

Brewing for a Feast

The Ritual Consumption of Beer in The Ancient Near East

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1: Introduction

The advent of fermented beverages is still debated by archaeologists and beer enthusiasts alike. What is not debated, is how fermented beverages affect our society today. Going to a bar to sit down with friends and a drink after a long day at work is relaxing. To many of us, drinking is a ritual. We drink at parties, weddings, or even in religious ceremonies. This is not new behavior; people have been consuming fermented beverages in a ritualistic manner for thousands of years (Joffe 1998, 298). Nearly every society has endorsed and controlled structures for altering our states of consciousness (Michalowski 1994, 27). This can take the form of the consumption of alcoholic beverages, hallucinogenic substances, or even fasting (Michalowski 1994, 27). Evidence for ancient beer has been discovered in numerous archaeological sites all around the world (fig. 1).



Figure 1 Map of some known archaeological sites with evidence for beer (produced by the author)



Figure 2 Close up of the Mesopotamian and Levant regions marking known sites with archaeological evidence for beer (produced by the author)

To gain a better understanding of the importance of fermented beverages this thesis will investigate the consumption of beer during feasts, banquets, and within domestic spaces, focusing on beer consumption, in Mesopotamia and the Levant (fig. 2). This thesis will answer how we can identify the ritual consumption of beer within the archaeological record? This thesis will also identify any change in beer over time in Mesopotamia and the Levant and if there are any differences between these two regions. Does this change in consumption or brewing practices make a significant mark on the archaeological record?

1.1 Methodology

As this thesis will focus on published research, the methodology for this research revolves around these works. In particular, the dataset will consist of: textual evidence, production installations, artistic representations, and pottery (table 1).

| <i>Data</i> | <i>Production</i> | <i>Consumption</i> | <i>Ritual Practices</i> |
|----------------------|-------------------|--------------------|-------------------------|
| <i>Texts</i> | X | X | X |
| <i>Installations</i> | X | | |
| <i>Art</i> | | X | X |
| <i>Pottery</i> | X | X | X |

Table 1 Table showing the types of data and what they reveal

By looking at the translated written evidence on clay tablets, such as the Garšana texts, we can gain an understanding of the production of alcoholic beverages, the consumption of these beverages and any potential ritual practices. These texts are in the form of receipts and ingredient lists which provide an interesting insight. Identifying centers of production, or installations, such as the installation at Tall Bazi in modern day Syria, can tell us about the production of alcoholic beverages, and may even be able to shed light on some aspects of consumption. The Royal Standard of Ur, the perforated plaques from Nippur and Khafaje, and the seal impressions from Khafaje and the Royal Cemetery of Ur are useful for investigating the consumption and ritual practices of alcoholic beverages. Finally, the change in pottery forms over the years, the beer vats from Tall Bazi, copper strainer tips, and chemical evidence in the form of calcium oxalate can help in investigating the production, consumption, and ritual practices of beer.

This study will focus on two areas in the Near East: Mesopotamia, and the Levant. These two geographical and cultural regions were chosen since they are both easily comparable and together provide enough evidence for the research necessary for this thesis.

1.2 Introducing Mesopotamia

Mesopotamia is a large area, encompassing the regions between the Tigris and the Euphrates rivers in what is now modern-day Iraq and Syria. The Mesopotamian region gets an annual rainfall of less than 200 mm per year (Wilkinson 2000, 222). The Mesopotamian alluvial plain is devoid of many natural resources which led to agricultural intensification, through irrigation techniques, with the cultivation of dates and barley, and an increase in animal husbandry, with the raising of sheep and cattle (Algaze 1989, 571; Schmandt-Besserat 2018, 392). Although the intensification of agriculture and irrigation techniques is not necessary for the brewing of beer, it played an important role for the world of beer brewing. The intensification of agriculture naturally led to a rise in the number of crops produced which in turn led to a possible increase in beer production. As farming centers grew, these locations became central places of residence. This eventually led to a rise in cities and city-states as central population centers. Large scale urbanization began in Mesopotamia as far back as the Middle to Late Uruk period (c. 3850 – 3100 BCE) (Algaze 1989, 571). By the start of the Early Bronze Age in Mesopotamia, much of the population lived in large urban centers (Pollock 2003, 20). Possibly due to the lack of

natural resources in the surrounding area, the Early Bronze Age was a period of much conflict between neighboring city-states (Pollock 2003, 20). In order to maintain the loyalty of their subject's, leaders would hold banquets and feasts where fermented beverages would be provided (Joffe 1992, 305).

1.3 Introducing the Levant

In terms of urbanization, the Southern Levant region was slightly slower than its counterpart to the southeast. This period was characterized by an increase in the cultivation of cereals and legumes, an increase in horticulture as well as animal husbandry (de Miroschedji 2013, 2). Furthermore, a sharp increase in the number of settlements from the Late Chalcolithic to the Early Bronze Age I (henceforth EB I) signifies an increase of sedentary lifestyles (de Miroschedji 2013, 2). These settlements are often walled and fortified indicating the presence of conflict between neighboring peoples (Chesson 2015). Around the start of the EB during the EB I period, there is a sharp increase in contact with foreign peoples (de Miroschedji 2013, 3). Contact with northern Syria seems likely as many ceramic vessels bear similarities in form with that of Urukian colonies (de Miroschedji 2013, 3). However, it remains unclear as to if this contact was direct or indirect (de Miroschedji 2013, 3).

The development of the Northern Levant region took off at a slower pace than the central region of Mesopotamia. It is believed that much of the settlements in the Northern Levant were small pastoral communities without a central political structure and minimal social structure (Akkermans and Schwartz 2003, 226). It is not until the Early Bronze Age III period (EBA III) that we see an apparent change in settlement development towards a more centralized structure and a unique material culture (Cooper 2013, 4). The Northern Levant saw a more household oriented approach to beer brewing during the Late Bronze Age. Looking at the site of Tall Bazi in modern day Syria, we find fifty residential buildings all containing the same assemblage of ceramic vessels indicating home brewed beer (Zarnkow *et al.* 2011).

