## "Drinking Beer in a Blissful Mood"

Alcohol Production, Operational Chains, and Feasting in the Ancient World<sup>1</sup>

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Feasts were important arenas of political action throughout much of the ancient world. Since alcoholic beverages were liberally consumed at many of these events, a sponsor often faced the daunting problem of assembling prodigious amounts of alcohol in the days preceding a feast. This paper considers traditional methods for making alcoholic beverages in certain regions and demonstrates how the details of each drink's manufacture, such as shelf life, plant maturation, and labor demand, offered challenges and opportunities to those who attempted to organize their mass production. Archaeological investigations of feasting have tended to focus on the political ramifications of the event itself, but the production struggles leading up to a feast are also important to our understanding of the political economies of past societies.

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1. We thank Francesca Bray, Nathan Craig, David Crawford, Ben Orlove, Adrienne Rand, Eric Schniter, Stuart Tyson Smith, James

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!

—"The Hymn of Ninkasi, the Mesopotamian Goddess of Brewing"

Over the past two decades, archaeologists have increasingly stressed that feasting—the communal consumption of food and drink at special events (after Dietler and Hayden 2001:3-4)—played an immensely important role in the social, economic, and political arenas of ancient cultures (Blitz 1993; Clark and Blake 1994; Dietler 1990, 1996, 2001; Edwards 1996; Gero 1992; Gumerman 1997; Hayden 1990, 1996, 2001; Joffe 1998; Junker 2001; Knight 2001; LeCount 2001; Schmandt-Bessarat 2001; Wiessner 2002). They recognize feasting as a "domain of political action" that was often critical to the development and maintenance of a wide variety of societies (Dietler 2001: 66). Feasts could be political tools for forming social alliances, fulfilling reciprocal obligations, creating social debt, collecting tribute, and advertising social differences (Hayden 2001:38). Leaders vied for power and elites sustained their power by sponsoring lavish banquets at which prodigious amounts of food and drink were consumed (Dietler 1996; 92–97; Earle 1991:3; Perodie 2001:

Archaeologists have generally focused on finding the material correlates of feasts, distinguishing between different types of feasting patterns, identifying the various individuals involved, and investigating an event's wider political and economic implications (e.g., Bray 2003, Dietler and Hayden 2001, Dietler and Herbrich 2001). While this work is extremely valuable, its focus on the feasting event can obscure the labor and resources committed to growing, harvesting, and processing the food and drink that were consumed on these occasions (Adams 2004:56; Spielmann 2002:197). Investments in feasts could be dauntingly high—taking up a sizable portion of a region's resources, demanding many people's labor over the course of several weeks, months, or even years, and occasionally plunging individuals and communities into

Tate, Hendrik Van Gijseghem, and seven anonymous reviewers for their comments on earlier drafts of this article. We also thank the University of California at Santa Barbara and the Department of Anthropology for allowing us the latitude to pursue this project as part of an undergraduate research course. We dedicate this article to the memory of Peter Paige, a Ph.D. candidate in our department. A devoted father and a loving friend, he will be missed by all.

was their clarita (a particularly light and effervescent variety of chicha). From Craig Morris's (1979) work at Huanco Pampa we know that Inka administrators also used corvée labor to produce chicha while tribute-paying citizens resided at the provincial capital. Here, maize grain, masticated quids, or germinated flour could be stored in state storehouses until needed. Requisitioning chicha for Andean feasts could therefore be achieved in at least two ways: pooling the production of beer made by supporters in dispersed locations such as homes or workshops or staging the mass production of beer by laborers concentrated in administrative quarters. The most fail-safe methods involved oversight into the storage, production, and/or distribution of drink by people attached in some way to the individual(s) sponsoring the event. Wines and rice beers afforded this level of control and therefore elevated the status of individuals who could serve them in substantial quantities at feasts.

