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## CHAPTER ONE

# Archaeology and Apprenticeship

### *Body Knowledge, Identity, and Communities of Practice*

WILLEKE WENDRICH

As archaeologists, we study material remains to pronounce upon a wide range of immaterial aspects, from cultural identity to the internal and external dynamics of sociocultural groups. The profession has developed from a simplistic equation of material culture with “a” culture (“a pot is a people”) to understanding cultural and individual identity as a fluid and context-dependent human trait. Explicating how and why material culture has a close relation with identity in the broadest sense of the word brings us to study the sharing of characteristic material features based on a shared understanding, a tradition, born from a degree of stability that results in recognizable material patterns (Costin 1998). The relative stability of these patterns is dependent on the transfer of knowledge from one person to the other, and from one generation to the next. Defining how and why this knowledge transfer occurs, and how we can recognize it in our archaeological material, is a definite aid in developing a deeper understanding not only of the types of and motives for knowledge transfer but also of the relation between material traces and what they tell us about individuals, groups, and generations.

Very limited explicit attention has been paid to the transfer of knowledge in archaeology. An excellent contribution was the special edition of the *Journal of Anthropological Research* (2001), edited by Jill Minar and Patricia Crown, dedicated to learning. Many of their contributors' articles are cited by authors contributing to this volume. A resurgence of interest in the subject is exemplified by a recent volume on cultural transmission (Stark et al. 2008). Anthropological and sociological interest in the subject of learning and apprenticeship is more ubiquitous, sometimes involving a lengthy apprenticeship of the researcher (Keller and Dixon Keller 1996; Marchand 2001, 2008) and descriptions of theory and method (Coy 1989), and recently has been explicitly related to present-day educational practices or concerns (Blackmore 2010; Brown et al. 1989; Hara 2009; Lave 1988; Lave and Wenger 1991; Wenger 1998; Wenger et al. 2009).

*Archaeology and Apprenticeship* considers various aspects of knowledge transfer: from the types and functions of knowledge to the methods of acquiring skill, experience, and the right attitude. The volume brings together authors who study knowledge transfer in a variety of cultures, ancient and modern, with the purpose to understand the domains that are directly or indirectly influencing and influenced by learning. Whether an approach to understanding teaching and learning is mostly psychological, sociological, economic, or symbolic, the transfer of knowledge implies change, and this enables us to observe the processes and relations involved. A session at the meeting of the Society of American Archaeologists in 2005 brought most of the authors together. When it was decided to bundle the contributions in a publication, interest in contributing was expressed by several scholars who could not participate in the meeting but whose research is directly relevant to the subject and provides augmenting angles (chapters 4 and 5).

The volume is organized according to five broad and overlapping themes. Chapters 2–4 emphasize the social context of learning and the agency of the producers, mostly based on French traditions in social theory. Chapters 5 and 6 focus on landscape, the natural environment, and aspects of learning. Chapters 7–10 and 13 discuss the identification of traces of apprenticeship in the archaeological record. Chapter 11 outlines types of learning, while chapter 12 explores types of practical learning and the language used in apprenticeship from a perspective prevalent in Scandinavian scholarship. Chapter 13 provides concluding remarks.

## Some Basic Concepts and Questions

*Apprenticeship* is broadly defined as the transmission of culture through a formal or informal teacher–pupil relation, as individuals or groups. The

major purposes are the development of dexterity, skill, endurance, memory, consideration, and properness, while gaining knowledge, inspiration, and/or motivation. *Dexterity* is defined as the physical ability to perform a required action. *Skill*, then, is the ability to perform the proper action in the proper sequence at the proper time, following an internalized set of rules of “how things are done.” Skill involves the right conduct of movements, timing, and organization. *Endurance* is the capability to perform a particular action for the required length of time, or the number of repetitions needed to finish a product or a workday. Part of mastering endurance is simply a matter of building muscle, but it also involves learning the correct body position, physical attitudes, and movements (Wendrich 2006). *Memory* involves not just the recollection of the production process but also the collective memory of the craftsmanship and the products that are the result, while *consideration* requires the full attentive focus on the work and the social context. *Properness* involves learning the appropriate behavior, the enculturation of the apprentice in the world of the group or the master, and is often characterized as “becoming a human being” within society. This is a tacit, informal function of learning that is not only part, but in many cases the most important purpose, of apprenticeship. Lastly, *inspiration* and *motivation* are the driving forces in the relation between master and pupil.