1.4 A Background on Brewing Processes

To the urbanizing ancient peoples of the Near East, fermented beverages were vitally important (Kaiser *et al.* 2011, 26). The process of making beer sterilizes the water, allowing

previously unsafe drinking water to be consumed without risk of bodily harm. Understanding the process of beer brewing is important to truly identify the presence of beer in the archaeological record. Beer is relatively simple to make: all one needs is water, barley, and yeast. Each of these ingredients were available in Mesopotamia and the Levant during this period.

To produce a beer, the brewer must first malt the barley. To do so, requires them to soak the barley in water, and then roast them which allows the barley to produce alpha and beta amylases (Jennings *et al.* 2005, 279). Amylases are enzymes which are critical in the production of a fermentable wort (the liquid before the addition of yeast). This can be done with fire, or by the hot desert sun of the region. It is probable that the ancient peoples of Mesopotamia could have laid the barley out on mats in the hot sun and exposed them to moisture to allow the grains to sprout (Jennings *et al.* 2005, 279).

Once the barley has been malted, it is then crushed and added to hot water, although it is still possible to brew with cold water as proved by Martin Zarnkow and his team at the site of Tall Bazi in modern day Northern Syria (Zarnkow *et al.* 2011). After the grains have soaked in the water for a good amount of time, it is useful to boil the wort, but this is not a necessary step. Furthermore, it is a difficult step to prove archaeologically. Once this process is done, all that is necessary from here is the addition of yeast. Although the ancient Mesopotamians did not fully understand the cellular characteristics of yeast, they still understood the importance of its addition (Thomas 2011, 43). There are several ways that people may have added yeast to the beer including reuse of vessels that would add natural yeast to the newest batch of beer, the addition of grapes or an older beer, or by the addition of saliva into the vessels (Jennings *et al.* 2005, 280). The many different vessels that the brewers would have used to brew and ferment in will be discussed later.

2: Beer Consumption During the Feast

2.1 Ancient Feasting and Banqueting in Mesopotamia

Before discussing ancient feasts and festivals, it is important to first define what is meant by feast. Generally, a feast is the communal consumption of food and drink (Dietler and Hayden 2010, 3). Dietler and Hayden also state that it is important to make the distinction between mundane, daily meals and the ritual activity of a feast (Dietler and Hayden 2010, 3). Although daily meals would have held some importance, this chapter will focus on communal consumption, the feast.

During the Early Bronze Age in Mesopotamia, festival feasts and banquets were undoubtedly linked to ritual behaviors, religion, and were important to maintain and build relationships between the leaders of a city-state, the inhabitants, and the deities (Brunke 2011, 1). The communal consumption of alcohol during these feasts may be interpreted as a means of economic activity, a form of social competition and a symbol of power and status (Joffe 1998, 298). Furthermore, the feast was a place for ‘commensal politics,’ the mutual transfer of symbolic and economic capital, the re-embedding of societal hierarchy structures, and the building of region-wide trade and exchange networks (Dietler and Hayden 1996)

Many of these feasts were dedicated to the various deities which indicates a ritual aspect of the celebrations (Dietler and Hayden 2010, 4). Furthermore, the behaviors of the attendants: singing, dancing, and consuming alcoholic beverages shows further evidence that these festivals and celebrations were ritual in nature (Dietler and Hayden 2010, 4). The importance of such celebrations can be shown by the structuring of the Mesopotamian calendar, around these festivals (Brunke 2011, 3). Each month of the year included numerous festivals and banquets dedicated to many of the Mesopotamian deities (Schmandt-Besserat 2010, 397).

Beer consumption was so ingrained in these events that they were named after it. *Kaš-de-a*, the Sumerian name for these banquets, translates to the literal meaning, ‘beer serving’ (Brunke 2011, 5). These celebrations would be for the inauguration of a new king or the death of one, the construction of a new temple to a deity, a new palace, new alliances with neighboring city-states, or to honor one of the many deities of the city (Schmandt-Besserat

2010, 397). Furthermore, textual evidence from the Garšana archives indicate the amount of goods to be provided for these celebrations indicating a hierarchy of importance for each of the gods or deities (Brunke 2011, 9). The Garšana archives are a rough collection of over 1500 tablets pertaining to the Mesopotamian town known as Garšana (Owen *et al.* 2007, 1). The overwhelming majority of the texts bear the names of the officials and one place name (Owen *et al.* 2007, 1). The tablets roughly date to the Ur III period (ca. 2112 – 2000 BCE) and seem to be scribed by the chief administrator of some form of household or estate (Owen *et al.* 2007, 2). The Garšana texts are useful as they provide insight into relationships between nearby towns, labor and construction, the feeding and payments for workers, the production of textiles and leather goods, and funerary and ritual matters (Owen *et al.* 2007, 7). It must be noted that the Garšana texts do not have any archaeological context, but it can be inferred by their single authorship that they originate from the same place (Owen *et al.* 2007, 7).

One of the clay tablets from the Garšana texts indicates five banquets taking place in the space of a month. The tablet lays out how much beer and food are to be provided for the event. This tablet can provide us an insight into how many people would have been invited to these celebrations but not necessarily who those people were. Were these feasts and banquets made for the male ruling elite? Dietler and Hayden argue that oftentimes, feasts are structured on the gender divide, that is, that female labor largely supports the feast where men are the main recipients of the event (Dietler and Hayden 2010, 11). Pollock suggests that in the feasts which reinforced the political power and solidarity of males were limited to men (Pollock 1991, 391). Pollock cites that the cylinder seals from the Royal Cemetery at Ur depicting banqueting activities are more often found in female burials while scenes of contests are more often found among male burials (Pollock 1991, 391). Without further evidence, it is difficult to determine if women were barred from various feasts or banquets.

