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magazine

ISSUE **TWENTY**

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ISSUE **TWENTY**

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WELCOME

Issue 20, wow! When I started the magazine in 2012, I couldn't imagine what it would feel like to reach this number. Now I can, and I'll tell you: it feels great.

As I put the finishing touches on this new issue, tired but happy, I'm looking back at the journey we've traveled together, grateful for being able to share it with you and the team involved in creating the magazine.

At the same time, I notice that just like in 2012, my thoughts are in the future: the people in the artisanal bread movement we still haven't reached, the many breadmaking topics we have yet to cover, the stories from inspiring bakers we will get to explore together.

Next year, BREAD Magazine will be back with *three new issues*, stronger and more driven than ever. Through reaching more readers, paying proper fees to our contributors and continuing to improve our processes to become more and more professional, we believe we can be a serious resource — "the magazine" — for everyone who loves and makes a good loaf of bread.

That also means some changes to our pricing: the price of an individual issue will go up to $9 and, replacing yearly bundles, we will introduce a new 1-year (3-issue) subscription plan for $24. The subscription will also include access to all of our previous issues.

But that's not what you'll pay! As a thank you for your continued support, we want to give the existing readers a discount: use the code "`BREADNEWYEAR`" at checkout and you'll get the subscription for 20% off the list price, for $19.20. Notice that the discount code is valid until January 31, 2017.

IN THIS ISSUE

In this issue, you will already start to notice some changes as we improve our editorial processes. Most importantly, as a new development, we are introducing *a feature section.* In each issue, we will pick one timely and interesting subject for the section and dive deeper into it through a collection of interrelated articles.

This time, the topic for the feature arose from my contact to the wider world of bread making. In September, I participated in the Quest for Sourdough, a sourdough event organized by Puratos, one of the world's leading manufacturers of ingredients for the bakery, confectionery, ice-cream and catering industries.

After returning from the trip, I couldn't shed the thought that maybe there's more to the division between craft, or artisanal, bakeries and the industry than I had previously considered.

I talked about it to François Thibeault and together, we decided to dig deeper into the question, making it BREAD Magazine's first feature, "Artisanal Bread in the Marketplace."

François contacted Daniel Leader, the baker and author who has grown Bread Alone Bakery from a small wood-fired operation into what he calls a "state-of-the-art artisanal bakery." I called the organizer of the sourdough event, Karl De Smedt, who manages the Puratos Center for Bread Flavour.

We hope the two interviews, as well as our shared article about how the artisanal bread movement can best succeed in the marketplace, will initiate a lively discussion about artisanal bread and the values we all share. Some of you will probably find the interviews controversial. Others maybe not at all. To be honest, we don't know.

That's why we invite you to spend some time to think about what these bakers have to say and to share your thoughts in our blog's comments section. We're looking forward to learning from you and together with you!

We hope the two interviews, as well as our shared article about how the artisanal bread movement can best succeed in the marketplace, will initiate a lively discussion about artisanal bread and the values we all share.

But the feature is just a part of what the issue has to offer. Just like before, BREAD Magazine is all about new encounters, experiences, and experiments — facilitated by bread.

A good example of this is "Bread Trail," a column that began in our previous issue. "Bread Trail" is all about personal and experiential journeys through bread, told through the lens of traveling through the world of bread baking. "It aims at telling stories that inspire and awaken to the diversity of the bread world, to capture the essence of travel writing, human relationships, and the artisanal bread movement," François Thibeault describes his goals in writing it.

In "It's All About the Ferment" you'll meet Steve Scott, a sourdough baker from Denver, Colorado, as Tia Ingle shares the lessons she learned from him visiting Babettes Artisan Bakery, the bakery Steve runs with his wife, Catherine.

In this issue's in-depth article, Don Sadowsky takes us on a journey into the world of microbes, reporting on some of the most promising recent findings from microbiology labs and how they relate to wheat, bread and therefore our individual well-being.

And what would be an issue of BREAD Magazine without baking?

In this issue, we encourage you to explore buckwheat, a pseudo-cereal commonly used in Japanese soba noodles. Maurizio Leo's "Sprouted Buckwheat Sourdough" recipe is an easy and delicious entry point. And because it's Christmas, we share a second, seasonal, recipe: Suzanne Dunaway looks back at her Roman Christmases and New Years' celebrations and shares her favorite Panettone recipe.

I hope you'll enjoy what we have collected for you! And I wish you happy baking, happy holidays, and a new year filled with great bread.

Jarkko

CONTRIBUTORS

WHO MADE THIS ISSUE?