Theoretical approaches to learning range from focusing on the development of the individual (psychology, cognitive science) to the role of knowledge transfer within group or in a particular environment (social theory). The French anthropological research tradition has long emphasized the importance of the body in expressing cultural aspects, going back to Marcel Mauss’s *Les techniques du corps* (1936). Developed by Pierre Bourdieu, the term *habitus* (Latin for the French concept of *déportement*, the manner of carrying or conducting oneself) denotes the embodied culture, which includes such aspects as skills, habits, style, and taste, as well as one’s history and experiences. This is communicated through *hexis* (the Greek term for *déportement*), which is the manifestation of *habitus* and enables communication through very subtle body language and almost involuntary movements, expressing reactions and communicative behavior, such as mimicking the other. *Habitus* is the basis for social differentiation, where the personal and cultural dispositions are combined (Bourdieu 1977). The material aspect of Bourdieu’s social theory is also anchored in earlier French anthropology. His distinction between *opus operatum*, the created work, and *modus operandi*, the method of creating, reflects André Leroi-Gourhan’s (1964) consideration of material objects as the result of a *chaîne opératoire*, a sequence of operations from collecting and preparing raw materials to finishing the product.

The essential part of the *modus operandi* which defines practical mastery is transmitted in practice, in its practical state, without attaining the level of discourse. The child imitates not “models” but other people’s actions. Body *hexis* speaks directly to the motor function, in the form of a pattern of postures that is both individual and systematic, because linked to a whole system of techniques involving the body and tools, and charged with a host of social meanings and values. (Bourdieu 1977, 87)

The emphasis on postures, gestures, and movements bears comparison to Leroi-Gourhan’s interest in body position and tool use but has been expanded to encompass all social interaction, including sometimes almost imperceptible nonverbal communication. Likewise, Pierre Lemonnier has pointed to the importance of studying movement: “A social theory of material culture should deal with technologies in their most physical aspects, that is to say, with the way they are made and used for some action on the material world” (1992, 3). The movements and operational sequences exist within mental models of the end product, which guide the technological choices that are made throughout the process (81; see also chapter 4 this volume). Transfer of knowledge, then, encompasses the entirety of operational sequences, mental models, appropriate behavior, and involuntary gestures, within a social context.

Knowledge is conveyed and acquired through play, observation, imitation, repetition, and experiment, but the emphasis on any of these is determined by cultural direction and circumscription, as well as the agency of both master and apprentice. The transfer of knowledge takes place not only directly from person to person, master to pupil, parent to child, and experienced group member to novice but also through oral traditions and narratives (see chapter 5) and examples in heirloom material culture (see chapter 10). In the latter situations, knowledge transfer is initiated by the learners, who may be experienced producers. They develop practical approaches from generalized principles, see examples of alternative methods, and find inspiration to adopt a new style or adapt their own based on ideas that might come to them through a variety of channels and are incorporated in their daily routine, adding to their experience. Apprenticeship is for the most part extremely hard and repetitive work, focused on gaining body knowledge, a physical memory embedded in muscle and the central nervous system, so that in many phases of the work the body simply seems to “know” what to do. A successful apprentice masters design and planning, having the ability to visualize the result before even starting to collect the raw materials (see chapter 4).

