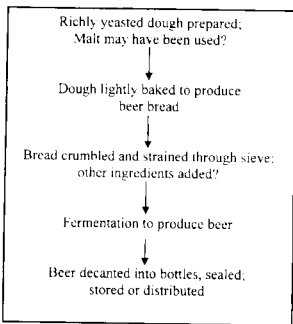
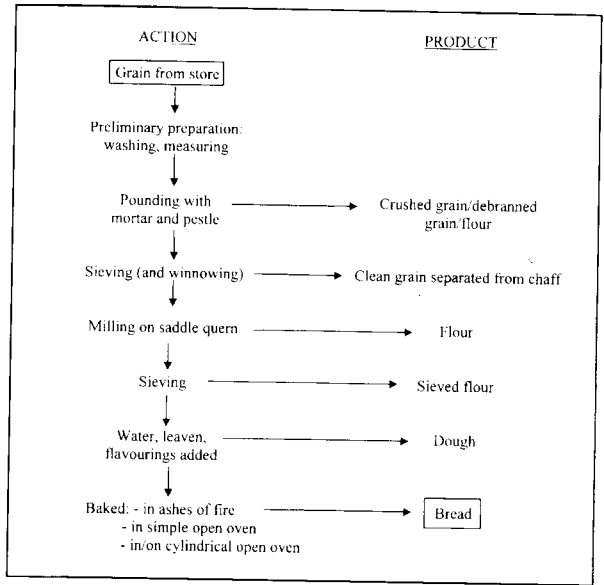


Samuel, figure 1. Summary of modern descriptions of ancient Egyptian bread baking based on artistic depictions.



Samuel, figure 2. Summary of modern descriptions of ancient Egyptian beer brewing based on artistic depictions.

# Brewing and Baking in Ancient Egyptian Art

*Delwen Samuel*

Amongst many other accomplishments, the ancient Egyptians are famous for the quality of their tomb decorations. These cover a range of different motifs, from scenes of daily life to the most solemn ceremonies for the dead during the transition to the hereafter. All these depictions served a ritual purpose, and the reason that ordinary activities were represented was to ensure that the familiar order of life would be perpetuated after death. Food was both a necessity and a pleasure much appreciated by the ancient Egyptians, and scenes connected with food and eating are commonly featured in tomb scenes.

Bread and beer were staples of the ancient Egyptian diet, and were made from barley and emmer wheat. Barley is familiar as the main ingredient of modern beer, while emmer is a type of wheat little known today but which was widespread in ancient times. Since bread and beer were staples, their preparation was an integral part of daily life, and the supply and transport of cereals, their conversion to bread and beer, and the distribution of the final product were all key parts of the ancient Egyptian economy. In addition, bread and beer were central in religious ceremonies. No offering to the gods was complete without copious quantities of beer and mounds of bread.

## *Types of Brewing and Baking Depictions*

Baking and brewing scenes vary over time. The earliest known representations are two clay figurines dated to about 4000–3500 BC. Each is thought to show someone working with a vat of beer. There is then a gap of about 1,000 years in the depiction of baking and brewing. From about 2500 BC onwards, during what is known as the Old Kingdom period (c. 2500–2100 BC), most of the known representations of baking and brewing were made.

Two types of baking and brewing depictions were produced during the Old Kingdom. Like the earliest examples, there are statuettes, but they are now made of wood or stone rather than clay. Sets were often placed in tombs, but the actions which are shown vary. There are about 40 known statuettes surviving. Despite this large number, they have been relatively little studied, while the bulk of scholarly attention has focused on the second class of depictions, reliefs carved on the walls of tombs. There are about 35 examples, but not all have been properly published. Some include hieroglyphic captions by each figure, although many have no inscriptions. The captions do not always explain the actions being carried out; usually they record conversations amongst the bakers and brewers.

Towards the end of the Old Kingdom, wooden statuettes were developed to incorporate two or even three figures working together. In the following periods, called the First Intermediate Period and the Middle Kingdom (c. 2100–1640 BC) carved wall reliefs gave way to wall paintings and small reliefs on memorial plaques called stelae. There are few of these however, while wooden models were much more popular. There are over 30 known examples.

In the next major period of Pharaonic history, the New Kingdom (c. 1550–1100 BC), there was a further change in the representation of baking and brewing. At this time, the portrayal of different activities was largely replaced by 'ushabti' figures, who would magically carry out any tasks required of them. There are only twelve New Kingdom tomb paintings of baking and brewing, as well as two stone reliefs from temple walls showing these activities being carried out in the sacred precincts.