François Thibeault is a traveler, photographer, writer, academic researcher, ... and a baker. He shares his passion for bread and wood-fired ovens, and his admiration for artisan bakers on reporterra.com.

Maurizio Leo is a self-taught home baker who focuses on 100% naturally leavened sourdough. He holds a master's degree in computer science and is a creator of the SkyView iOS/Android app. When he's not writing code he's most likely in his kitchen milling flour, testing formulae and baking bread.

You can find more of his baking, instruction and never-ending search for the perfect sourdough at his award-winning site The Perfect Loaf. You can also find him on Instagram and Twitter.

Tia Ingle is a bread coach and microbaker from South Australia with three kids and a winemaker husband. She is passionate about empowering people who care about their bread to bake it themselves and showing them that it can be done with no fancy equipment and only four ingredients: flour, water, leaven and salt.

You can learn more about Tia on her Facebook page and blog, Flour-and-Spice.

Jarkko Laine is the creator and editor of BREAD Magazine. He is a home baker, writer, software developer, entrepreneur and stay-at-home dad from Vantaa, Finland, who never wants to lose his curiosity for the world around him.

Suzanne Dunaway is the author of No Need To Knead and Rome At Home, founder of *Buona Forchetta Hand Made Breads* in LA, illustrator for The New Yorker, Gourmet Magazine, Bon Appetit, The Los Angeles Times and more, and now, dweller in France and Italy where she cooks, writes for BREAD Magazine, The American Magazine and France Today, gardens, and helps her kitty, Loulou, write her blog, Living with Loulou.

For **Don Sadowsky**, bread is a link in a glorious web of history, practice, science, politics and craft. Writing is a way to learn, to entertain, to educate and to advocate. Plus it's immensely fun.

Connect with Don on Facebook and on Instagram.

Danielle Ellis recently won Bronze Award in the "Speciality: Sweet" Category at the World Bread Awards. She blogs at www.severnbites.com. On Twitter and Instagram, she is @breadbakerdani.

See page 92 for photo credits.

BREAD TRAIL: SWEDEN

Words: FRANÇOIS THIBEAULT

Photos: FRANÇOIS THIBEAULT and MIKAEL PERSSON

The Bread Trail was born out of my passion for traveling and meeting with passionate artisan bakers around my province (Québec, Canada). It was a way to answer the call of bread: I wanted to share with others what I could learn from bakers who loved what they were doing and did what they love.

The essence of the Bread Trail became obvious to me when I apprenticed with a farmer-baker in Normandy, France in 2015[1]. I realized that cultivating a beginner's mind, accepting to relearn the basics, opening up to my vulnerability and sharing intense moments with inspiring people were the core of the lifestyle I was seeking for. Writing followed as a natural consequence.

Traveling for a year with my wife and two children, as a traveler-baker as it were, I understood the potential of bread as a medium to create relationships, to uncover new aspects of the world we live in and to put into practice the values and ideas I cherish. There could not have been a better opportunity to meet with craft bakers from various cultures and traditions.

TRADITIONAL TUNNBRÖD

In Dalarna, central Sweden, the landscape opened up infinitely before our eyes. Aboard our old Bedford 1981 campervan, we crossed tree plantations, lakes and valleys while heading towards the mountains of the Fulufjället national park. The monotonous highway regularly stepped over the Dalälven river, the second largest in the country (541 km). The high plateaus of Fulufjället averaged 1000 m (3000 feet) in altitude and spread long and wide.

They offered us contemplative hikes among lichen, rocks and open skies. And mosquitoes, lots of them!

The midnight sun kept me awake. At 3:00 a.m., the sun was heating up our tent but the freezing waters of Tangsjöarna lake cleansed us from the burning itches of mosquito bites.

1 See our Summer 2016 issue.

After such a taste of Swedish wilderness, I could not resist the attraction of a traditional, old-fashioned bread in the small community of Blyberg, where, at an exhibition, a team of middle-aged women bakers were showing their craft in making *tunnbröd* ("flatbread"), a true inspiration in style and design.

Unleavened flatbreads are very common — and the staple meal — in many countries around the world (think of chapatis in India). They are easy to make, bake and eat with whatever side dish at hand. However, they usually don't keep well. They dry out and crack quickly.

The tunnbröd is a different species, most probably because of its ingredients: barley flour, potatoes and salt. The bakers told us that potatoes from the previous year's crops were better than those harvested recently.

The dough mix only contained baked, cooled and mashed potatoes, mixed thoroughly with barley flour and salt. Wheat or rye flour could also be used in varying proportions. The baking team demonstrated each step as big batches of dough landed on the workbench. An experienced woman divided the dough, flattening each piece into a round about 50 cm (20 inches) in diameter and then rolled it with a rolling pin with spikes, making pokes in the dough. I believed this helped the bread to bake quickly in a wood-fired oven where a fire was burning continuously. Each bread was baked individually on a round piece of cast iron, thus inviting us to a contemplative observation of each step leading to this testimony of tradition.