2.2 Gods and Goddesses of Beer

The various city-states in Mesopotamia had a vast pantheon of gods and deities. Many of the major deities and gods were connected to inanimate objects, animals, numbers, minerals, foods and so on (Hundley 2013, 80). These deities, which lived in a society which mirrored our own, were anthropomorphic, gigantic and had superhuman powers

(Hundley 2013, 72). The Ancient Mesopotamians assigned deities to specific professions or tasks, such as Ninkasi and Siras for beer brewing and Ninduluma for woodworking (Hundley 2013, 79).

Interestingly, there is a Sumerian Hymn dedicated to the goddess of brewing, Ninkasi. This hymn was written on a tablet and seems to have been written carelessly (Prince 1916, 40). There are many reasons why the writer may have written this carelessly, but perhaps it was written whilst the writer had a few too much to drink. Perhaps the act of writing the hymn was seen as an offering to the goddess, thanking her for the pleasant beverage. The hymn is as follows:

May Ninkasi live together with you!
Let her pour for you beer (and) wine,
Let (the pouring) of the sweet liquor resound pleasantly for you!
In the ... reed buckets there is sweet water
I will make cupbearers, boys, (and) brewers stand by,
While I turn around the abundance of beer,
While I feel wonderful, I feel wonderful,
Drinking beer in a blissful mood,
Drinking liquor, feeling exhilarated,
With joy in the heart (and) a happy liver –
While my heart full of joy,
(And my) happy liver I cover with a garment fit for a queen!
-Excerpt from “The Hymn to Ninkasi” (Prince 1916)

Along with the Hymn to Ninkasi, there are several hymns dedicated to various other gods which mention beer and drink specifically. Another hymn which specifically mentions beer is the hymn of Iddin-Dagan of Isin (Michalowski 2004, 32). The hymn is as follows:

They pour dark beer for her,
They pour light beer for her, Dark beer, emmer beer,
Emmer beer for her majesty,
The fermentation vats bubble fervently.

Mixing syrup with butter into a past,
Mixing butter into a confection,
They make bread of syrup and dates for her.
Beer at day's end, flour, flour in syrup,
(And then) syrup and "wine" at sunrise, they pour for her.
God and man go to her with food and drink.
- Hymn to Iddin-Dagan of Isin (Reisman 1987)

2.3 Beer Consumption as Ritual Behavior

There is no doubt that alcohol alters our state of mind for better or worse. Furthermore, the act of altering our states of mind as a means of relaxation, enjoyment, ritual behavior, and building solidarity and connectiveness in social contexts is commonplace throughout history. The act of drinking in a group helps to build connections, memories, and relationships between those involved. This is seen today in bars, at sporting events or at private parties and events. This behavior is not a new occurrence. As stated before, alcohol consumption during feasts and banquets was used to build social and economic relationships to change power dynamics in the Early Bronze Age of Mesopotamia.

The consumption of alcohol in a ritual context, outside of private contexts, can be seen in several cultures and peoples from all periods of history (Joffe 1998, 298). Furthermore, the act of drinking alcohol for ritual behavior can be seen in many aspects of today's society and culture. These behaviors manifest in rituals such as Holy Communion for Christians in modern society or drinking alcohol during festivals or celebrations such as birthdays, graduations, or weddings. Although beer has been used as a social and religious tool, it also had a few important mundane roles. Alcohol was used as an everyday stimulant, an easily accessible luxury, and a source of cheap calories (Braudel 1973, 175).

Used to celebrate victories in battle, to inaugurate or mourn a king, to build political clout, or to thank the many gods of the Mesopotamian pantheon, feasts and banquets were a large part of the culture of ancient Mesopotamian societies. Textual evidence reveals the various goods consumed at these events and the reasons for these events.

3: Beer in the Daily Life

3.1 Ancient Home Brewers

Beer was not just reserved for those in higher social standings or reserved just for feasts. The brewing of beer was a common household activity, a good example of this is the site of Tall Bazi (Zarnkow *et al.* 2011). Located in Northern Mesopotamia, or modern-day Northern Syria, Tall Bazi was divided into three areas, two separate parts of the lower town, and the citadel (Sallaberger *et al.* 2006, 69). The citadel can be dated back to the Early Bronze Age and is built atop a natural mountain 60 meters high (Sallaberger *et al.* 2006, 70).

Fifty houses within a residential area of the lower city, dating to the Late Bronze Age occupation of the settlement, contained a series of ceramic vessels in various locations throughout the houses (Zarnkow *et al.* 2011, 48). Among the discovered vessels were a large 200 – liter volume vat with a thick rim and wide opening, a 90 – 110 – liter vessel with a perforation in the bottom, and several storage jars (Zarnkow *et al.* 2011, 48). The specifics about these vessels and their relation to beer production and consumption will be discussed in section 4.4.

3.2 Beer as Payment

Outside of its use as a ritual libation, social lubricant at banquets, or its mundane use as a safe to drink beverage, beer served as a method of payment for work (Neumann 1994, 323). However, beer was not used as a common source for compensation. Rather, its use as a method of payment was during extraordinary circumstances (Neumann 1994, 323). These circumstances include when there was an abundance of the liquid, or during special occasions (Neumann 1994, 323). It would not have been possible to provide all workers employed by the state with an allotment of beer. It is estimated that a total of over 300,000 workers were employed by the state in the Ur III period (ca. 2112 – 2000 BCE) (Neumann 1994, 323). Presargonic administrative texts indicate that brewers would be given the necessary ingredients to brew beer (Neumann 1994, 325). Furthermore, these brewers would sometimes hold higher social standing, producing beer for the palace and the temple households (Neumann 1994, 325). These brewers would often be given land allotments, livestock and even slaves (Neumann 1994, 325). Women and children are likely

to be recipients of beer for temporary work at the temples (Neumann 1994, 328). Furthermore, women and children with no households would be given a ration of monthly beer (Neumann 1994, 328).