Although the quality of these various depictions vary greatly, the style is often lively and engaging. The reliefs, paintings, models and statuettes have frequently been rendered with great skill. When the execution is cruder, however, each figure often has a distinct individuality. This lack of formality may partly be due to the ordinary nature of the subject matter, and the fact that the people portrayed are not amongst the elite, for whom the tombs were made, but are their servants.

### *Art and Interpretation of Brewing and Baking*

Until recently, these artistic depictions have been the primary evidence for ancient Egyptian brewing and baking. Their analysis began in the late nineteenth century, with the investigation of a selection of Old Kingdom statuettes. The aim was to establish what activities they were representing. Studies gathered pace as more tombs and their contents were systematically recorded. As results were published, general accounts of baking and brewing were produced. The most active period for this type of work was the 1920s and 1930s.

Many of the actions portrayed seem to modern observers to be relatively straightforward. The fact that the commodities were bread and beer was clear from those reliefs and paintings accompanied by inscriptions, since the known Coptic words for bread and beer are very similar to the ancient Egyptian equivalents. Along with the captions on the wall scenes, there is other documentary material related to baking and brewing, but it is of little help in clarifying the technology which was used. There are no known recipes for ancient Egyptian bread and beer. The written sources are mostly administrative documents which record how much grain was required in order to produce given numbers of loaves and jugs of beer.

In order to understand the ancient actions, some reference has been made to current traditional Egyptian baking and brewing methods, although no one established that there was a true cultural link between ancient and modern cereal preparation. Egypt is now predominantly a Muslim country, but the Christian population brews a mildly alcoholic beverage called *bouza* made from lightly baked bread. Along with reference to casual ethnographic observations, it appeared that tomb art provides all the information one needs. Most accounts of ancient Egyptian baking and brewing

are simple and straightforward, invoking little change over time and little variety in the final products.

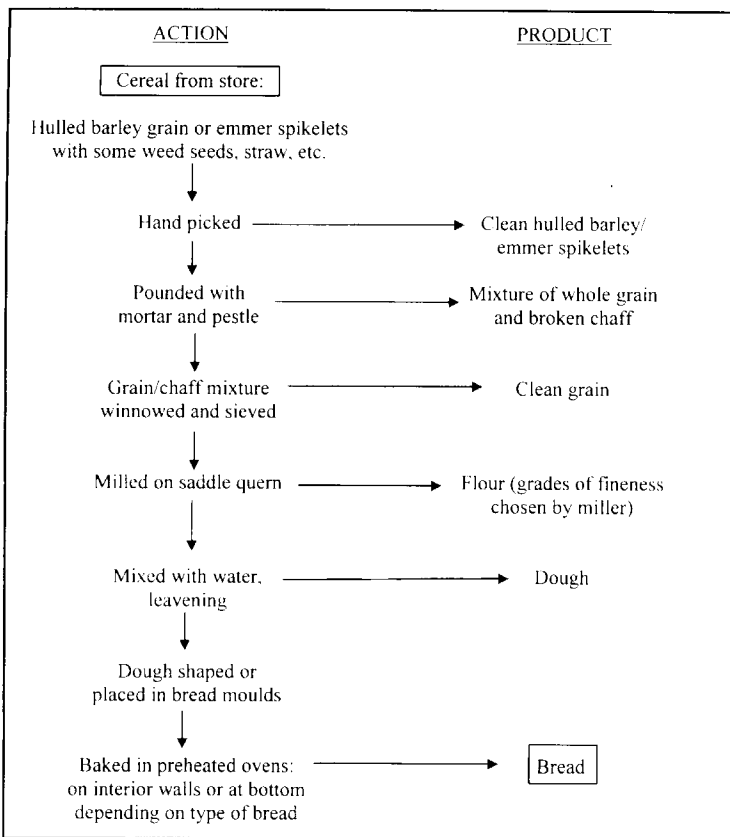
Baking as described in ancient art involved several steps (figure 1). Prior to some preliminary preparation such as measuring the grain or washing it, the first processing stage is said to have been pounding the grain with mortar and pestle. The stated function of the pounding step varies somewhat; some authors conclude that it was to crush or bruise the grain, others say that flour was produced at this stage, while some scholars believe this step was to remove the bran. Most accounts say that the crushed or debranned grain was then sieved; some mention that winnowing was also carried out at this point. Next, the grain was milled on a stone slab called a saddle quern, and then sieving was applied again to the flour. To make a dough, water and various other ingredients such as salt and spices were added, as well as leavening. The dough has been described as either quite firm, in which case it was shaped into loaves, or somewhat liquid, for pouring into moulds.

