

# Sergey Konstantinov

## BEER: A LECTURE



*(Tasting  
Included)*

**Sergey Konstantinov. Beer: a Lecture (Tasting Included).**

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Beer. The most modest and unassuming beverage, a filler for supermarket shelves. At the same time—a staple of the economies of many nations for millennia. Egyptian pyramid builders were paid with it, polar explorers took it to the North Pole as life-sustaining support, workers of Brussels once rioted because its price was up by two centimes.

In this book, a centuries-long beer history is told in a comprehensive, interesting, and *practical* manner. You will learn which beer styles were popular in each epoch, from Bronze Age to the 21st century, understand the reasons why, and, which is the most important, explore the history by taste.

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# PREFACE

## Chapter 1. Author's Note

The history of beer and brewing was always a practical study to me. I was always keen to try something new—and not just try, but learn from it: when this beverage occurred and why its tastes like this. Gradually, I involved myself in studying beer history and soon found that brewing is now one of the hottest topics of historical science.

For many centuries in northern parts of Europe beer was if not the first economy sector then at least second—the fact which both Medieval chroniclers and contemporary scholars turn a blind eye to. Up until 1980s the researchers were interested in the history of alcohol only in a context of consumption effects on personal and public health<sup>1</sup>. But as we all well know, alcohol, a ‘social lubricant’, plays a much greater role in society! Gradually, this fact reached academic studies. In the case of beer, it happened even later, at the beginning of the 21st century. It turns out that beer, an ordinary and democratic beverage, allows us to poke our noses into the most interesting and least documented part of the past: the daily routine of common folk.

Making one's way through beer history is incredibly fascinating—and equally challenging. Eyewitnesses didn't care about writing down such obvious and mundane things as beer brewing. Historical science made huge progress over many mysteries last years, and craft beer reenactors recreated lots of historical beers

for everyone to taste. But our knowledge is still miserably sparse regarding many aspects and events, even quite novel ones.

While writing this book I hadn't pursued a goal of compiling some short beer history. First, it's impossible; second, I'm no scholar but a beer enthusiast. All I want is just acquaint you, dear reader, to good beer, and tell an interesting story along the way. Let us begin!

## **An Important Remark**

This book is written as a lecture-tasting. In each chapter, we're proposing to try a specific kind of beer matching the historical period described. Full description of how to read classifications and where to learn about suitable beer styles you may find in the Appendix.

## **References**

<sup>1</sup> Dietler, M. (2006), p. 230

## Chapter 2. What is Beer

Before describing the history of beer, we need to define what 'beer' is. Natural alcoholic beverages are a result of the biochemical process of alcoholic fermentation: various microorganisms (primarily yeast, but not only them) are capable to extract carbohydrates (first of all, sugars) from aqueous solution and break them down, producing ethyl alcohol and carbon dioxide, as well as some other organic compounds. Carbon dioxide makes the resulting drink sparkling; ethyl alcohol, interesting to humans.

Depending on what raw materials were used and what kind of sugar was fermented, the resulting beverages are called differently:

- if the raw material is grapes (or other fruit), juice of which contains a large amount of glucose, then the result of fermentation is called wine;
- if the raw material is apple (or pear) juice containing glucose and malic acid, then we get cider (or perry);
- if milk sugar lactose has fermented, then we get kumis;
- if we take honey rich in fructose saccharide as raw material, we will get mead.

### It's interesting

A sucrose solution also quite fits for the manufacture of low-alcohol beverages in the form of sugar cane juice, but humanity started to cultivate it for this purpose quite recently. At that moment the distillation technology was already known, and just strong drinks were produced, rum and cachaça for instance. The product of natural, without the use

of distillation, fermentation of sugar cane is known in some countries under the name 'guarapo', being in very limited demand.

Finally, if sugars extracted from cereals are used for fermentation (first of all, we are talking about the disaccharide maltose), then the resulting low-alcohol drink is called 'beer'. The grain of many cultivated plants, such as wheat, barley, maize, rice, rye, oats, millet, buckwheat, and others is suitable for beer production. Thus, such drinks made from cereals as Russian kvass, Finnish sahti, and traditional Japanese sake should also be considered 'beer'.

