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A Brief History of Sourdough

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Editors note: *This publication contains the video of the talk from the Fermentology webinar series, as well as a lightly edited transcript of the lecture.*

Abstract

[Eric Pallant](#) is chair of the Department of Environmental Science and Sustainability at Allegheny College and the author of [Sourdough Culture: The History of Bread Making from Ancient to Modern Bakers](#). For 6,000 years—since breads were first baked in the Fertile Crescent until the end of the 19th century—the staff of life was made by hand from only four ingredients: flour, water, salt, and a sourdough culture of wild yeast and bacteria. Workers who built the Egyptian pyramids received the bulk of their calories from sourdough bread. Ancient Rome imported wheat from across its vast empire to turn into loaves it distributed to Roman citizens. Survival through the Middle Ages depended upon preparation of sourdough loaves baked in communal ovens.

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Introduction

My task is to explain 6,000 years of sourdough history as briefly as possible (think 20 minutes).

My goal here is to skim the wave tops and pick out a few highlights from my forthcoming book, called [Sourdough Culture: The History of Bread Making from Ancient to Modern Bakers](#). That book is going to be out probably next summer. And so here are a few things that I picked up in my research on the history of sourdough.

The Sourdough Basics

Anybody who's making sourdough or has sourdough, knows that to make sourdough bread, you really only need three to four ingredients. You need flour. You can make sourdough bread with any flour, but if you want it to rise you need a flour that has gluten. Wheat flour is your best choice for that. You need water. Of course, you can use

other liquid. You'll need salt (you don't have to have it, but it certainly tastes better if you do) and then a leavening agent.

The remarkable thing is that, for 6,000 years, until just about 200 years ago, the only leavening agent was this gloppy mess of flour and water, and unbeknownst to anybody until 200 years ago, a collection of wild yeast and bacteria. Until very recently, it was just glop. And that was the recipe that we used since pretty much the dawn of civilization. Until very recently, you would mix together flour, water, salt, and some magic glop that you saved from the last time you baked. You would make something, you repeat it, and you get bread — very delicious and yummy bread.

And it worked that way almost continuously from the dawn of the first settled civilizations 6,000 years ago until the Industrial Revolution, when we decided that we could fabricate bread in large continuous operating machines.

The Beginnings with Sourdough

What I want to talk about is the very beginning. Agriculture, the domestication of plants and animals, started roughly all over the world about 10,000 years ago.

We have really good archaeological evidence from the Middle East, partly because it's so dry, and it's easy to preserve things in a very dry climate. But we see the very first time humans settling down and picking seeds starting around the end of the last Ice Age, 10,000 years ago. They also start saving these seed — not just eating them, but saving them and replanting them. They would pick the biggest, the most nutritious, and the tastiest seeds, and replant those again.

A relationship starts to develop between human beings and particular plants that they like. Now, most of those plants are grasses, and among those grasses are the forerunners of what we have as modern wheat, and corn, and emmer in particular. You can make bread from barley, and from chickpeas, and lentils. But if you do, because those things don't have gluten, you're going to get a brick or a flatbread. If you want to get something that rises and holds its shape, you do need to use wheat or a forerunner of wheat.

What's interesting is that about the same time that humans are domesticating wheat and beginning this relationship where one cares for the other (humans care for the wheat, and wheat, in some respects, cares for humans) we're also, a couple of thousand years later, developing a relationship with these microscopic organisms

without ever knowing it. And so we can surmise as there's no way to really know how or when exactly this happened, but a porridge is left out.

This is how the Sourdough Project works. You leave out a porridge of some grain and water. In two or three days, it will start bubbling. And if you take that and cook it, you'll also get some oven spring. You won't know why until 200 years ago, when you have a pretty decent microscope. But you will get something that's reproducible, especially if you save some of that glop and use it next time.