The taste was not as bland as one could have imagined: the barley flour gave some richness to it. The bread remained soft for days, kept in a plastic bag. Black bean wraps made with tunnbröd, hot salsa, green peppers, tomatoes, grated carrots, melted cheese and sour cream were irresistible — which proved incredibly useful for our road trek in Dalarna.

Unleavened flatbreads are very common – and the staple meal – in many countries around the world (think of chapatis in India). They are easy to make, bake and eat with whatever side dish at hand.

We hit the road once again.

We marveled at the Swedish outdoor and caravanning culture that welcomed us anywhere we wished to stop. As the "right to nature" is enshrined in the constitution, anyone can walk on any land as long as he or she "leaves no trace." Sweden is the European country with the highest ratio of campervans per capita (295 RVs per 1000 inhabitants). Camping stops are available for free almost everywhere.

Heading back to Stockholm, we said farewell to the Dalälven river which had so warm-heartedly hosted us on its banks on many occasions.

Surprisingly, some of the nicest looking boutique shops (including a well-designed bakery) were closed for summer holidays, in the midst of July and August. I couldn't help but think that such a culture of work was worthy of admiration.

HIPSTERS IN STOCKHOLM

In Lidingö, one of the biggest islands in the Stockholm archipelago, forests, lakes, meadows and pastures take over the suburb's buildings and roads. They invite the visitor to long trail runs punctuated by refreshing swims in the lake. In fact, Lidingö's nature reserve hosts one of the biggest cross-country running race in the world. As I jogged past the many trails' post signs (from 5 to 30 km), I was reminded of how poor my shape had become after driving for thousands of kilometers.

The T-Centralen station in Stockholm is forty-five minutes away from Lidingö by bus and train. From there, the Södermalm district is a mere thirty-minute walk away. The waters of the lake Mälaren and the bright sky are the main features of this urban landscape.

Streets breathe space.

We walked past *Gamla Stan* ("old town"), where RVs can camp (yes, in the middle of the city) and enjoy an amazing view of the Af Chapman — a sailboat converted into a youth hostel.

In Södermalm, we were on a quest to find Swedish artisanal bakeries and to experience some of the hip culture of this burgeoning district. Surprisingly, some of the nicest looking boutique shops (including a well-designed bakery) were closed for summer holidays, in the midst of July and August. I couldn't help but think that such a culture of work was worthy of admiration.

Simple living.

Södermalm reminded me of the Mile-End district in Montreal (Canada), with its marginal, on-the-fringe, techy geeks and its urban tribes of global creatives. A more upscale district than its North-American counterpart, Södermalm was host to, among others, *Chaqiya*, a fair trade boutique, *Johan & Nyström*, an avant-garde coffee roaster and shop, and *Brunkerbergs Bageri*, one of the rare artisanal bakeries in town (one that I would actually call "artisanal").

Many bakeries in Stockholm called themselves "artisanal" or "organic," but their bread was baked elsewhere and had little to show for: it was dry, dense and bland.

At Brunkerbergs, the ovens stood at the forefront. Helene Johansson, the bakery's founder and an author of bread books, focused on slow fermentation and high hydration. The results were an impressive art and a warm-hearted experience. However, a loaf of country sourdough bread was sold for 16€ ($16)! This artisanal bread rhymed with connoisseurship and luxury, just as the coffee at Johan & Nyström did, both part of the latest trend in shop and product design. I understood the situation (Stockholm is exorbitant too) but was disappointed that I could only buy myself half a loaf.

After gulping cheap burgers on the street, we headed to Fotografiska museum, where we were mystified by Sebastião Saldago's Genesis photography exhibition. As our last days in Stockholm went by, we made preparations for our long journey to the U.K., where we hoped to stay for a month to replenish our energy while volunteering on organic farms and exploring the artisanal bread world.

The month-long road trip down from Sweden to the U.K. took us on a ferryboat from the Swedish coast to Germany, where old vessels greeted us on the ocean. We drove through Germany, the Netherlands, Belgium and Northern France. We reached Calais from where we crossed the Strait of Dover into the U.K.

We had entered the world of Chorleywood-processed bread and that of the Real Bread Campaign, launched by Andrew Whitley in 2008.

To be continued.