Apprenticeship, knowledge transfer that conveys traditions and enculturation, is also closely related to the definition of style, not as a diagnostic

tag of a culture as a whole but as an information carrier of social and cultural identity (Lemonnier 1992, 89). Style reflects instances of choice in a technological process, determined by the agency of a group or individual (van der Leeuw 1993). In descriptions of present-day apprenticeship, there is much emphasis on the rules one has to abide by, described as a “web of rules” (Gamst 1989) or “strict set of rules” (Aronson 1989), which seems to deny agency of both apprentice and teacher. A valuable approach to the relations between group and individual, which reflect and are reflected by the production process, is the concept of communities of practice, as introduced by Jean Lave and Etienne Wenger (1991) and expanded by Wenger (1998). They focus not only on the learning of the individual but also on the activities of the group, which integrates individuals to participate through legitimate peripheral learning (observation, performing limited tasks, and imitation). The learning in a community of practice is ongoing, often informal, and is based on the sharing of knowledge and experience within a social group. It can be contrasted with formal learning but is not its opposite; rather, it is a complementary way of learning in practice (Wenger 1998, 63–71). Communities of practice share knowledge for a variety of reasons and in many different ways. Interests in contemporary applications of the concept focus on dispersed individuals forming communities of practice and sharing knowledge through the Internet (Hara 2009; Wenger et al. 2009), but mostly communities of practice have a locational center, such as a workshop, building site, or even an entire landscape (Ingold 2010; Marchand 2010; see also chapters 5 and 6 this volume). The notion of communities of practice allows for agency of all members of the group. This concept of agency is quite different from that defined by Bourdieu and especially Jean-Pierre Warnier, who argues that we should also recognize that technologies are embedded in systems of agency, which act on objects and directly influence the (bodies of) persons involved. Warnier calls this system of agency the “praxis value” of material culture, which exists next to the sign value used to communicate (Warnier 2007, 1–40).

Scholarly endeavors, even ancient ones, such as becoming a scribe (see chapter 8), have strong elements of apprenticeship. In our own training we are confronted with a general Western attitude toward learning that ranks academic (explicit) knowledge higher than practical (tacit) knowledge, a preference that is expressed in the social position and salaries of white- versus blue-collar workers (see chapter 12). Knowledge that is not or is poorly verbalized, termed *procedural knowledge* by Warnier (1999, 2007), is not given the same appreciation as discursive knowledge. This pervasive attitude may form the greatest obstacle to a proper understanding of what learning in the past encompassed.

Archaeologists are among the academics that are most familiar with learning practical skills, in the form of methods for fieldwork (see

chapter 11). Archaeological field schools are, in a very literal sense, apprenticeships, in which students learn how to excavate, record, set up, and execute a survey, as well as clean and do first-aid conservation on finds. There still is a dichotomy between academic work and practical work, however, because a theoretical account is generally given a higher status than practical fieldwork. This seems to be less so for scientists, who are also heavily involved in hands-on work as part of method development and analysis (see chapter 12). Following the GIGA rule (“garbage in, garbage out”), good practice is the foundation of good science; good data are the result of well-designed and well-executed practical work. Apprenticeship in archaeology is therefore an integral part of the training at both the undergraduate and graduate level. Graduate students are supposed to “do their chores”—pay their dues by performing repetitive or uninteresting tasks for their masters. Similar to ancient workshop owners, some academics abuse their position of power. Depending on the academic culture, a student’s innovation and criticism are stimulated or discouraged. Similarly, ancient apprentices were tightly bound to the culture of their masters and either passed this on or rebelled against and transformed it.

As academics, we are to a great extent the product of a process in which learning is on one level explicit, highly structured, and abstract yet on another level is hidden, implied, and sometimes flat-out denied. Knowledge transfer is done through a curriculum, with defined goals, while at the same time academic learning has many aspects of apprenticeship, in which the goal is not just imbibing and reproducing information but also doing the chores (“as we all did in our time”), learning the correct attitude—ranging from reverent to independently critical, depending on the academic (sub)culture—displaying the correct behavior, and wearing appropriate clothing. The first type of learning is acknowledged; the second usually is not. These implicit social values that are part of the academic community of practice are at the heart of apprenticeship, ancient and modern.

To understand ancient apprenticeship, we need to take many aspects into consideration, ranging from cognitive skills to social and personal relations and objectives of learning. This leads to the definition of five key questions:

1. What can a person master—what is the human potential for learning?
2. How does a person learn—what is the apprenticeship process?
3. Who is teaching—what is the apprentice-tutor relation?
4. What is the result of learning—what types of knowledge can we discern?