Egypt + Sourdough

So what we know is that some of the earliest, most successful civilizations, let's go to ancient Egypt, really built their societies around growing wheat, harvesting wheat, grinding that wheat into flour, and using that as the fuel to feed very large populations. In the process, they were also domesticating or starting a relationship with microscopic yeast and bacteria that they were using to both leaven bread. And we know now the very same yeast species, *saccharomyces cerevisiae*, and probably the same bacteria could be used to eat the carbohydrates in a liquid form and grow beer.

With beer and bread, you could feed 10,000 pyramid workers, provide enough fuel and safe drinking water. Fuel here being the carbohydrates needed to keep a worker alive and functioning for another day of work. What we know from archaeological evidence is that huge populations were supported with large bakeries of sourdough breads in ancient Egypt. What follows several thousand years of Egyptian civilization are the Greeks, followed by the Romans.

Roman Empire + Sourdough

What's so interesting to me about Roman civilization is that the map of the Roman Empire overlaps almost perfectly with the range in which you could grow wheat. So to the north of the Roman Empire, wheat doesn't grow. It's too cold. It's too wet. It defines, in some ways, the edge of the Roman Empire.

The Romans brought wheat from all over their empire to Rome. We see with Hadrian's Wall in Great Britain, the border between what most traditional historians would describe as the border between the Scots to the north and left of the wall, who are barbaric people to the Romans and a danger to the Roman Empire. And the English and the Romans are to the right, or the south, of the wall.

That line is also the line between where wheat will no longer grow to the north in Scotland. It's too wet and too cold for wheat, but oats can deal. So if you think of Scottish food you might think of Scottish oat cakes and Scottish oatmeal, but there isn't a whole lot of bread in traditional Scottish fare. Likewise, if you were to go north of the Roman Empire towards what's now Germany, Denmark, and Scandinavia, you've moved from wheat territory into rye territory. Now, of course, sourdough rye is a wonderful kind of bread, but it's not the same as Italian bread or what the Romans would have eaten.

The Romans transported grain from all over their empire to Rome, which they then distributed to free male citizens in the form of bread. The Roman philosopher Juvenal said, in chastising the Roman government, that the Roman government was just pacifying people by giving them free bread, circuses, and entertainment so that they didn't revolt. The theory is the same as today: if you give 18 to 21-year-old men enough pizza, beer, and football on Sundays they won't revolt either.

Jesus of Bethlehem + Sourdough

It doesn't hold entirely true, because at the very, very far edge of the eastern edge of the Roman Empire, there is a young man, named Jesus of Bethlehem. "Bethlehem" in Hebrew comes from the words "beit", meaning house and "lechem", meaning bread, to directly translate as the "House of Bread". Jesus of Bethlehem is not fond of the Roman occupation of the Middle East and of their way of dealing with things. If you want the details, you're going to have to read the book. For now, think of Jesus of Bethlehem or Nazareth. His very first miracle, the miracle that is attributed to him by all four books of the New Testament (Matthew, Mark, Luke, and John) is the miracle of the fishes and the loaves, where he feeds thousands of people with five loaves of bread. Anybody who knows sourdough, as everybody at the time would have known, is that sourdough can grow, and reproduce, and feed thousands and thousands of people, if it is nourished correctly.

Take it a step further, and you'll see that Jesus, at the Last Supper declares that "my body is bread" but as everybody would have known at the time, his body would have been sourdough bread. And that thought of the bubbling pot of sourdough, and the smell and the feeling of warm bread would have been both satisfying physically as well as spiritually to anybody who made that association at the time. And so he didn't have to specify that "my body is sourdough bread".

Everybody at the time also would have known that sourdough cultures have essentially eternal life. As Peter Reinhardt said in his presentation a couple of weeks ago Jesus Christ could have said, “my body is a stone”, or he could have said, “I’m a lamb”, or any other thing, but he chose fermentation. My body is bread. My blood is wine.

And here's one more thing that might have gone through the minds of people at the time - that wheat is alive, flour is dead. It is brought back to life by association with sourdough culture, only to die again in the oven, and finally to bring life again as we break bread. It is our sustenance, and has been our sustenance, and continues to be our sustenance in the form of bread.