Our distant ancestors, presumably, discovered the fermentation process by accident: it was enough to leave the water with grain in the open air so that the wind inoculate it with wild yeast. A few days at the right temperature — and you will get a refreshing low-alcohol drink.

The age of the known remains of fermented sugars is steadily moving further into the past. At the moment, the oldest such finding dates back to about the eleventh millennium BCE<sup>1</sup>. Thus, beer and mammoths were there at the same time for at least nine thousand years! Some researchers believe that beer may be older than bread: getting beer is easier than baking bread. But we would disagree with them, for two reasons.

First, cereals themselves contain little to no low-molecular carbohydrates: the main component of grain is starch. To get maltose or glucose out of it, you need to somehow activate the processes of converting starches into saccharides. For example, you can chew rice: the enzymes in saliva help to start the processes of converting starch into glucose. This is how traditional Japanese

sake *kuchikamizake* is prepared (not to be confused with modern sake, the production technology of which we will explain in the chapter ‘At the dawn of civilization’). If you have wondered why the heroine of the ‘Your Name’ movie is chewing rice, that’s it: she was producing traditional sake.

It is believed that the *kuchikamizake* technology (which was used not only by the Japanese but also by South American Indians, for example) is about 2.5 thousand years old (although we have not seen credible studies on this topic). Therefore the oldest beer was prepared somehow differently. To ‘activate’ the cereals some specific process is required. For example, bread was baked or *malt* was prepared. The latter is a product of controlled sprouting: during the germination of grain, enzymes are produced. These chemical compounds are capable of converting starches into maltose under the right conditions, and such grain becomes suitable for the production of a beverage, which we call ‘beer’.

Another problem of beer production is the necessity to somehow introduce yeast into the solution. You can, of course, rely on sheer luck, but this method is poorly applicable for large-scale production. In order for fermentation to begin, a ‘starter culture’ is needed. It can be fruits (such as grapes or dates), on the surface of which yeast lives in the wild, or baked bread, or yeast sediment from previous cooking.

Based on this, we strongly doubt that ancient beer was produced by accident: ‘accidental’ beer should have been obtained too rarely and being too weak, unlike, for example, fermented milk or fruit juices. Brewing was exactly a *technology*, one of the first mastered by mankind<sup>2</sup>.

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<sup>2</sup> Meussdoerffer, F.G. (2009), p. 4

# **FROM SUMERIANS TO SADI CARNOT**

## **Chapter 3. At the Dawn of Civilization**

Historical period: from 10th millennium BCE to 2nd century CE

Scene of action: Mesopotamia, Egypt, China, Mediterranean

Sumerians are widely regarded as the first civilization in human history. It was likely Sumerians who invented writing. And — what a coincidence! — they were also huge beer lovers. In the oldest clay tablets, dated 30-32 centuries BCE, beer is already mentioned as a staple product, manufacturing of which was controlled by the state<sup>1</sup>.

Sumerians loved beer so much that they have a separate beer goddess: Ninkasi. ‘A Hymn to Ninkasi’<sup>2</sup>, dedicated to the goddess, is itself a beer recipe, according to scholars. The Hymn was written down circa 18th century BCE, but researchers suggest it’s much older than that<sup>3</sup>. Apart from the Hymn, beer is also mentioned in one of the oldest Sumerian legends, ‘Inana and Enki’<sup>4</sup>.

There are many surviving images of people drinking beer (supposedly) from mugs or large vessels by the means of tubes<sup>5</sup>. Furthermore, it’s the oldest known depictions of cocktail straws<sup>6</sup>, so it’s quite probable they were invented specifically to drink beer.



Two sitting figures drinking from vessels by means of straw. 2600–2350 BCE

Image Credit: The University of Chicago

Babylonians, Akkadians, Ancient Egyptians — all these peoples adopted a taste for beer from Sumerians<sup>7</sup>. In the oldest of surviving epics, namely ‘Epic of Gilgamesh’, beer is mentioned in a very peculiar aspect. According to the myth, goddess Aruru created a ‘wild man’ Enkidu to confront Gilgamesh. But then Shamhat, a sacred temple prostitute, seduces Enkidu and civilizes him. To do so, she makes him eat bread and drink beer: the symbols of civilization, unknown to wild men<sup>8</sup>.

