and methods mentioned here) and technology comprises awareness of social, environmental, and scientific principles.

Ploux (1989, 1991) has divided know-how into three psycho-motor aspects: the conceptual scheme or planning, the realisation of the chaîne opératoire through operative ideational know-how, and the execution of gestures through physical motor know-how. The first two correspond to Byrne & Byrne's (1991) 'program level', while the last one is their 'action level'. These elements (Apel 2001; Karlin & Julien 1994: 159; Roux 1990; Roux et al. 1995; Steele 1999) can be taken up to suggest that human technology requires (1) techniques, namely precise and accurate gestures; and (2) methods, namely long reduction sequences with many embedded levels of sub-goals (Pelegrin 2001-02, 2005).

While some aspects of knapping must be learned procedurally, to become part of Pelegrin's (1991) ‘know-how’, other aspects are part of the declarative ‘knowledge’ that is transmitted. Stout’s (2002) interviews with the Langda knappers revealed aspects which are in the conscious awareness of the Langda knappers: the necessity to hold the core with the fingers cradling the intended flake, which the knappers consider ‘proper technique’ to absorb the shock and direct the force; the focus on...
striking high points on the edge and removing a flake to follow a ridge; platform preparation by pounding or microflaking ‘to keep the edge from breaking’; preparing the hammerstone by rubbing it on a flat surface of the core, to smooth its striking surface ‘to avoid slipping on impact’; the shaping order beginning with the tip of the adze, then the butt, lastly the middle areas; the belief that grinding reveals qualities of the stone; and the need for commitment and continual practice to become a skilled knapper.

In summary, we argue that techniques are motor skills, which are necessarily procedural. Methods are about the conceptual aspects of the craft/art, usually declarative. These are Pelegrin’s know-how and knowledge. In any craft/art there are both kinds. The example of iron working in historic times in Kenya (Apel 2001) highlights very clearly this dichotomy. Knowledge of iron smelting was a guarded secret, whereas the practice of forging was public. Smelting is about theoretical knowledge and recipes for action; it draws on declarative memory, methods, and knowledge. The practice of forging is a motor skill requiring hours of practice; it is procedural learning involving techniques and know-how. We suggest that the theoretical / declarative knowledge of methods was kept secret because it can easily be transmitted (e.g. through language, storytelling, dance, legends, drawings, etc.), but the motoric / procedural techniques and know-how MUST be learned individually through physical practice; it is more difficult to transmit.

If we extend this to Upper Palaeolithic cave painting, then we can already see a distinction between the various elements involved: the preparation of the pigments according to recipes and action sequences; the performance of the action according to one’s personal motor skill. More detail can be gained by studying the location of these different activities, to see if they are done in public or private. This can therefore tell us whether each activity was seen as private/secret/valuable or public/shared. For example, the fact that the paints used at Niaux were made at La Vache (Clottes 1993) indicates a common procedure or recipe where the paint preparation was separate from the paint usage. From our own experiments with making liquid paint by mixing ochre powder with water or egg, we have discovered that the texture must be very accurate for spraying hand stencils using the two-tube technique (Hoyle, Uomini, Alcantarilla, not published). It cannot be too thick or too thin, or else it will not spray properly. With scientific instruments it might be possible to quantify the texture of the paint for optimal spray-painting. However, because we did not measure anything, only learning through trial and error, we eventually gained an implicit, procedural know-how of the correct paint texture. We cannot describe the quantity of water and ochre needed, but we can tell if a given mixture is too thick or too thin. By this example we want to suggest that prehistoric paint recipes were not like modern cake recipes, with exact measures, but rather they are procedures that were learned through practice. Another example is Rebecca Harrison’s study of the locations of hand stencils in French caves. Many hands were sprayed in parts of the caves that were hard to reach, involving squeezes and narrow passages, or in areas where no more than one or two persons could fit (Pettitt 2009). These is compatible with the idea of a ‘private’ activity, since it is impossible to perform to a large group of observers in such small spaces. In these cases, the making of the hand stencil might be private, even though the end product, was public. Other frescoes in large spaces, such as the panel of the bulls at Altamira, would potentially be painted in front of many viewers, with the associated pressures of public performance.
4. A Beginner’s guide to Palaeolithic art (or a Guide to the art of Palaeolithic beginners)

To examine the learning and teaching of image making, we need to look more closely at the work of beginners, their degree of acquired skill, and the socio-spatial contexts in which techniques and methods were passed on. We should start by identifying the images of those starting to paint and engrave; they will not be the finest images so commonly represented in the classic reports.