5. Why does a person learn—what is the objective of the apprenticeship?

These five questions feature in one form or another in all chapters in this volume. They illustrate the variation of approaches to apprenticeship, emphasizing the psychological, economical, or social aspects, but also the many common features.

### **The Human Potential for Learning**

It has long been recognized that there are different types of learning (Gardner 1983, 1999; Guilford 1967; Guilford and Hoepfner 1971; Lave and Wenger 1991; Sternberg 1997). Developmental psychology has considered the potential of children to learn, either related to age and development stage (e.g., Piaget 1970, 1972; Wadsworth 1996) or to personality and talent (Gardner 1983, 1999; Guilford 1967; Sternberg 1997). Jean Piaget developed four distinctive stages of cognitive development, linked to specific age groups, and argued that children’s learning should be adapted to these (table 1.1). The development progresses from the sensorimotor stage, in which children develop motor skills but are not capable of forming mental images, through a stage in which children develop “true thought,” the preoperational stage. When children are approximately eight years old, they start to develop the capability of deductive reasoning and discerning different perspectives, the concrete operations stage. The last stage is the formal operations stage, in which children develop abstract thinking.

**Table 1.1. Four stages of cognitive development (Piaget 1972)**

Stage	Function	Approximate Age (years)
Sensorimotor	Development of sensory perceptions and motor skills	0–2
Preoperational	Language development	3–6
Concrete operational	Logical thinking	7–11
Formal operational	Logical and abstract thinking, deductive reasoning, systematic planning	12 to adult



Criticism of this cognitive approach was twofold. The main revision of Piaget's work was that more attention should be given to the social and cultural context of the child, which, as Lev Vygotsky argued, was of great influence on a child's development and potential (Veer and Valsiner 1991). Furthermore, cognition was defined mostly as a development of linguistic or logical abilities, while only the very first stage was important for the development of sensory perception and motor skills. A more holistic approach should take these other types of continuing development into account as well. Howard Gardner's nine types of intelligence—linguistic, logical-mathematical, bodily-kinesthetic, spatial, musical, interpersonal, intrapersonal, naturalistic, and existential (Gardner 1983, 1999)—recognized human variation in capabilities and has been important for the development of a balanced appreciation of personal potential, even though society tends to value some types of intelligence over others. It would not be surprising if individuals with a strong bodily-kinesthetic or spatial intelligence, provided they had a free choice of career, would gravitate toward working as craftspersons.

For archaeologists who work with cultures that are removed from theirs in space *and* time, it is important to move away from a definition of knowledge and understanding centered on academic and Western culture, to redefine the definition of capabilities, and to recognize that they are multifaceted. Apart from Gardner's, several other systems have been devised to express or analyze the differences in human capacity. Joy Paul Guilford discerns 150 components of intelligence, which consist of the intersections of five contents, six products, and five operations. In this way, he enables a refined definition of human potential by cross-referring the various possible approaches, the types of talents, and the scale and focus on relationships with which a person primarily tends to approach a problem or activity (Guilford 1967; Guilford and Hoepfner 1971). Thus, decision-making skills (the evaluative operation), for instance, can be subdivided into 30 types of aptitude: the cross-references of the five types of content and the six products. Less detailed, but perhaps more accessible, is Robert J. Sternberg's triarchic theory of intelligence, an approach that provides insights from developmental psychology. It is particularly helpful for archaeologists to understand the principles underlying apprenticeship constructs and how to recognize them. Sternberg is quoted more often than Guilford in this context, because his approach seems less rigid than Guilford's system and more geared toward the influence society has on all elements of human behavior and cognition (Sternberg 1997). His division of the theory of intelligence into componential (metacognitive, performance, knowledge acquisition), experiential (referencing to previous experience on a scale from novel to familiar), and contextual theories (specifying the circumstances in which certain behavior is or is not intel-

ligent) forms a useful basis for understanding the variation of defining intelligence across (sub)cultures. Particularly relevant is that he recognizes the existence of implicit theories of intelligence between and within cultures and subgroups (Sternberg 1983).