Then beer is mentioned in the Epic once more<sup>9</sup>: goddess Siduri advises Gilgamesh to abolish his quest of seeking the meaning of life, and just enjoy small wonders — like beer. This character, Siduri, is considered to be the first written mention of ‘alewife’, e.g. a female brewer-bartender-tavern keeper<sup>10</sup>.

First code of law in human history, a Babylonian Code of Hammurabi, refers to beer four times<sup>11</sup>:

- §108: if a tavern keeper pours short of the paid amount of beer (or refuses to take grain as a payment), then she shall be drowned to death;
- §109: if a tavern keeper fails to report the powers about the planned coup which was discussed in her tavern, she shall be put to death (a method of which remains unspecified);
- §110: if a ‘Sister of God’ (e.g. the high priestess) runs a tavern or just enters one to drink beer, then, as you should have guessed, she shall be executed;
- §110: if a tavern keeper donates sixty *ka* of beer in the time of famine, then she shall be awarded fifty *ka* of grain afterward.

Let us point out that the Code refers to tavern keepers as females, and all the corresponding goddesses and legendary characters are females either. From the beginning of civilization up to the industrial revolution preparation of alcoholic beverages as a whole, and brewing beer in particular, was predominantly women job<sup>12</sup>, with an exception of Christian male monasteries<sup>13</sup>. It appears that brewing and baking were not decoupled from each other, it was essentially the same occupation.



Model bakery and brewery from the tomb of Meketre, an Egyptian noble, chancellor to Pharaoh Mentuhotep II and several of his successors. Circa 1981–1975 BCE

Image Credit: The Metropolitan Museum of Art

In Ancient Mesopotamia, beer was something like a currency<sup>14</sup>. Daily workers (builder of Giza pyramids, in particular) were paid with beer — something like 4-5 liters per person per day<sup>15</sup>.

## How to Try

The distinguished researcher of ancient civilizations' cuisine, prof. Patrick McGovern, managed to find traces of Egyptian beer and recreate it<sup>16</sup>. In collaboration with Dogfish Head Brewery a 'Midas Touch', beer, based on the recipe, was prepared. This is not the only attempt: another brewer, Fritz Maytag (of whom we will tell much more later) considers the procedure described in 'A Hymn to

Ninkasi' so obvious that he brewed beer based on it and presented it at the annual meeting of American Homebrewers Association in 1991. Maytag hasn't released it commercially, since the technology doesn't preclude using preserving agents; other brewers are not so picky. Today, beers brewed according to ancient recipes (Sumerian, Egyptian, Celtic, Etruscan, etc.) are available in numbers. The most famous examples are:

- abovementioned Dogfish Head Midas Touch;
- Williams Bros. Fraoch, possibly the most widespread brand, based on an ancient Celtic recipe (might be found as a part of the 'Historical Ales of Scotland' set);
- Thornbridge Hall Bracia, analogous Celtic beer from the neighboring brewery;
- another ale prepared by McGovern & Dogfish Head, Kvasir (recreated using the remains of 15th century BCE beer found on the territory of nowadays Denmark);
- Posca Rustica by Brasserie Dupont, based on 1st century CE Roman recipe;
- Birra del Borgo Etrusca, after Etruscans.

There is no specific name for such 'elder' beer; look into 'Ancient Herbed Beer' and 'Traditional' categories.

Nevertheless, we consider these reconstructions being a bit deceiving; in many cases, just a wild fantasy on historical themes. Let us name three reasons which make us think so.

Let's start with the Sumerians. The situation there looks paradoxical: we are well aware of many kinds of Sumerian beer (clay tablets mention 'Gold', 'Dark', 'Sweet Dark', 'Red', and other types), and we knew all ingredients of these beverages. But have

totally no idea what these ingredients actually were, and how these beers tasted<sup>17</sup>.