In terms of payment at the city of Umma for the everyday worker, rations would be distributed as payment (Neumann 1994). These rations included the necessary ingredients for brewing beer, namely barley (Neumann 1994, 328). This would make it possible for each person to brew their own beer in their homes. It seems that the recipients of beer were those who conducted a special service for the temple, palace, or government officials (Neumann 1994, 329).

3.3 Storing Beer

Improper storage of beer is a major factor in the health and lifespan of beer. Ideally, beer should be stored out of direct sunlight and in a cool environment. Several rooms in the palace structure in Ebla have been identified as storage areas (Dolce 1994, 296). These rooms show evidence for the storage of cereals and olives (Dolce 1994, 297). These rooms, however, seem to not be specifically used for food and liquid storage as many small pots for domestic uses are found within (Dolce 1994, 297). Among the ceramics which are possibly used to store liquids are narrow-mouthed jars and 'tea-pot' shaped vessels (Dolce 1994, 297). These tea pot vessels are depicted in banqueting scenes such as the seal impressions from Khafaje. Their similarity in form could indicate that these tea-pot vessels could have been used to store beer. The narrow-mouthed jars also make for excellent pouring vessels and possibly indicate the presence of alcohol.

During the Early Bronze Age I (3250 – 3000 BCE) period in the Levant there seems to be an increase in the production of these narrow-mouthed jars indicating an increase in the consumption of liquid, but there is little evidence for storage for these vessels (Frangipane 1994, 235). We only start to find more substantial storage locations in the Late Uruk period in Mesopotamia (Frangipane 1994, 235).

4: Archaeological Evidence

As an organic substance, beer is difficult to identify in the archaeological record. Jars of perfectly preserved beer found in-situ is a highly unlikely find. Because of this, we must rely on other forms of information to be able to identify the presence of beer in the archaeological record. Ancient beer is not like the beer we have today. It does not preserve and get better over time in the same way a modern barleywine or an imperial stout would. Due to the low alcohol content and the lack of a true anaerobic environment, if the beer was not stored properly it would spoil within the week (Jennings *et al.* 2005, 277). To make matters worse, the chemical compound calcium oxalate, which archaeologists use to identify the presence of beer on pottery sherds, is difficult to detect (Homan 2004, 86). This has partly to do with the fact that beer was rarely stored for extended periods of time which would not allow residues to build up as efficiently (Homan 2004, 86). To add to this, beer production can be performed with only one vessel, making the total number of beer brewing artifacts infrequent in the archaeological record (Jennings *et al.* 2005, 277).

4.1 Textual Evidence of Beer Production and Consumption

Textual evidence of beer comes in several forms. These range from receipt documents for celebratory events to hymns dedicated to the gods. Among texts related to beer the largest collection comes from the aforementioned Garšana archives (Owen *et al.* 2007, 1). Within the Garšana texts is an ingredient list for the various foods and beverages that would be needed for a feast dedicated to the goddess Inana (Brunke 2011, 9). The ingredient list states that 1935 liters of beer was needed for the banquet (Brunke 2011, 9). With this information in combination of other foods, bread, and soups, Brunke estimates that a total of 1600 people could have been fed during this banquet. That is just about 1.2 liters of beer for each person, not considering any non-drinkers or potential higher portions for the more elite attendants. This seems to eliminate any notion of a heavy drinking environment which seems to be synonymous with modern day festivals and celebrations. In this sense, beer would have been more of a sipping drink throughout the night, indicating a more restrained drinking environment. Moreover, 1600 attendants in a city of thousands shows that these banquets would not have been for the entire city. These events were likely restricted to those of the upper-class.

Further textual evidence of beer is known from the records of Presargonic Girsu (Powell 1994, 93). These records from Girsu, the capital of the Sumerian state of Lagash, record beer deliveries by brewers, and monthly allocations of cereals to brewers (Powell 1994, 93). These texts mention many different ‘types’ of beer including dark beer, red beer, and golden beer (Powell 1994, 104). The ingredients on the brewer’s receipt tell us much about the different grains allocated to the brewer (Powell 1994, 94). The grains include base malts and adjunct grains for flavoring and color (Powell 1994, 94). The Girsu texts are important as they provide us several ingredients brewers have access to and how much beer is produced. With this information, we can infer that the beers were likely ‘strong’ in alcohol content (Powell 1994, 118). However, without further evidence and information, it is impossible to infer an exact alcohol by volume for the produced beers.

4.2 Artistic Evidence of Beer

Depictions of beer in art is almost entirely in a social setting. Very rarely do we see depictions of alcohol consumption in solitary settings (Michalowski 1994, 29). These artistic representations are almost always scenes of communal consumption in the form of celebratory events or banquets (Michalowski 1994, 29). Banqueting and feasting while consuming beer is a common theme in Mesopotamian art (Schmandt-Besserat 2010, 396). Banqueting themes or scenes in Mesopotamia can be defined as a figurative motif in which one or more figures are seated and drinking from large jars with straws or holding cups (Pinnock 1994, 15). Oftentimes, there are often servants or attendants standing around the seated figures (Pinnock 1994, 15). These banqueting scenes are most common during the Early Dynastic periods in Mesopotamia and seem to come to its apex during Early Dynastic III (Pinnock 1994, 16). It is worth noting that the many votive plaques, cylinder seals, inlays, and other artistic depictions of banqueting and feasting scenes are not solely for one ritual (Pinnock 1994, 24). Rather, these scenes can depict a multitude of celebratory events and rituals (Pinnock 1994, 24).

When considering banqueting and celebratory scenes in Mesopotamia, the most discussed is the Standard of Ur as it is one of the best-known pieces of Mesopotamian art depicting a banqueting scene, seen in figure 3 (Schmandt-Besserat 2010, 396). The Standard was discovered in the Royal Cemetery of Ur and dates to the Early Dynastic period (Ławecka 2017, 339). The Standard is a wooden, trapezoidal, box-like object (Collins 2015, 5). It is

unknown what purpose the Standard served as it was labeled as an inlaid box and a stela in the excavation notes during its discovery (Collins 2015, 60). The standard has two panels both depicting different events, the battle scene, and the banqueting scene (Collins 2015).