Most authors agree that baking methods varied over time and according to circumstances. Thus, field workers might bake their loaves in the ashes of a fire, while a simple open oven seems to have been standard for general use in earlier times. Open-topped, cylindrical ovens are portrayed in later depictions, but the baking method has been described in different ways. Suggestions range from loaves placed on an interior ledge of some kind, attached in some fashion to the internal oven walls or placed directly on them, or set on the outside walls of the ovens.

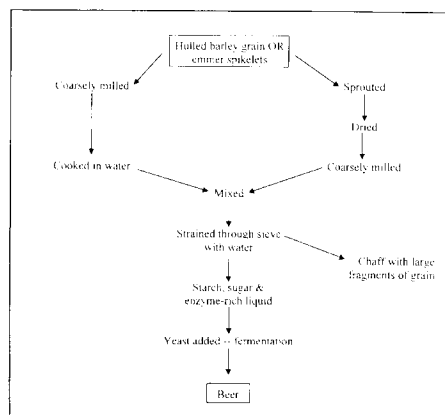
For brewing (figure 2), the standard interpretation has been that beer was made from specially prepared beer loaves. These were made with a richly yeasted dough which was very lightly baked so as not to kill the yeast. The details of beer-bread preparation are never given, but presumably it is considered to have been similar to normal bread apart from the partial baking. Some authors state that malt was used for brewing – in what way is never described – but generally this ingredient is not mentioned. The lightly baked loaves were then crumbled and strained through a sieve into a large vat. This straining stage is seen in brewing depictions at all periods and indeed to the ancient Egyptians it epitomized the whole brewing process. At this point, it is thought that other ingredients such as flavourings and extra yeast may have been added. Fermentation then took place in the vat, rapidly producing beer. When the fermentation process was complete, the beer was decanted into bottles and sealed.

### *Problems with Interpretation of the Artistic Record*

Although this outline of baking and brewing methods seems plausible and straightforward, there are several problems associated with it. Firstly, despite the restricted number of artistic depictions, forming a fairly limited pool of data, there are many unresolved discrepancies in the numerous published accounts of ancient Egyptian baking and brewing. Some of the alternative suggestions given above are one indication of the lack of agreement, but there are many others. Amongst the main uncertainties are whether the portrayed order of action reflects the actual sequence



Samuel, figure 3. Simplified archaeological model of ancient Egyptian baking.



Samuel, figure 4. Simplified archaeological model of ancient Egyptian brewing.

of preparation steps; what the functions of different tools were; the nature of the final product; and whether and how preparation methods changed in any way over time.

The artistic record has largely been used as if it were an illustrated guide to everyday ancient Egyptian practices, but this approach cannot necessarily be assumed to be valid. It is easy to think of 'daily life' scenes as purely decorative accounts, but for the ancient Egyptians they served an important symbolic purpose. Their function was not to demonstrate how daily life was carried out, but to represent any given activity, or its key stages, so that it could be perpetuated in the afterlife. Furthermore, these decorations were only available to the elite of the population. Are the artistic representations a reflection of idealized concepts about what bread and beer ought to be – especially in the light of its ritual importance? Are we seeing production of ritual or special foods? Were these foods specially produced for wealthy people, and not available to most of the population? The depictions may vary, with some portraying production of ritual foods, while others may show 'ordinary' food preparation. Such questions have not yet been assessed.

There is another problem with the use of the ancient artistic record to gather information about bread and beer. Brewing and especially baking activities are well known to us today. Even if we as individuals have never baked a loaf of bread or brewed a barrel of beer, we are familiar with the end products. Many people have, of course, baked and brewed themselves. This is in marked contrast to other ancient activities such as making pottery or producing textiles. There are few people in our society today who have much experience with making and using pots, or spinning and weaving flax into cloth. When dealing with something so familiar as the foods which we consume, how can we be sure that what we perceive, influenced by our modern experience of beer and bread, is an accurate interpretation of the ancient Egyptian scenes? It is inevitable that we should impose our own assumptions about apparently familiar foods, which are actually likely to have been made using processes which do not correspond to our experience at all. Thus, the apparent familiarity of the foods may be quite misleading, and without independent evidence, we may well be misunderstanding the artists' intentions.