Writing (cuneiforms on clay tablets) was expensive, so it was used for *important* things, like every kind of administrative order: deliver these amounts of those ingredients from point A to point B to make that amount of beer<sup>18</sup>. It went without saying that the receiver totally knew how she would brew the requested beverage, so nothing like precise recipes or brewery blueprints survived<sup>19</sup>.

Even basic facts are actually a set of assumptions. There are two main ingredients mentioned in all listings: *bappir* and *munu*. The former probably means barley bread (though it's measured in volume units, like something which might be poured), the latter should be barley malt<sup>20</sup>. That's actually all we know more or less reliably.

The oldest surviving beer recipe was written down by Egyptian alchemist Zosimus in the 4th century CE (which is several thousand years after the heyday of ancient brewing), and, possibly, not by Zosimus himself, but an unknown later scribe. The recipe prescribes soaking then drying barley, preparing a half-baked bread from it, soaking it again and leaving liquids to ferment<sup>21</sup>. No other details like amounts and types of ingredients or further actions are provided. It's also vexing that Zosimus recipe contradicts archeological evidence, so considering it genuine is a bit of an overstatement<sup>22</sup>. That's the first reason why authentic beer reconstructions are not possible.

Of course, we can still brew *some* beer based on this recipe or archeological findings. But there are also second and third reasons.

Modern beer is basically brewed with four components: grain, water, yeast, and hops. As we will explain in the next chapters, none of these ingredients existed before the High Middle Ages. Yeast was strictly airborne, e.g. 'wild', and we don't know the exact species. Cereals that were prevalent in Ancient Mesopotamia and Egypt, namely emmer, spelt, and einkorn, were half-domesticated ancestors of modern wheat; ancient barley was a distant relative to modern barley either. Beer was sweetened and spiced with some flavor additives which we know nothing of. Finally, water in Mesopotamia was a rare commodity being very far from crystal clarity. Some reenactors choose similar (as they think) modern ingredients; some of them try authentic cereals. But no attempt to precisely reconstruct all four components has ever been made, as far as we know<sup>23</sup>.

And there is also a third reason, probably more important than the two previous ones. For industrial beer production, the technical parameters must be controlled with extreme precision, right up to degrees and per mills. Until the 18th century when thermometer and hydrometer were invented, brewer's control over the processes of mashing, cooling, and fermenting was quite limited. Many factors, like weather or microorganisms, were totally out of their control. So ancient beer hasn't had 'a taste': each batch brewed under some specific conditions had its own specific taste. Master brewers were probably able to produce the more or less consistent product; less skilled ones were preparing totally unique beverages each time, but constantly sour and cloudy. We can only agree that, according to big numbers law, sometimes they must have brewed something close to a liquid we have just filled our glass with.

## Decline of Ancient Beer

During the Bronze Age beer was the most common beverage to almost every civilization, from Sumerians to Chinese. But in the 1st millennium BCE, the situation changed dramatically.

In China, supposedly under the rule of the Shang dynasty circa 15-16th century BCE, a new method of producing alcoholic beverages from rice was discovered. A complex mixture of molds, yeast, and bacteria, known as 'qū' (麴 in traditional Chinese), cultured on a starch-rich substrate, is able to convert cereal to alcohol directly. The result is a rather strong beverage containing 8 to 20 percent ABV. Many traditional Eastern alcoholic beverages, such as Chinese 'rice wine' *huangjiu*, Korean and Japanese *sake* and *shochu*, are produced using *qu*<sup>24</sup>. This technology superseded beer brewing in the East, but for obvious reasons (the secrecy and lack of rice) were not adapted in the West.

But the West — Ancient Greece and, later, Ancient Rome — had their own technological know-how: grape wine. Archeological evidence indicates that it was already produced in 6-7 millennium BCE on the territory of nowadays Georgia (and probably in China either), but it was Phoenicians who spread the taste for wine through all the Mediterranean<sup>25</sup>.