Mikael Persson

Mikael Persson


RESTAURANT & CAFE
STOCKHOLM SIGHTSEEING


Kanelsnurra
20:-
Vegan

SPROUTED BUCKWHEAT SOURDOUGH

Words and Photos: MAURIZIO LEO

After a few minutes shy of finishing my typical hand mix, I looked down at the dark dough oozing between my fingers and thought to myself: "Wow, this looks and smells remarkably wonderful."

When working again and again with bread dough, you come to expect a certain color palette: deep reds, nut-browns, soft tans, milky whites and every possible shade therein — for the most part, this palette neatly defines your bread baking world. Even when changing to freshly milled flour or a new type of grain you can usually be assured the color will be along that spectrum.

Not so with whole grain buckwheat. Just a small percentage of the milled, dark and menacing grain-like seed transformed the entire dough to something more like itself: a stunning dark gray, almost black, hue. The earthy aroma surfaced memories of fresh cut soba noodles I had in a modest but astounding restaurant in Japan.

I can vividly recount this exposure to buckwheat: it was during my recent trip to Japan when we serendipitously visited the smallest restaurant I've ever encountered. In fact, the only indication it was a restaurant was the unpretentious and familiar symbol on the door indicating it as such.

No open windows, no lit up flashy signs, no line snaking around the corner. Just a haven inside that sheltered diners from the hustle and liveliness a short distance from their tables. Almost every seat in the restaurant was occupied, and a survey of the diners immediately told me the dish to order was a large bowl of steaming soup.

The small shop was run by an elderly gentleman and his wife who welcomed us inside with a bow and an open hand. After ordering kutsune soba, per their recommendation and the unintentional recommendation of all other patrons, I proceeded to have one of the best meals of my entire trip. The vaguely strong flavor of buckwheat noodles in their delectable broth was nothing like any food I had had before and, to the astonishment of the owner, I ordered a second bowl to split with a friend.

That one restaurant visit opened my eyes to this wonderful pseudocereal and piqued my desire to work with buckwheat flour in my own kitchen — and of course in baking bread.

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The earthy aroma surfaced memories of fresh cut soba noodles I had in a modest but astounding restaurant in Japan.

With the arrival of very cold weather here in New Mexico and soups on the regular in my kitchen, I found myself thinking back to that meal and the stage was set for me to begin experimenting with the earthy, dark buckwheat flour.

Sometimes when trying to create a sourdough formula, I find myself in the mood for bread that's uncomplicated, light as air, crisp, and very crunchy. Other times I want something more elaborate, something deep flavored with many layers of complexity, a touch more sourness, and very flavor-forward. Buckwheat fits perfectly into the latter category, and channeling inspiration from my recent experience in Japan, I knew it would be a perfect fit for this season.

FLOUR AND SEED SELECTION

Originally, I intended on using freshly milled buckwheat in this formula but was unable to find the whole grain variety at my local market — I only found buckwheat groats (hulled buckwheat). Unfortunately, it's the outer, hard hull in buckwheat that gives the flour its dark appearance. And while I'm not one to usually choose appearances over taste, I found the whole buckwheat to also have an incredible aroma and flavor. I was committed.

When experimenting with the total percentage of buckwheat flour used in this formula, I ran the gamut from one percent all the way up to ten percent. However, because buckwheat has no gluten, at 10% the interior of the loaf was rather dense — it was shocking how big of an impact this small percentage imparted on the structure of the loaf. Additionally, at this percentage, I felt the intense buckwheat flavor was a bit too forward, overshadowing just about everything else.

I finally dialed things back to 5% and found the sweet spot: just enough of that earthy flavor without overpowering the rest of the wheat and fermentation flavors.

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In addition to buckwheat, I decided to work in a small amount of rye flour. The flavor of light rye compliments the earthy buckwheat without adding any additional bitterness. It also helps slightly increase acetic acid production, adding a little more sourness to the result.

I find that the slightly more sour flavor works very well with the overall flavor profile and my desire for a more complex bread.

SPROUTING BUCKWHEAT GROATS

Since I'm already using buckwheat flour why include sprouted buckwheat groats?

I treated the sprouts as more of an "add-in" to contribute even more flavor to this bread, much like adding in seeds or nuts. As I mentioned, because I had intended on milling fresh buckwheat for this recipe, I had a sack of (raw) buckwheat groats lying around. I decided to try and sprout them to see just how hard it might be.

Turns out it's incredibly simple, and my test bakes with added buckwheat sprouts had a subtle sweetness that I just couldn't part with; I felt their addition only added to the overall appeal to this loaf.

In addition to the added flavor and texture, the act of sprouting seeds begins the transformation from seed to plant. This transformation makes their nutrients more bioavailable to us during digestion, as a sort of "predigestion" where the nutrients in the seed become easier to absorb and utilize by our bodies.