### *Archaeology: a New Approach*

For the work on ancient Egyptian baking and brewing which I have done over the last few years, I decided to set aside the artistic record entirely. The work on it which had already been carried out has resulted in much unacknowledged confusion. The previous heavy reliance upon depictions suggested that there were unlikely to be many new insights about baking and brewing technology to be gained by using the artistic record as a starting point. The art undoubtedly provides rich data, but the fact that it had already been so well worked, with so many varying accounts produced from it, has made it impossible to gain a fresh perspective on preparation methods. Clearly, an entirely different approach was required if progress were to be made.

Accordingly, I set about developing a new model for ancient baking and brewing with archaeology as the primary focus, making, as far as possible, no reference to the

artistic record. I focused on the New Kingdom period, so change over time is not yet a part of this study. Three categories of archaeological remains are relevant, drawn from both tombs and settlement. They are the archaeo-botanical evidence, showing which species of cereals were grown, the tools and installations used to process those cereals, and the actual remains of ancient bread and beer themselves, preserved thanks to the extreme aridity of Egypt's climate. In addition, two supporting classes of data enabled the archaeological record to be interpreted. Ethnographic observations of people using traditional cereal technology were carefully selected on the basis of similarity to ancient Egyptian tools and ingredients. Experiments reconstructed the processes using authentic or replica tools and installations. Through the integration of information drawn from this wide range of sources, it was possible to create testable, logical models for ancient Egyptian brewing and baking. The archaeo-botanical evidence has demonstrated for at least a century that the ancient Egyptians cultivated only hulled barley and emmer wheat. Terms in the captions of reliefs and paintings showing cereal processing, as well as in administrative lists and the like, have led many Egyptologists to suggest that other cereals were grown as well, but there is no archaeological basis for this idea. The properties which dictate the processing requirements of hulled barley and emmer have not been well understood, because emmer is very rare today and barley is hardly used for human consumption apart from its principal role in brewing.

Both cereals are hulled, which means that when they are threshed, they still retain an envelope of chaff tightly surrounding the grain. For wheat, such a chaff-grain package is called a spikelet. The hull of barley is much thinner than that of emmer wheat, but it is attached to the surface of the grain whereas emmer chaff is not actually bonded to the wheat kernel. In contrast, the wheats used almost everywhere today for bread, biscuits, pasta and other products are free-threshing: when they are threshed all the chaff falls cleanly away from the grain. This means that hulled cereals need extra processing stages to remove the chaff compared to the free-threshing cereals if the grain is to be used for human food. This critical difference has not been widely recognized, but it is essential for an accurate interpretation of the artistic record.

The archaeological and related evidence for baking (figure 3) indicates that, after hand-picking weeds and other contaminants from the emmer spikelets or hulled barley grain, the cleaned cereal was pounded in a mortar together with a little water. This broke up the tough emmer chaff, or sheared off the thin barley husk, without crushing the grain. After drying, probably simply by spreading the damp mixture in the sun for a few hours, the fine chaff was winnowed off and the coarse chaff sieved from the grain. The clean grain was then ready for milling, a process which could be controlled quite precisely to produce coarse or fine flour. No sieving was necessary at this stage. The flour was mixed with water, leavening and possibly other flavourings, then made into loaves and baked.

Figure 4 outlines how beer was made using a two-part process. The grain, whether barley or emmer, was divided into two batches. One was sprouted for a few days and then dried, perhaps in the sun or by gentle heating, to produce malt. Malt is still a key ingredient of modern brewing. It contains the enzymes needed to break down

the starch contained in the bulk of the grain into sugars, which can then be metabolized by yeast into alcohol. The malt was then coarsely milled.

The second batch of grain was first milled, then cooked in water to form a sort of coarse, chaffy porridge. This procedure changed the raw starch into a form which is easily attacked by malt enzymes. The two batches of grain were mixed, probably while the cooked batch was still hot. The warmth of the mixture would have made the enzymes more active in breaking down the starch. It may have been left for a period of time for starch breakdown to proceed. Then, it was washed through a sieve with water to remove most of the chaff, the sugar-rich liquid was inoculated with yeast and fermentation into beer occurred. In this sequence, bread plays no role. This more complex brewing method compared to previous suggestions seems to fit better with a society accomplished in many other spheres of activity, not least art!