Cognitive psychology and cognitive science have developed a more thorough recognition that the human ability for learning is not a passive, unchanging, and individual trait. Psychology has been known to apply to various other cultures theories that have been developed in a Western cultural population, without accounting for the specific context, and without adaptation. More recent approaches strive to be aware of ethnocentrism and reductionism (Miller 1997; Sinha 1997).

### The Apprenticeship Process

In many present-day societies, apprenticeship involves a number of stages, often, but not always, linked to the age and to the talent, skill, and social position of the apprentice and the length of the total apprenticeship (see chapters 2, 4, and 9 this volume). Piaget discerned the capabilities of children according to age groups and stressed that children had to be taught at the appropriate level of the knowledge acquisition they were capable of (see table 1.1), but the apprenticeship stages do not mimic development stages and are more complex than these. Different types of knowledge and skills are incorporated at every stage, ranging from motor skills to abstract thinking (chapters 3 and 4). In many cases apprenticeship is geared toward learning the properties of the raw materials, the use of tools, the type of products that are supposed to be the end result, and decorative patterns, which typically carry complicated meaning and are means of communication. Wallaert (chapter 2) demonstrates convincingly that apprenticeship is much more than learning certain actions or understanding particular materials.

The stages of apprenticeship can be defined by the type of involvement or the type of activities, and the apprenticeship can be structured to a greater or lesser extent. If the apprenticeship starts very early, the level of involvement is to a certain extent linked to the child's development stages. Typical approaches are learning by play, observation, imitation, performance of menial tasks, initiation, copying, repetitive practice, and increased responsibility, freedom, and experimentation. There is, however, also a strong relation between the apprenticeship and the production process (*chaîne opératoire*). Pupils start with cleaning up and helping with preparations, a stage that may take several years (see chapter 9). Preparation of the raw materials (e.g., selection and preparation of reeds for matting, clay for pottery, and trees for carpentry) often takes more

than half of the total production time and is of extreme importance to ensure the quality of the end product. That part of the work is where most apprentices start. Learning the production of the actual object often is another multiyear stage, in which the apprentice first assists, for instance, in building a wooden structure or starts handling the raw materials as part of the process, such as adding handles or adding slip to half-finished pots. Then the student progresses to a period of increasingly difficult tasks, for instance, making increasingly larger pots, thoroughly practiced at each stage through numerous repetitions and characterized by increasing dexterity and speed. The final stage sees the apprentice finishing a product from beginning to end, including the application of decoration.

These apprenticeship stages can be part of a highly structured curriculum, or an almost offhand “instruction by example.” Educational theory defines a complex relation between aptitude and instructional treatment. Even though the talent of the apprentice, the tasks, and the learning situations vary greatly, in general low-ability students or pupils who are dependent or anxious perform better in highly structured instructional environments, while the opposite is true for high-ability, independent apprentices (Cronbach and Snow 1977; Snow et al. 1980). The examples outlined in this volume represent both ends of the scale. Holdaway and Allen (chapter 5) explicitly address the constant interplay between informal action-based learning and formal ritual training, represented by specific stages that are reached through gradual initiation, among Australian aboriginals. Rockman (chapter 6) demonstrates the seeming lack of structure of learning among the !Kung, even though the abilities of being a skilled hunter are clearly defined as four types: knowledge, sense, cleverness, and alertness. Only the first can be taken from others, but even that is not a given: knowledge should actually be gained by experiencing the environment. In this case, the transfer of knowledge is therefore mostly through observation, imitation, and practice.

The case studies of Wallaert (chapter 2), on the other hand, demonstrate tightly structured systems among the Dowayo in Cameroon, as well as the Pueblo potters in New Mexico. From the writings of the Greek philosophers, we may deduce that in ancient Greece apprenticeship was highly structured as well, with clearly defined stages. Plato seems to quote an existing axiom when he says, “Is not this, as they say to learn the potter’s craft by undertaking a *pithos* (large storage jar) . . . and does not this seem to you a foolish thing to do?” (Plato, *Gorgias*, 514E, qtd. in chapter 9 this volume). In other words, there is a very specific order in which to learn things.