Guthrie (2005) has already presented a series of exemplar images where he identifies deficiencies in the representational knowledge of animal anatomy and behaviour. We need to go further to investigate rigorously these images and record their ‘mistakes’ so as to identify the common problems that beginners make and relate these problems to inexperience in technique, or errors in conceptual knowledge, as has been done for lithic technology (Shelley 1990). When combined with detailed analyses of the order by which commonly represented animals are made (within temporal and regional limits), we may begin to discern the methodological schema that are passed on. Guthrie has also argued that the images of learners should be in the majority, based on the age at which one starts to make images and the age profile of hunter-gatherer societies. So we should have a large corpus of images to work from. We also need to identify the physical context of image making, the opportunities to learn from those individuals more skilled, recognising that the co-presence of individuals at different stages of skill can facilitate a ‘zone of proximal development’ (sensu Vygotsky) in which the skills of learners are extended through the advice of others, as has been recognised on Magdalenian sites (Pigeot 1990).

Conclusion

Experimental flint knapping throughout the 20th Century, has established a tradition and community which allows greater insights into the technical act in the Palaeolithic. In some cases we can distinguish separate areas where different parts of production are carried out. According to Apel (2001), the elaborate stage of stone knapping could be done in a public place, as part of a display of the knapper's knowledge and skill. In contrast, the roughing-out stage would be done privately because it does not show off the knapper's great skill.

In relation to public displays, Olausson (2000, 2008) argues that certain individuals used the knapping skill of a knapper they sponsored to increase their own prestige. For example, in Neolithic Scandinavia the 6 thin-butted axes in the Rydave hoard represent two weeks of skilled knapping. Olausson (2000) argues these were made by a knapper who was sponsored by someone to create a prestige display. The fact that the axes were not used at all, but rather deposited into a bog, supports the idea that it was the process of knapping, and not the final product, that was desired. The knapper would have spent two weeks finely working these axes as a public exhibit, which served to enhance the prestige of the knapper's sponsor.

Similarly, the Haarbølle hoard (with 16 daggers, seven of which were knapped by one person) represents a total of 192 hours of work (Olausson 2000). Such a long time is a considerable investment, during which the knapper must be fed and housed. As Olausson argues, there must have been a clear gain from the knapping process in order to support a skilled craftsperson working full-time. Apel (2001: 114)
suggests that an apprenticeship system for prehistoric Danish dagger makers was probably hereditary and institutionalised where kinship is an important line for the transmission of technological skill and know-how. Roux et al. (1995), and others (Mieg 2006; Hunt 2006) have pointed out that a craft that requires a long time to master depends on certain socioeconomic contexts to support the apprentice.

Whilst there is a long history of experimental stone knapping (Dumas 2009) going back to the experiments of Boucher de Perthes and de Mortillet in the nineteenth century, culminating in the growth of an extensive community of knappers in the USA, and in Europe (Dumas 2009), the experimental tradition for Pleistocene art has considerably less historical depth. We can point to the work of the Abbé Glory experimenting with pigments and binders in the 1940s (Hameau 2009), and to the knowledge gained in the preparation of Lascaux II in the 1970s (Aujoulat 2005), and to the work of Lorblanchet (1995b). However, in cave art studies there is not yet a tradition of work, a growing community, teaching and learning with each other to create such a worldwide phenomenon as is the case of stone tool-making and other Palaeolithic crafts.

Modern-day stone knappers have come to understand their craft through experiments, ethnographic parallels, careful recording of observations, and studying the learning process (Sternke 2010; Sternke & Sørenson 2009). These have taken place through a global and growing support network where apprenticeship chains can be traced. The situation with experimental modern-day cave painting seems to be much less developed. We hope that this paper has shown that art can benefit from craft, by focusing on the learning and transmission of skills and knowledge, and the contexts in which they occur.

BIBLIOGRAPHY


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