Figure 3 Standard of Ur, discovered in the Royal Cemetery of Ur (www.penn.museum)

The banqueting scene on the standard is split into three scenes, the topmost scene depicts seated men drinking from cups whilst a musician plays his instrument (Schmandt-Besserat 2010, 392). The lower and middle scenes portray men carrying sacks over their head and leading bulls and goats in a procession (Ławecka 2017, 339). These sacks were likely filled with grain for the large amount of bread to be made. Ławecka and Schmandt-Besserat describe these people as tribute-bearers. These were people who would bring the food and beer to the banquets and the feasts as an offering to the king (Schmandt-Besserat 2010, 394). This banqueting scene likely depicts the victory feast after the battle depicted on the back side of the standard (Collins 2015, 13). Drinking was a central aspect of Mesopotamian ritual (Collins 2015, 36). This is clear from the many depictions of drinking in Mesopotamia throughout the various wall stela, cylinder seals, and plaques discovered. Identifying what the participants were drinking based solely on the artwork is difficult. Collins suggests that the cups would have been filled with wine as beer was mainly drunk through large vessels and straws (Collins 2015, 36).

Filtering out a beer would have been possible as the brewers likely had the means to filter out the unwanted grist. Small cloths could have been used as a sieve. These small cloths were already in use as stoppers on fermentation jars as ancient airlocks (Homan 2004, 89). These airlocks will be discussed in more detail in section 4.4. Many of the drinking vessels

depicted in the banquet scene have been found during the excavations of the Royal cemetery. Many stacks of drinking cups were discovered within the royal cemetery (Collins 2015, 36). Among the discovered vessels were silver cups and even some ceramic cups were discovered within some of the poorer graves (Collins 2015, 36). Unfortunately, no residue or chemical analysis has been conducted on the discovered vessels from the Royal cemetery so it is unknown if there are traces of calcium oxalate, which would indicate the vessels use as a beer cup, or tartaric acid indicating the use of the cup as a vessel for wine.

Further depictions of beverage consumption in art come from the lapis lazuli cylinder seal from Queen Pu-abi's tomb in the Royal Cemetery of Ur, seen in figure 4. This seal has two panels, both depicting a banquet in which seated figures are drinking from cups (Schmandt-Besserat 2010, 397). In both registers there are two seated figures, likely the king and queen, and several standing figures around them. These figures appear to be in the act of toasting or sharing glasses. It is not clear what would have been in these cups but given the importance on beer and alcohol during banquets and feasts, it seems likely that these cups would have been filled with the liquid. Determining what alcohol was consumed is again, difficult.



Figure 4 Cylinder seal made of lapis lazuli, discovered in the Royal Cemetery of Ur (www.britishmuseum.org)

A cylinder seal found at the site of Khafaje (fig 5), dating to the Early Dynastic Period, also show depictions of beer consumption. Confirming the depictions as beer consumption is clearer with this artifact. The seal shows two seated figures drinking from

straws from a central vessel (Schmandt-Besserat 2010, 397). Drinking from straws would have been necessary to strain out any leftover grist from the drinking vessel, as it is likely that the beer would not have been filtered as often as modern standards. This can be inferred from several factors. First, removing the grist from the beer requires the beer to be transferred to a secondary vessel. Not only does this require a separate vessel, but this process could also introduce unwanted bacteria into the beer. However, if the beer would have been drunk relatively quickly after transferring, the bacteria would not pose a problem.



Figure 5 Cylinder seal and its impression depicting two seated drinkers from Khafaje (www.asor.org)

The perforated votive plaques from Nippur and Tell Khafaje (figs. 6 and 7) also provide insight into beer consumption during banqueting and feasting. Specifically plates 105, 107, 185, and 187. Schmandt-Besserat states that these plaques do not show any ritual activity, instead focusing on the goods provided for a banquet (Joffe 1998, 305). The act of providing goods for a feast can be viewed as ritual behavior. Libations, or providing goods to the gods is certainly ritual behavior. Many of the depictions of tribute-bearers lining up in a procession with their goods to present them to the king one by one is ritual behavior in and of itself. Specifically, in the procession scene on the Standard of Ur, the tribute bearers are providing goods for the king. The King won the battle with the aid of the deities therefore, the tribute is used to thank the deities and the king for the victory (Collins 2015, 36). Dietler defines ritual activity as any behavior that can be distinguished by common or usual activities (Dietler 2010, 67). The act of providing goods for the feast or banquet, is the first step of the feast.



Figure 6 Image of perforated plaque from Nippur (Schmandt-Besserat 2010, 395)



Figure 7 Image of perforated plaque depicting a banquet scene from Khafaje (Schmandt-Besserat 2010, 395)

4.3 Chemical Evidence of Beer

Identifying ancient beer through chemical evidence is difficult. Identifying calcium oxalate is the preferred method but as mentioned before, is not an easy task. Many chemical tests must be conducted in order to properly identify the chemical compounds present. Some of these methods include Fourier-transform infrared spectrometry (FT-IR). This process provides an initial estimation of how many organics are present in a sample on an artifact (McGovern 2017, XXV). From here, further tests are conducted, such as gas chromatography-mass-spectrometry (GC-MS), liquid chromatography tandem mass spectrometry (LC-MS-MS), and headspace solid-phase microextraction (SPME) (McGovern 2017, XXVI). These processes measure the masses of the ions so that it becomes possible to identify the specific compounds present in the sample (McGovern 2017, XXVI). Because of these limitations and challenges the evidence is limited and can only provide us with incomplete data. Despite this, there are a few sources of chemical evidence for beer in the ancient Near East.