Almost all apprenticeships, ancient and modern, have in common that they last a long period, ranging from several months to decades. There

is, however, enormous variation in the apprentice-tutor relationships and the purposes of the learning period.

## Apprentice-Tutor Relation

The word *apprentice* often calls up the formal relation between a master and a pupil, an image derived from the medieval and renaissance guild systems. This is a very specific, highly structured, and regulated type of apprenticeship that was particularly dominant in urban environments. In such a system, “apprentice” is a specific stage between “learners” and “journeymen” that involves working with a master who can only accept a limited guild-regulated number of apprentices (Montias 1977). From the contributions in this volume, it is clear, however, that many of the craft apprenticeships in rural areas of the ancient and the present-day world are much more informal and in many cases part of a long-standing family tradition and divided by gender: father teaches son or mother teaches daughter a craft that has been taught for generations, and a specific form of familial apprenticeship is that of a new bride with her mother-in-law (Wallaert 2008; see also chapter 2 this volume). In many cases, the social structure of teaching expands to encompass the extended family or an entire village that specializes in a particular craft (Wallaert 1999; Wendrich 1999), or part of a community that develops its specific technological or decoration signature (Lave and Wenger 1991; Wenger 1998). The study of communities of practice is particularly apt for understanding knowledge transfer and apprenticeship from the archaeological record, because it enables us to understand shared principles, without necessarily knowing the exact apprenticeship relations (see chapter 2). Such a community of practice demonstratively existed in ancient Egyptian Deir el-Medina (chapter 8). The few glimpses that we get from apprenticeship among potters in ancient Greece can also be characterized as a “community of practice,” even though the organization seems to have been more formalized than that in Egypt.

Learning among several hunter-gatherer groups is usually characterized as “informal learning,” a term that exists only in the context of a society in which “formal learning” has a place as well (Schugurensky 2000). Much of the ancient apprenticeship structure can be characterized as such because, aside from a formal position as apprentice, the socialization, which is such a prominent part of most apprenticeships, usually is not formulated in explicit terms of learning, while the stages of craftsmanship, related to the *chaîne opératoire*, commonly are. The training of hunter-gatherer youths seems to be instigated by the student rather than by an instructor or the group. This type of informal learning is not exclusively

family related but expands to the broader group. Younger group members can develop their skills by observing and imitating their elders, but mostly skills are honed by practice. Specialization is based on talent and zeal of the individual (see chapters 5 and 6).

Chapters 2, 3, and 10 highlight yet another form of learning that is based not on the one-to-one relation with a living crafts specialist who serves as an example or is actively engaged in the teaching process but on products from previous generations of craftsmen. Copying the style and reinventing a long-lost procedure of the ancestors can be a strong impetus for innovation and learning. It is more than inspiration because the physical products are at hand and can be analyzed, copied, and used as a check for the results. This also highlights the fact that skilled, practiced, and creative craftsmen are never finished learning, as Cooney points out in chapter 8 for the community of artists in Deir el-Medina. To our Western minds, learning from the ancestors may not be a valid educational principle, but the participants who are involved take the lessons as seriously as other forms of teaching.

The relation between student and master is, on the one hand, firmly embedded in the social context around and beyond craftsmanship, as defined by status, gender, age, and other factors of identity. On the other hand, it also has its own rules that at times can change the established social hierarchy. In my own work I have used the position of apprentice as a means of ethnoarchaeological research into basketry production in Egypt (Wendrich 1999). Bridging the gap between a Western-trained, urban, foreign, female academic and an Egyptian, rural, male basketmaker was made possible by my request to learn the trade. I was accepted as an informal apprentice, even though I was in Middle Egypt for only three months rather than a number of years. My interest and regular visits elevated the social status of the basketmaker, and at the same time, my position as his pupil opened up many opportunities for learning other, mostly female, village activities such as cheese making and the baking of bread. Nevertheless, this “shortened” apprenticeship had many shortcomings in understanding the usual apprenticeship procedure. The basketmaker did not have a formal or informal apprentice and was actually hesitant to teach his young sons because he wanted them to go to school and improve their economic situation.