### *New Roles for the Artistic Record*

With an alternative suggestion for the ancient Egyptian method of cereal preparation which has been constructed independently of the artistic record, how can the depictions now be used? First of all, the artistic corpus forms an independent means to test the archaeological models for baking and brewing. The art is an important reflection of ancient Egyptian activities, even if it has not been fully understood in modern times. Therefore, the artistic record and archaeological models must not conflict. The actions proposed for baking and brewing based on archaeological evidence include all the activities described based solely on the artistic depictions, such as pounding, sieving, grinding, straining and so on. The differences are the functions ascribed to each activity, the proposed sequence of actions, and the intermediate products generated at each stage.

With the new explanatory models, some of the actions seen in the art are more satisfactorily explained. For example, it seems an unnecessary repetition to produce flour by both crushing grain in a mortar and then milling it with a quern, whereas the need to dehusk the grain explains well the presence of the two types of tool shown in the artistic scenes. Since partially-baked bread no longer features in the production of beer, the odd suggestion that bread was strained through a sieve no longer needs to be accepted. Indeed, archaeological and artistic data on the sieving stage of brewing now fits together very well. The presence of large quantities of chaff, removed at some stage in the brewing process, explains the need for sieving. In some Middle Kingdom tomb models, little sausage-shaped objects are arranged around the outer edge of the sieve set above the vat. These have been taken to represent bread loaves, but they are more likely to be squeezed-out masses of chaff from which the sugars and starch of the processed grain have been rinsed. Chaffy masses which have been found in tombs match very well with this suggestion.

Another important use of the artistic record is as a guide to changing technology. Since a limited number of settlement sites have been excavated in Egypt, there is little archaeological evidence at present to trace the development of baking and brewing methods over time. With a better understanding in particular of hulled cereal



processing requirements, and New Kingdom cereal food processing related to contemporary depictions, the changes in the artistic record can be more accurately traced.

Such work has already been done to some extent with bread moulds. The moulds shown in reliefs and models have different shapes at different periods, and a recent study found that the bread moulds excavated from archaeological sites of different periods changed shape in parallel. This shows that the artistic record kept pace with contemporary changes, and was not clinging to older, conventionalized portrayals of food production for ritual purposes. Exactly how the moulds were used, and how the bread may have varied over time, has yet to be fully established.

A unique contribution of the artistic record is information about changing gender roles. It is often stated that the job of grinding grain was restricted to women, while the heavier task of pounding was always done by men. A careful study of all depictions – statuettes and models as well as reliefs and paintings – mostly bears out the first premise, although there is at least one Middle Kingdom statuette of a man who is milling. On the other hand, the assumption that pounding was only a male job is not borne out by the artistic scenes. There are many examples from the Old and Middle Kingdoms, particularly amongst the models, of women pounding. A fine example which flouts this suggestion is an Old Kingdom relief in which two men and one woman work together in rhythm at one mortar. In the earlier periods, women are shown participating fully in all tasks connecting with baking and brewing, while conversely, men do not appear to work at every job and may even be outnumbered by women in the bakery and brewery.

The few bread and beer paintings which date to New Kingdom times, however, show a substantial change in roles. Only men are shown carrying out the various activities. Interestingly, not one New Kingdom painting shows the milling action. Were women consigned solely to this role but not portrayed? Since the depictions show production of bread and beer for the elite, though, the lack of women may reflect a change in personnel for large households and state production. It seems likely that women were involved in food preparation in small households.

Despite a long history of description, the critical analysis of brewing and baking in ancient Egyptian art has only just begun. Ancient Egyptian art is beguiling and superficially accessible because of its skilled execution and detailed portrayal, but without independent means of interpretation, it is actually deceptive because we are forced to view it with our modern preconceptions. This is a particular problem for scenes which depict food preparation. The more distant the society in time or cultural affinity from us the observers, the more cautious we need to be about the interpretation of food preparation from art. As part of an integrated study, however, the artistic record has the capacity to provide unusual insights into ancient life.

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# FOOD IN THE ARTS

PROCEEDINGS OF THE OXFORD SYMPOSIUM  
ON FOOD AND COOKERY 1998

EDITED  
BY  
HARLAN WALKER



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