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This paper presents some important cross-cultural concepts of how the industrial steps (chaîne opératoire) in making an alcoholic beverage are constrained by the starting materials themselves—whether a grain, root, fruit, or plant exudation—and the specific means used to saccharify and ferment their carbohydrates. Jennings et al. then apply this understanding of alcoholic beverage production, with implications for agriculture, land and capital formation, labor, storage and transportation, etc., to what is arguably a key motive force in human culture and technology—elite display and emulation in the form of banquets and grand celebrations. A similar approach of "deconstructing" other ancient technologies (e.g., pottery-making [McGovern 1986]) has proven useful in shedding light on their social, economic, and political underpinnings.

As admirable as the goal is of reconstructing ancient fermented-beverage production, this paper too often falls into the trap of projecting modern or near-modern templates back into the past. Because the available archaeological evidence—contextual, botanical, chemical, documentary, and artistic—is generally very limited, the authors have often relied on ethnographic and/or ethnohistorical accounts. But technologies, like cultures, have undergone significant changes over time. Despite qualifications and the goal of drawing broad lines of distinction among the five alcoholic beverages described, one can easily come away with the idea that specific methods requiring so many days, so many workers, so much land, certain temperatures, etc., were being employed thousands of years ago.

The discussion of rice beer, for example, relies too much on recent Japanese sake production. Ancient Chinese rice "wine" and "beer" production—involving a variety of beverage types with differing amounts and degrees of alcohol and aromatic properties, as described in the earliest Shang Dynasty texts—precedes the transfer of these beverages to Japan by at least a thousand years and probably many more. Before the Japanese developed specific mold and yeast colonies for amylolysis and fermentation, the ancient Chinese were much more eclectic, as they continue to be today. Besides Aspergillus oryzae, Rhizopus, Monascus, and other fungus species, depending on environmental availability, where used to break down the carbohydrates of rice and other grains into simple, fermentable sugars. It should also be noted that the amylolysis/fermentation agent is usually referred to as qu, not jiu ou, and that the wine yeast (Saccharomyces cerevisiae) is not airborne.

A more exacting and nuanced approach is needed to reconstruct ancient rice "wine" or "beer" production before the emergence of the complicated mold amylolysis system. For example, in Neolithic China, grain was probably masticated and/or malted. Given different tools and containers as well, beverage production in this period would have been quite different from more recent Japanese sake production and have had differing impacts on ancient feasting and sociopolitical structures.

Similar questions can be raised about the scenarios for ancient beer and grape wine production. For example, it is debatable that Samuel's reconstruction of Old Kingdom beer-making in Old Kingdom Egypt can be applied to Mesopotamian technology, with its own traditions. Emmer (and einkorn and bread wheats) were used sparingly throughout the ancient Near East because they are more difficult to ferment than barley.

Given the title of the paper and since, by the authors' own definition, "wine" and "beer" are mutually exclusive, the inclusion of grape wine is surprising. Yet, this addition is useful in showing that beverages made from high-sugar fruits differ in significant ways from beer. What goes unnoticed, however, is the relative ease of making wine as compared with beer. Grapes have their own yeast (unlike cereals), so that once the juice with its concentrated simple sugars has been extracted (no need to break down starches), fermentation is initiated. Grapes and other fruits also produce a beverage with a higher alcohol content than beer (with notable exceptions, such as Chinese rice "wine"). Such beverages keep better, have the potential of improving with aging, and can be transported. It is no wonder that they were preferred by the elite for their celebrations, funerary ceremonies, and daily sustenance (McGovern 2003).

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This paper offers an intriguing perspective on ancient feasting which gives rise to a variety of possible agendas for research. As the authors point out, much research on ancient feasting has concentrated on consumption, but widening the enquiry to examine the preceding stages of

provision offers great potential for furthering our understanding of ancient political economies and social interactions.

The paper suffers, however, from a failure to grapple with the complexities of the topic and includes numerous inaccuracies. To take one example, the description of beer biochemistry includes errors relating to the definition of hydrolysis, the interaction of starch and water at low temperatures, and the definition of malt. Not only do these shortcomings obscure the accurate interpretation of ancient food practices, but they hinder broader analysis of the problems faced by those who aimed to produce surplus food and alcohol for feasting.