The ancient site of Godin Tepe has provided us with some of the earliest chemical evidence thus far (Michel *et al.* 1992, 24). Grooved pottery sherds, from the Late Uruk period, found on the site have been confirmed to show traces of calcium oxalate, a primary element of beerstone (Michel *et al.* 1992, 24). Further chemical evidence of ancient beer can be seen at the Late Bronze Age site Tall Bazi in modern day Northern Syria. Residue analysis of large vessels has identified traces of calcium oxalate, indicating that these vessels were intended for beer brewing (Zarnkow *et al.* 2011, 49).

4.4 Material Evidence of Beer

Identifying differing forms in ceramic vessels has proved to be a decent way to identify the presence of beer. One of the more researched sites is Tall Bazi and it showcases fifty residential buildings which all contained a set of three ceramic vessels. These vessels include two small vessels with a perforated bottom and a 200 – liter thick rimmed vessel, seen in figure 8 (Zarnkow *et al.* 2011, 48). As stated previously, chemical analysis has indicated the presence of calcium oxalate in these vessels, indicating their use as brewing vessels (Zarnkow *et al.* 2011, 49). Further proof of the validity of these vessels as brewing vats comes from Perruchini *et al.* during their experiments. Perruchini *et al.* has chemically

confirmed that large perforated vats were indeed used for brewing purposes (Perruchini *et al.* 2018, 187).

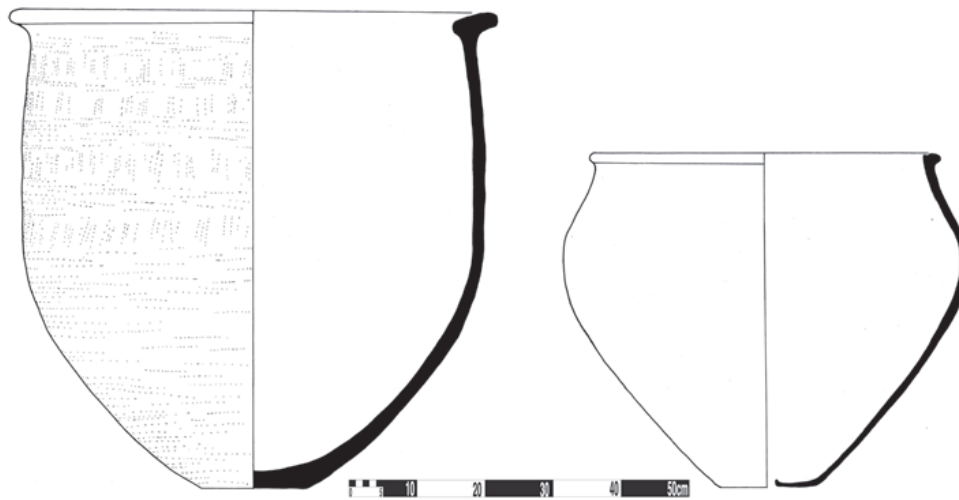


Figure 8 200-liter beer vat and the smaller perforated vessel from Tall Bazj (Zarnkow et al. 2011, 47)

Further interesting archaeological finds are the ‘flowerpots’ also known as ‘beer bottles’ (fig. 9) (Homan 2004, 89). These ‘beer bottles’ have been found in various Syro-Palestinian contexts such as Tell Mor (Homan 2004, 89). These vessels, which have a small hole in the bottom of the jar, are speculated to have been used to produce barley bread (Homan 2004, 89). The brewer would bake the bread into the vessel, and once hardened, the brewer could place their finger into the hole, pushing the bread out of the other side (Homan 2004, 89).



Figure 9 Flowerpots or 'beer bottle' vessels from Tel Mor (Homan 2004)

Other finds from similar contexts are what are known as fermentation stoppers or airlocks, seen in figure 10. These artifacts had a small hole in the center which was sealed off with a tightly packed cloth (Homan 2004, 89). The stopper would then be placed over the mouth of a fermentation jar. These stoppers, or airlocks, allow carbon dioxide, a byproduct of fermentation, to escape the vessel but prevent other foreign materials or organisms to enter (Homan 2004, 89).



Figure 10 Fermentation stoppers (Homan 2004)

Another form of physical evidence of beer brewing and consumption comes in the form of straw strainer tips. These would be typically made of metals or bone and attached to hollow reeds to allow the drinker to strain out any remaining grist or flocculating yeast, seen in figure 11 (Homan 2004, 86). These metal or bone tips are the only remains of the straws as the hollow reeds used to make the straws typically preserve well in the archaeological record (Homan 2004, 86). These straws are also depicted in many artistic representations of beer drinking such as various cylinder seals from Khafaje. The practice of drinking beer through a straw can be seen with anthropological parallels in Africa and Vietnam (Homan 2004, 86). This is thought to have been done to strain out any remaining grains from the mash. This would imply that no boil or filtration process was done for the beer. The beer would be mashed and fermented and promptly drunk. These strainer tips are often found in Middle Bronze Age to Iron Age contexts in the Levant and Egypt, however, they remain rare finds from Mesopotamian contexts (Homan 2004, 86). One such find comes from the site of Tell Hadidi in Upper Mesopotamia. A bronze tip of a strainer straw, dating to the Late Bronze Age was excavated in addition to a Middle Bronze Age plaque depicting two men drinking from straws within a central vessel (Henry *et al.* 2015, 136).