Some scholars believe that late Bronze Age Greeks (Mycenaeans) inherited brewing traditions from their Minoan predecessors, and therefore drank beer or at least tolerated beer; maybe Dionysius was a god of beer and mead as well as wine<sup>26</sup>. However, starting from the 10th century BCE beer completely disappears from the Greeks' diet and is mentioned in written sources as 'foreign beverage' — of Thracians, Phrygians, Egyptians. To Ancient Greeks beer was a beverage of northern 'barbarians' Thracians and Peons<sup>27</sup>. In the 5th century BCE, Aeschylus in his plays

counterposes ‘Dionysius beverage’ (e.g. wine) against ‘Thracian beverage’ (e.g. beer). Many other Greek dramatists started to despise beer after Aeschylus. Greeks believed that beer as a result of ‘decay’ of grain, in turn, makes humans decay, and also effemulates men. This opinion, voiced by Theophrastus<sup>28</sup>, is to be repeated constantly in Ancient Greek and Roman literature. Beer was associated with excessive alcohol consumption attributed to Scythians and Thracians, while Greeks themselves were of course considered being inherently modest and temperate.

As a result with Ancient Greece then Ancient Rome influence growth beer was universally dislodged<sup>29</sup>. Peoples living on a territory of nowadays France, Spain, Northern Italy, Germany had been drinking beer for millennia before wine and viniculture arrived on their soil<sup>30</sup>, but during the 1st and 2nd centuries BCE, Romans progressively defeated all beer-drinking nations: Celtiberians, Gaul, Carthaginians, Ligurians, Egyptians. Even Celts started to prefer wine under Roman influence<sup>31</sup>. Wine prominence was also enforced by swiftly spreading Christianity, which gave it a very special position in its rituals and sacred books. At the beginning of the Common Era, the only keepers of beer tradition in the world were the ‘barbarians’ on the outskirts of the Roman Empire.

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<sup>1</sup> Damerow, P. (2001), pp. 1-2

<sup>2</sup> A Hymn to Ninkasi.

<sup>3</sup> <https://www.worldhistory.org/Beer/>

<sup>4</sup> Inana and Enki

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<sup>5</sup> Meussdoerffer, F. G. (2009), p. 5

<sup>6</sup> Thompson, D. (2011) *The Amazing History and the Strange Invention of the Bendy Straw*

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<sup>8</sup> George, A. (1999), p. 14

<sup>9</sup> ibid, p. 76

<sup>10</sup> <https://en.wikipedia.org/wiki/Siduri>

<sup>11</sup> Johns, C. H. W. (1904), p. 52

<sup>12</sup> Dietler, M. (2006), pp. 236, 238

<sup>13</sup> Poelmans, E., Swinnen, J. F. M. (2016), p. 6

<sup>14</sup> Swinnen, J., Briski, D. (2017), p. 8

<sup>15</sup> Marks, T. (2018) *A sip of history: ancient Egyptian beer*. The British Museum Blog

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<sup>16</sup> [https://en.wikipedia.org/wiki/Patrick\\_Edward\\_McGovern](https://en.wikipedia.org/wiki/Patrick_Edward_McGovern)

<sup>17</sup> Damerow, P. (2001), pp. 6-20

<sup>18</sup> ibid, p. 2

<sup>19</sup> Meussdoerffer, F. G. (2009), p. 5

<sup>20</sup> Damerow, P. (2001), pp. 6-8

<sup>21</sup> Hornsey, I.S. (2008), p. 49

<sup>22</sup> Nelson, M. (2001), pp. 124-126

<sup>23</sup> Schwartz, G. (2013) *A pint of the past: assessing authenticity in modern versions of ancient and historic ales*. *Brewery History*, 154

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<sup>24</sup> <https://en.wikipedia.org/wiki/Q%C5%AB>

<sup>25</sup> <https://en.wikipedia.org/wiki/Wine#History>

<sup>26</sup> Nelson, M. (2005), p. 14

<sup>27</sup> ibid, pp. 15-16

<sup>28</sup> ibid, p. 36

<sup>29</sup> Poelmans, E., Swinnen, J.F.M. (2012), p. 2

<sup>30</sup> ibid

<sup>31</sup> Nelson, M. (2005), pp. 52-53

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