Jennings et al. imply that the operational chain involved in producing Near Eastern beer, the area with which I am most familiar, was essentially the same in ancient Mesopotamia and ancient Egypt, remaining broadly unchanged for millennia. There is clear archaeological evidence, however, that pre-Dynastic brewing was different to that of the New Kingdom. Neither is likely to have involved beer loaves (Samuel 2000). I have not studied the archaeological evidence for Mesopotamian brewing, but the documentary and artistic data support the traditional view that loaves were precursors to beer in the Mesopotamian process, at least in some periods. Therefore the operational chains were quite different for these widely differing times and areas.

This conflation is unfortunate, for it obscures accurate comparative analysis of ancient surplus beer production. For example, there may have been changes in the flexibility of elite production over time in Egypt. In pre-Dynastic Egypt brewing vats were large, fixed structures, at least in the centralized contexts that we know of at Hierakonpolis and Abydos (Peet and Loat 1913), and thus elite beer production may have been limited. By New Kingdom times and probably earlier, brewing took place in smaller moveable pottery vessels. Beer was made from staple cereal crops in both ancient Mesopotamia and ancient Egypt, two highly organized and hierarchical states; the reasons for very different production methods and their specific organizational implications and time constraints may be a useful area to explore.

It is very important to emphasize that food provision is a highly complicated undertaking, that evidence for ancient food preparation is difficult to obtain and interpret, and that without a sound grasp of the technology and activities involved, any wider interpretation will be inaccurate. The operational chain of food production is made up of details, and in the differences may be local preferences or critical variations in production.

In order for engendered operational chains to be taken forward as a fruitful concept, it is essential that we have a detailed understanding of specific ancient food technologies. The archaeological evidence must be underpinned by appropriate ethnographic parallels and carefully designed experiments to understand actions, labour investments, and time requirements (see, for example, Samuel 2000 and, in another context, Bayliss-Smith 1999). This multistranded approach is a fundamental necessity and not, as Jennings et al. suggest, a method of providing a "more nuanced understanding" of food operational chains. The archaeological evidence itself needs to be carefully assessed to detect homogeneity or variation in production within a culture for any given period before change over time can be inferred. Otherwise, regional or social differences—of interest in their own right—may be erroneously interpreted as temporal developments.

One area not touched on by Jennings et al. is how feasting operational chains were embedded in wider social, economic, and political economies: how elites coped with the production of surplus for feasting together with day-to-day consumption needs. Production methods may have been the same as for domestic production, differing only in scale. This appears to have been the case for New Kingdom Egypt. In some cultures, elites may have had access to different technologies and materials compared with domestic households. Relevant archaeological indicators may include centralized largescale brewing facilities, scattered small-scale or domestic facilities, differences in production installations and tools, associated archaeobotanical remains, and visible or chemical residues.

The study of ancient food provision is not easy, nor is it an undertaking which provides rapid results. The archaeology of food is a highly complex and challenging field, requiring many strands of evidence. This paper contributes by opening up a profitable area of enquiry. However, it is essential that primary studies and syntheses of food in the past be based upon detailed analysis and a firm understanding of food processes.

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Agricultural and food-producing technologies constitute a field so immense that the more research is done on it, the more research seems necessary. The paper by Jennings et al. is very welcome in this respect. It makes so many points that a full comment would take nearly as many pages as the article itself, so I shall limit myself to a few questions centered on storage, which has been of special interest to me for a long time (Gast and Sigaut 1979-85).

From the point of view of storage, beers and wine are two opposite cases. Primitive beers, of whatever kind of grain they happen to be made (maize, barley, millet, rice, etc.), do not keep more than a few days, and therefore they must be made on demand. And they can be made on demand because the grain or flour (and I would add, malt) of which they are made can be stored for months. Conversely, grapes do not keep at all (unless dried, which is another story), and therefore wine has to be made immediately following the grape harvest and stored as such. Now, storing wine is a difficult business. It was pointless to grow and harvest grapes in any "large" quantity (I leave out the question of what "large" means here as