Figure 11 Copper strainer tips for drinking beer with straws (Homan 2004, 88)

4.5 Brewing Processes

Taking a further look into the limited alcohol consumption during these events, it is important to consider a possible alcohol percentage by volume for the consumed beverages. The primary mind-altering substance of alcohol beverages is ethyl alcohol, or ethanol. Ethanol is produced during the fermentation process by the yeast consuming the residual sugars produced during the mash. This process gives beer its alcoholic content. Typically, beer needs around two weeks to ferment, but this would not have been viable for the Mesopotamians as beer was quick to spoil (Jennings *et al.* 2005, 277). The more sugars (and healthy yeast) the higher percentage of ethanol in your beverage. With the current research and technology, it is difficult to say how much ethanol was in the beer of ancient Mesopotamia. If the attendants were restricted to one liter of beer per night, it is probable that they were not drinking enough to get drunk. However, it is worth noting that in the Hymn to Ninkasi, the writer proclaims that whilst drinking beer, they feel wonderful, indicating an altered state of mind, likely drunkenness.

The previously mentioned Girsu texts hold an interesting insight into the ancient brewer. The fact that they were using base malts and adjunct malts is an interesting finding. Base malts are used as a 'base' when brewing. They make up most of the grain bill which is the entire amount of grains used in the beer. What remains are typically referred to as specialty malts or adjuncts. Specialty malts are used as extra flavoring and for color. Adjuncts are things such as syrups, fruits and other additives used for flavoring. The Hymn to Iddin-

Dagan of Isin mentions mixing syrup and dates. In this case, it is likely that dates and a syrup of some kind were used in the mash as adjuncts for flavoring the beer.

It is also likely that the Mesopotamian brewers baked bread with the malted grain. This could have then been added during the mashing process and would effectively produce the same effect as normal mashing (Homan 2002, 275). The process of throwing bread into water during the mash is outlined on the XXIIIrd tablet of the HAR . r a = *bubulu* series (Hartman and Oppenheim 1950, 17 – 19). In summation, the process is as follows: the brewer prepares the malted grain and lightly bakes it into a bread named TITAB (Hartman and Oppenheim 1950, 17). This bread, or TITAB, would be added to the mash, or nartabu (Hartman and Oppenheim 1950, 17). The brewer would then prepare a second batch of milled grain into another beer bread, or BAPPIR, which was later added into the mash (Hartman and Oppenheim 1950, 18). The addition of both the TITAB and the BAPPIR would create the DIDA, known today as wort (Hartman and Oppenheim 1950, 19). Unfortunately, there are missing lines on the tablet, but with the available information the process can and has been reconstructed by Ellison in her doctoral thesis (fig. 12) (Ellison 1978, 137).

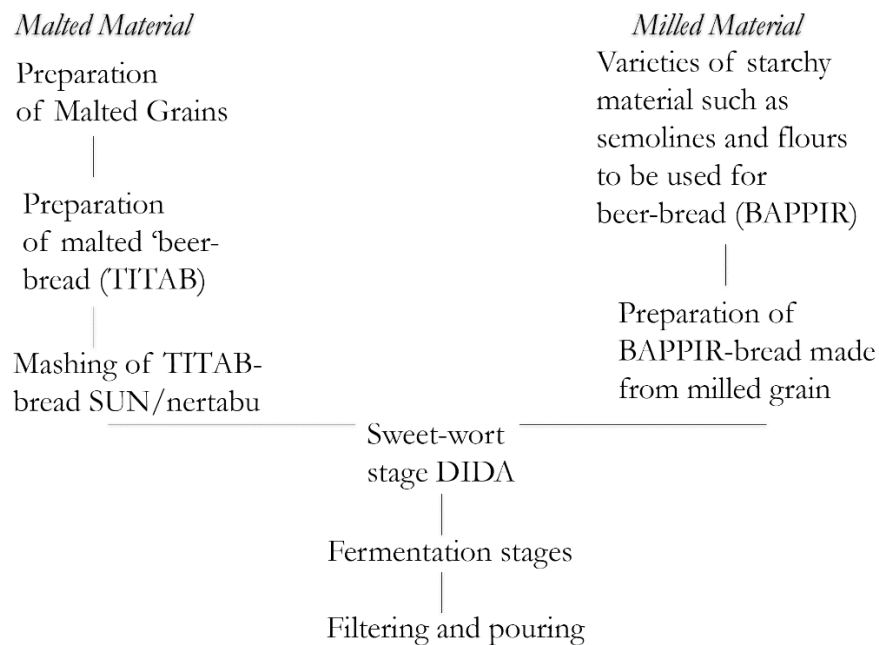


Figure 12 Outline of Mesopotamian brewing process (after Ellison 1978, 137)

On the process of brewing, the question as to whether the ancient brewer boiled the wort or not is intriguing. Boiling the wort is mostly done to sterilize the liquid and to stabilize the flavor of the wort (Thomas 2011, 41). This step in the brewing process is difficult to prove archaeologically. Sterilizing the wort would have been beneficial for the ancient brewer as unboiled water was typically unsafe to drink (Thomas 2011, 41). The evidence at Tall Bazi suggests that the boiling stage of the brewing process was skipped. However, it is possible that brewers conducted a boil at other sites around the near east.

5: Comparative Discussion and Conclusions

5.1 Comparing Mesopotamia and the Levant

Archaeological sites and evidence for brewing in the Levant is more limited than in Mesopotamia. There is less evidence for communal drinking in the Levant. In the Northern Levant at sites like Tall Bazi, there is more of a focus on individual brewing, or brewing within the home. This seems to differ from the more communal focus of beer consumption in Mesopotamian states. Looking towards the Southern Levant, different changes begin to appear in the Middle to Late Bronze Age. There seems to be more of a focus on fermented date wine rather than a barley-based beer. At sites like Jericho and Ein Feshkha, we find wine presses. Large stone rollers, sometimes weighing upwards of 900 kilograms, used for pressing dates and perhaps other fruits to collect the juices into nearby cisterns (Broshi 2007, 57). These large cisterns, which are only found in Jericho and Ein Feshkha, differ from the smaller vessels used in Mesopotamia to brew barley beer (Broshi 2007, 57).

Some of the best evidence for changes between Mesopotamia and the Levant are the pottery forms. Caches of ceramic vessels from Nineveh 5 were made up of cups, smaller necked jars, and chalices (Joffe 1992, 305). While assemblages from sites in the northern Levant region, such as Ebla, contained cups, pedestaled vessels, goblets, teapots, pitchers and spouted jars (Joffe 1992, 305).