## Types of Knowledge

The range of knowledge gained in apprenticeship is very broad, from motor skills through organizational skills to design and abstract thinking. Students have to handle the materials, understand the production pro-

cess and timing, and be trained in using the tools, gestures, and processes of creating the objects. In addition, they need to learn the vocabulary of the craft and the abstract dimensions, the vision of what the final project should be (see chapter 4). Knowledge of materials and their properties is a first requirement. *Properties* should be taken in the widest sense and includes knowledge ranging from the physical characteristics (e.g., tension strength, flexibility) to the source of the materials (e.g., quarry, natural habitat, trade network).

Endless repetition is a major element in all forms of apprenticeship, to enhance kinesthetic skills and also to build endurance, create habits, and engrain the movements, actions, and work order in the body. The result is what I have called *body knowledge*: the mastery of dexterity, skill, and endurance (Wendrich 2006). To grow from an apprentice to a master, however, body knowledge is not sufficient; self-motivation, creativity, and organizational and communication skills are equally important (Marchand 2001). Only rarely is repetition not the key element of learning, namely, when the knowledge transfer targets skills to deal with novel circumstances, as in landscape learning of mobile peoples (see chapters 5–7). This type of knowledge transfer is characterized by a high degree of abstraction and generalization, to enable pupils to extrapolate from earlier experiences.

Memorizing the knowledge therefore happens on a number of different levels. One could see apprenticeship as a result of personal, cognitive, and habit memory, as discerned by Connerton (1989), in which the importance of the latter is often underrecognized. Cognitive memory, as one of the universal mental faculties, is important in the basic classification of the world, while habit memory introduces the social factor, the conventions that a community abides by. Both of these types of memory are often an unconscious part in the learning process, but from several examples in this volume it is very clear that enculturation and socialization are key factors and, in some instances, the main driving force for apprenticeship.

Each craft has its own specialized vocabulary, a refinement and adaptation of daily language that enables the distinction of particular materials, techniques, products, and faults. Learning the jargon without learning the physical aspects is of no use, however, and explaining the exact activities is impossible by using words alone. Even adding visual means of knowledge transfer (e.g., drawings, photographs, video), although helpful, ultimately does not bring across the tactile and social elements that are essential in apprenticeship. If a master says “let me show you how to do this,” then in fact what he says is “let me make you feel how to do this,” a fact beautifully illustrated by an Egyptian tomb relief from approximately 1450 BCE, where the official Min trains the young king in shooting his bow by adjusting his position (figure 1.1).

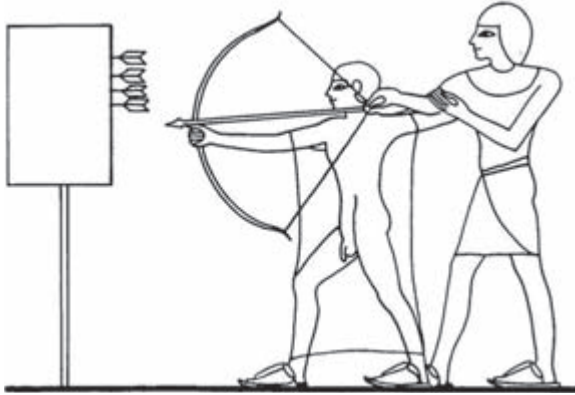


FIGURE 1.1. The official Min gives archery lessons to the prince (later King Amenhotep II), ca. 1425 BCE: relief from Theban Tomb 109. Line drawing by H. Barnard, based on the drawing by N. de G. Davies (1935, 52).

The use of language is often geared toward the theory of craftsmanship, a very particular type of literacy that covers only part of the process. The most satisfying combination of movement, rhythm, applied strength, creativity, and time investment is often impossible to express in words. A written tradition on crafts may exist but may be geared not toward the practitioner but to other groups, such as the financiers (see chapter 9). When academics write about crafts, we also find that language falls short (see chapter 12). When trying to describe aural, visual, or tactile aspects of craft production, we need to revert to quite clumsy, often numerical ways of expressing patterns such as working rhythm or properties such as tensile strength (Wendrich 2006). It is a way of theorizing practical knowledge and is linked intrinsically to status: in our literate society, knowledge that is not transferred through the written word is considered of lesser social value than theoretical knowledge (Marchand 2008).