When the Eastern Orthodox Church does the Eucharist, the delivery of the body of Christ, they use a sourdough that their scriptures describe as having come from the very blood and tears of Christ on the cross. They were captured by John, who then made a sourdough starter from it. That sourdough starter is still in use in the churches of Syria, Northern Iraq, and so forth by the Eastern Orthodox churches.

The Middle Ages + Sourdough

After the fall of the Roman Empire, for the next several centuries, sourdough is going to be the difference between famine and survival across the Middle Ages. As I did my research, much of what I learned about the mythology of sourdough turned out to be exactly that, mythology - not entirely true.

In the Middle Ages the harvesting of wheat was controlled by the landlord, or the lord of the manor, who forced serfs to not just harvest wheat, but to donate very large portions of it both to the lord of the manor and to the church as tithes. The only way a serf survived was by having a sourdough starter and hoping to have just enough flour, which was milled by the miller (who was controlled by the lord of the manor) and baked in the communal oven by a baker (who worked for the lord of the manor) and hope that those guys were scrupulous enough to be fair in their dealings. It was a very touch and go situation, and remained so from the fall of the Roman Empire until through the French Revolution, when you really have a failure of bread and circuses to keep the population pacified.

The French Revolution + Sourdough

What happened in the French Revolution, among many other things, is that the price of a sourdough baguette got to be too expensive. There's a long history of the price of bread going up and a government coming down. When the cost of bread rises you get

a revolution. The most famous revolutionary phrase ever uttered was by Marie Antoinette, who said, “if the people don't have bread, let them eat cake”.

She actually said brioche, which, for anybody who's had one, is not that different from a very nice cake. The unfortunate thing is that Marie Antoinette never said this. She never would have said it. Again, you can learn why when my book finally comes out, but it was attributed to her 50 years after the revolution, when revolutionaries wanted to pin the cause of the revolution on her.

Anybody who remembers the French Revolution or knows about the French Revolution knows that Marie Antoinette and her husband, King Louis XVI, went the same way as this baguette. Their heads were taken off by a bread guillotine (or its equivalent) soon after they were captured.

And now Ill fast forward, since Im trying to cover 6,000 years of history.

The Sciences + Sourdough

Here we are up into the 1600s, when Antoine Von Leewonhoek, a really good microscope maker, puts things underneath a microscope for the first time. Everything he can find he puts underneath a microscope. He doesn't know what he's seeing in 1600. He calls the little tiny things he sees animalcules. He doesn't know if they're animals, vegetables, alive, or not alive. He just knows that nobody has ever seen them before.

But up until now, blood was a liquid. But now it turns out it's made up of these little cells. And then it turns out he's discovering yeast cells, bacteria cells, and sperm cells. I will very quickly go on while you ponder how he got sperm cells onto his microscope slide.

But it's going to be 200 years of really intense experimentation before Louis Pasteur finally brings together all of the science to figure out that yeast are, in fact, alive and that they reproduce. He also learns that, as waste products of consuming carbohydrates, they produce carbon dioxide and alcohol —which we know today carbonate beer, ferment beer, make bread rise, and so forth. But we're now into the late 1800s.

The Industrial Revolution + Sourdough

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everything he can get his hands on under the microscope he doesn't know what he's seeing. He calls these little tiny things that he sees “animalcules”. He doesn't know if they're animals, or vegetables, or live, or not alive. He just knows that nobody has ever seen them before.

Up until then, blood was a liquid. But now he is learning that it's made up of these little cells. And then it turns out he's discovering yeast cells and bacteria cells and sperm cells. I will very quickly move on while you ponder how he got sperm cells onto his microscope slide.

What followed were 200 years of really intense experimentation before Louis Pasteur finally brought together all of the science to figure out that yeast are, in fact, alive, that they reproduce, and that, as waste products of consuming carbohydrates, that they produce carbon dioxide and alcohol, which we know today carbonate beer, ferment beer, make bread rise, and so forth. But we're now into the late 1800s.