5.2 Archaeological Parallels

There are several parallels that can be drawn between Mesopotamian and Levantine beer consumption and production. The process of brewing beer, specifically the process of tossing bread into water is similar in practice to the Ancient Egyptian method of beer brewing (Homan 2002, 275). Egyptians also had attributed the invention of beer to Osiris, one of their gods (Stewart 2003, 33). Similarly, the Egyptians gave offerings of beer to their gods and to their dead (Stewart 2003, 33). These activities are clearly similar to Mesopotamian ritual activity regarding beer production and consumption.

Moving westward towards Cyprus, possible evidence of beer production at the site of Kissonerga-Skalia can be seen. A building complex dating to the Cypriot Bronze Age (ca. 2300 – 1650 BCE) could be a possible brewery (Crewe and Hill 2012, 206). Vessels types

during the Cypriot Bronze Age share the style of Syrian goblets and teapots from the EB IV period of the southern Levant region which could indicate the consumption of beer (Crewe and Hill 2012, 210).

5.3 Addressing the Research Questions and Discussion

The consumption of beer was an important factor for ritual contexts, mundane, and political contexts of the ancient Near East. Feasting and banqueting served as an excellent means to gain political standing, build relationships with neighboring states, appeasing the people, and celebrating numerous events. Beer consumption served a crucial role during these feasts. The consumption of beer might have been a means of flaunting one's economic standing, social competition, or a display of power and status.

This thesis aimed at answering the following research question: what was the role of beer and fermented beverages in the Mesopotamia and the Levant? To complete this aim, these sub-questions were addressed: does the ritual consumption of beer make a significant mark on the archaeological record? How can we identify the ritual consumption of beer in the archaeological record? Does the change in beer consumption vary between the Mesopotamian to the Levant? These three sub-questions are addressed in detail below.

Does the ritual consumption of beer make a significant mark on the archaeological record?

As shown from the artistic evidence from numerous sites throughout the region, including the Royal Cemetery of Ur, Khafaje, and Nippur, there is a large focus on ritual behavior. Among such artifacts are the Standard of Ur, the perforated votive plaques, and cylinder seals. In each of these artifacts, the banqueting scene was paramount. The various artifactual finds such as the metal strainer tips or the large beer vats from Tall Bazi are more difficult to attribute directly to ritual use.

The Standard of Ur is a clear example of a ritual scene, the banquet. In this scene, at least two characters are consuming a beverage. Based off textual and vessel typology, there is no doubt that these characters in the banqueting scene are drinking an alcoholic beverage.

The perforated votive plaques also serve as an excellent example of ritual consumption of alcoholic beverages. These plaques served as votive offerings which provides us a clear

example of ritual behavior. The scenes depicted on these plaques make it evident that the consumption of alcoholic beverages was thought of as a ritual behavior.

How can we identify the ritual consumption of beer in the archaeological record?

Identifying ritual behavior is always a challenge. Dietler defines ritual as any behavior which can be differentiated from every day or usual activities (Dietler 2010, 67). In this regard, ritual becomes even more difficult to identify. Looking into the past through archaeology only gives snapshots of the actual events that took place. It is, however, unlikely that banquets and feasts occurred on such a regular basis that they lost their distinction from uncommon activities to everyday activity. Cuneiform texts such as the Girsu and Garšana texts provide us an insight into how often these events would take place. From this data, we can extrapolate that these banquets would not be common enough to make them every day or mundane activities. By Dietler's definition of ritual, these banquets and feasts would be considered ritual activity. It is necessary to differentiate beer brewing for banqueting and feasts and beer brewing for everyday consumption. The large beer vats at Tall Bazi, for example, were likely used for brewing beer daily. This production schedule would point to a more mundane, household consumption of beer, rather than the ritualized behavior of communal consumption at banquets.

Does the change in beer consumption vary over time between Mesopotamia and the Levant?

Judging by the available data, beer consumption does not substantially change between the Mesopotamian and Levantine regions. The consumption of beer seems to be a daily activity as well for both regions. Furthermore, the production of beer is quite similar between the two regions. As stated, there are some changes in the vessel types between the two regions as well as a seemingly more focused ritual context in Mesopotamia. This is where data is lacking, however. The limitations on data in the Levantine region, specifically in the south, results in making any form of distinction on this question difficult. However, the possible change in beverage preference from the Southern Levant region to Mesopotamia is interesting.

And finally, what was the role of beer and fermented beverages in Mesopotamia and the Levant? Beer and fermented beverages played an important role in the lives of the peoples

of Mesopotamia and the Levant. Beer served as an offering to the gods, a means of gaining political standing, and a celebratory drink. Furthermore, beer served as a clean and safe to drink beverage in everyday life. Beer was an important part of Mesopotamian life; it was a safe to drink beverage which had the capability changing the perceptions of the imbiber. Beer became so integral in Mesopotamia and the Levantine region that it became a highly ritualized substance. Beer had gods dedicated to the substance, was consumed during banquets and feasts, and even served as a libation to the various gods. Beer had many roles in Mesopotamia and the Levant, so much so that narrowing it down to one specific role becomes impossible.

5.4 Conclusion

In this study I conducted a review of published data related to beer production and consumption. Given the available datasets, there is much more to explore on this topic. Gaining access to material and performing various chemical analyses on differing datasets would create new conclusions for this study. For further research, it is recommended to perform a full chemical analysis on a specific dataset to narrow the study down to a smaller scale. A full investigation into the assemblage of cups and chalices from the Royal Cemetery of Ur could prove invaluable for the realm of the archaeology of ancient beer. A full chemical analysis on the assemblage could prove useful in identifying which alcoholic beverage was consumed within the vessels. This knowledge would bring valuable insights into the realm of beer archaeology.

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