Several philosophers of science and sociologists have reflected on the different types of knowledge and the language of crafts knowledge transfer (chapters 4 and 12). Bloch (1977) calls it “learning what” and “learning how,” Polanyi (1966) refers to “verbalized knowledge” and “tacit knowledge,” adapted by Harré (2002) to “explicit knowledge” versus “tacit knowledge,” while Warnier uses the terms “discursive” and “procedural” knowledge. In a field where theory and practice are thoroughly interwoven, recognizing that the status difference is a by-product of a singularly focused society in which certain types of literacy are considered primary is the start of putting into practice the realization that there are different

types of intellect, as discussed above. In the Scandinavian countries, a number of quite recent initiatives stress the value of practical intellect. Several professional schools have obtained university status, and the application and study of crafts practices are considered valid thesis subjects (see chapter 12). Such an approach has been accepted to a certain extent in the United States, where professional schools such as architecture, conservation, dance, music, and arts are part of regular universities, although even there the assessment of faculty for promotion and tenure regularly turns out to be problematic.

### **The Objective of Learning**

On the surface, the educational objective of apprenticeship is learning a craft, with a very practical, economic purpose: making a living. The purpose of the training can be to make perfectly standardized pot sizes, gorgeously decorated vessels, sturdy boats, or intricate baskets. As hinted to above, this is usually the explicit objective; all forms of apprenticeship also aim, often implicitly, for some degree of enculturation. This is expressed by several contributors to this volume, for instance, Milne (chapter 7), who describes that learning how to make stone tools involves not only “learning how to do” but also “learning how to act.” The learning process facilitates enculturation by exposing novices to the norms that structure the technological, social, and economic environment.

In her work on craft specialization, Costin (1991, 1998, 2001) has given ample attention to the social aspect of craft production. The often considerable length of apprenticeship is related not only to engraining body knowledge but also to the investment and period that a person dedicates to becoming a full member of (a segment of) society. In chapter 2, Wallaert describes a situation in which the transfer of technical skills is almost negligible; virtually all of the apprenticeship is dedicated to becoming part of a new group. Highly skilled potters are obliged to restart at the very beginning of apprenticeship if they move from their own household to that of their husband’s family. Guided by the mother-in-law, their abilities are humbled, their attitude is criticized, and they are treated as children, even though they are full-grown well-trained women. The point of the apprenticeship is becoming a potter, but this means a thorough enculturation in the new group rather than learning new skills.

Apprenticeship has the characteristics of an initiation in other ways, too, not only in a very literal sense (see, e.g., chapter 5) but also in the sharing of knowledge that is meant for and guarded by a limited group of people (Dilley 1989). The family lineage that forms the core of the most common informal apprentice-tutor relations is a powerful stimulant for



keeping the knowledge within and limited to the group. Restricted knowledge can be a particular building style, an ingredient, or a recipe for a clay mixture or colorant.

The strong social factor of apprenticeship has no set consequences for whether a new member of the group is stimulated to dutifully copy or generally adhere to the group style or whether he or she is allowed to experiment and innovate. A community of practice can have a tradition of innovation, for instance, among the master vase painters in ancient Greece (see chapter 9), and it is the group culture that determines whether change is considered a positive or negative feature of recently graduated apprentices. Similarly, new forms can be resocialized and become the standard, based on the personality of the producer—just one example of the importance of agency in understanding craft traditions (Dobres 2000; Dobres and Hoffman 1999; Warnier 1999, 2007).

Considering the above, it is not far-fetched to state that apprenticeship provides an important contribution to identity construction, whether or not this is a conscious course of action (Gosselain 2000; see also chapter 3 this volume). To grasp such developments as aspects of growth and change requires that we perceive apprenticeship as a process rather than a fixed situation, goal, or end product.

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