Along the way, Great Britain is about to destroy what we consider to be good bread. The Industrial Revolution changes everything. The Industrial Revolution really gets going in the 1700s in the Manchester and Lancashire area of Northern England. We had just mechanized the production of textiles. While previously it was a spinning wheel managed by a single woman in her house making a single line of thread, but now you could put it onto a machine that could do very large swatches of fabric or textiles. If we could do that for fabric, why couldn't we do that for anything, perhaps even bread?

The idea of mass production becomes a concept that bread makers and all kinds of food producers begin to transfer from the Industrial Revolution. In order to accomplish this, we need a couple of things. We're going to need good quality yeast. Now that Louis Pasteur has figured out what yeast is, there are hundreds of patents being developed all over the world in the 19th century for ways to produce pretty clear and clean yeast - no bacteria allowed - that works really quickly and makes bread rise very fast. And you're going to need thousands of loaves of bread to feed thousands of workers, who are now moving from farms to textile mills. And we're going to see the death of sourdough, which is displaced by rapidly-produced, fast-growing yeast and by quickly-manufactured bread.

The Miners + Sourdough

The last redoubt of sourdough is made alongside a group of Gold Rush miners. These miners are mythologized as having followed the Gold Rush of 1849 in San Francisco to

the Klondike gold rush of Alaska. I actually have a sourdough starter from the Cripple Creek Gold Rush of 1893. These guys were independent, who supposedly survived on nothing more than a pan, and a shovel, and maybe a tent, and a sourdough starter they kept close to their hearts. That mythology was really cemented in the minds of most people around the world by Jack London, the author who wrote a couple of books, who celebrated the independence of that lone miner, whether out in the Alaskan wilderness, or the top of the Colorado Rockies.

It turns out none of that is really true. Yes, there were probably a couple of people who really did survive that way, but most mines were owned by very wealthy capitalists who employed thousands of day laborer, paying them \$2 a day for 10 hours of work. This is how most mines were operating in the 19th century at the height of the Gilded Era (and this is as true in North America as it is in Australia or South America mines).

Miners took that \$2. They went to the bakery. They spent it at hotels for lodging. They weren't making their own food. These guys didn't know how to cook anyway. And that's probably closer to the real story, with respect to sourdough. And there are some sourdoughs left from those eras, but they're not the myth that Jack London made.

The Chorleywood Bread Process

The 1960s we had the Chorleywood bread process. This is just continuous, essentially no knead, no time dough running through machines. Again, the British invent this. They transform dough from a very slow, methodical process that depends upon the slow actions of wild yeast and bacteria. And you can see on the left how many ingredients are necessary to make the dough fit the large machines and survive the large machines that are needed to create very quick bread. You can see that Americans are even better at adding more ingredients to their bread to make their machines, which are even larger and churn out bread very quickly.

The History of Humanity

As I summarize (I'm almost at the end of 6,000 years) I guess I'd like to make the case that, even if you are one of the people who just made a sourdough last week or two weeks ago and your sourdough starter is not 125 years old, like mine is, but is a couple of days old, it does, in my opinion, still contain the history of humanity. Our survival as Western civilization is embodied in these sourdough cultures.

This is my own personal mission. I believe sourdough starters, like love and like bread, are to be shared and given away. There's no better feeling for you or for a recipient

than to break bread with that person. And in these times, when spending 20 minutes reading about sourdough bread in some ways feels superfluous, this is one small way to make a contribution — to understand the breadth of different cultures, see what kinds of breads other people are eating, share bread with those people, and share your sourdough experience with those people.

Let's work on rebuilding our sense of community and justice. Here's how I share my sourdough. I put it into little containers and smuggle them past TSA, and bring them all over the world where I share them. Or now I mail dried versions of my old starters. My Cripple Creek Colorado Gold Rush starter from 1893 is pretty much on every continent but Australia. And it's a kind of fungal network that spans the globe.