"Sprouts represent the point of greatest vitality in the life cycle of a plant."

– Paul Pitchford, "Healing with Whole Foods"

Sprouting the groats is a very straightforward process with a few caveats.

First, ensure the groats are not toasted (these will not sprout). Raw groats will have a light color that is almost green, opposed to toasted groats which are darker brown and, well, look toasted.

Second, the warmer the ambient temperature at which the groats are stored the better; sprouting seems to move at a faster pace when groats are kept at around 24-27°C (75-80°F). I got into a routine of preparing groats the evening before a bake, keeping them at a warm temperature so that they would be ready the next day in the afternoon when bulk fermentation rolled around.

I would suggest trying to sprout a small amount, say 50 grams, a few days before you plan to bake this recipe to judge just how long it takes for the groats to sprout for you and your environment.

Finally, you can use the refrigerator to stall the sprouting process: if the sprouts are extending shoots too fast, place the jar in the fridge and then pull it out right when bulk fermentation begins. This way the sprouts come up to room temperature by the time they are needed (after the second set of stretch and folds, about 1 hour into bulk).

Sprouting process:

1. Rinse the raw buckwheat groats several times under water (I used a mesh sieve to hold them).
2. Place the groats in a jar and cover with water for 1-2 hours.
3. Drain the jar and rinse the groats under water (again, using a mesh sieve). Place the groats back in the dry jar and cover with a kitchen towel or very loose fitting lid.
4. After several hours (I waited 8 hours or so, until the morning) drain the jar, rinse the groats under water again, place back into the jar and fluff them up with a spoon to aerate (good airflow is essential for sprouting).
5. Wait several hours and check to see if sprouts are emerging. If not, continue to drain/rise/aerate until sprouting occurs.

My very first time I tried to sprout these groats I saw activity after one day — it's not a difficult thing, and the fridge is always a great option to help synchronize the timing between dough development and sprouting.

FORMULA

Makes two 950 g loaves
Total dough weight: 1900 g
Pre-fermented flour: 4.75%
Hydration: 85%

Levain Build

Ingredient	Quantity	Baker's %
Sourdough starter (100% hydration)	50 g	100%
Malted Type 85 Flour	50 g	100%
Water at room temperature	50 g	100%

Dough Formula

Target final dough temperature (FDT) is 25°C (77°F).

Note that the baker's percentages listed below are with respect to the final dough ingredients and do not take into account the levain.

Ingredient	Quantity	Baker's %
Malted Bread Flour	501 g	52.49%
Malted Type 85 Flour	203 g	21.26%
High Gluten Bread Flour, ~13.5% Protein	150 g	15.75%
Whole Grain Buckwheat Flour	50 g	5.25%
Medium Rye Flour	50 g	5.25%
Water (32°C/90°F)	804 g	84.25%
Salt	23 g	2.41%
Mature, 100% hydration levain	119 g	12.47%

On the night before mixing the dough, sprout the buckwheat groats: Following the process listed above, rinse the buckwheat groats several times and soak them in water for one hour. After this, rinse them and place them into a dry jar overnight.

Method

1. *In the morning (8:30 a.m.)*, build the liquid levain (everything listed in the Levain Build section above) and store it somewhere around 25-27°C (77-80°F) ambient.

   Check on the buckwheat groats: rinse them under water and place them back into their jar, fluff a little with a spoon to ensure they are aerated.

2. At 4 p.m., mix flour and water (reserve 100g water for later) in a bowl until all dry bits are hydrated. Cover the bowl and store somewhere warm (around 24-26°C/75-78°F) for a two-hour autolyse.

3. After the autolyse, slap and fold the dough for about 5 minutes, just until the dough starts to show signs of a smooth surface.

   If you aren't comfortable with the slap and fold method, or don't like it, you can do stretch and folds in the bowl until the dough tightens up and becomes harder to stretch out and fold over. Let the dough rest 15 minutes.

4. When finished with the slap and fold, sprinkle the salt on top of the dough and use the remaining water to help it dissolve. Pinch through a few times and fold the dough over itself to help incorporate.

   Perform an additional 3 minutes of slap and fold to build even more strength in the dough. It should come together and be slightly smooth but still a tad sticky.

   Transfer the dough to a tub or thick-walled bowl for bulk fermentation.

5. At an ambient temperature of 26°C (78-81°F), bulk fermentation should go for about 3 hours and 30 minutes.

   Perform a total of 3 sets of stretch and folds during the bulk fermentation, spaced out by 30 minutes.

   If after the last set of stretch and folds the dough feels overly slack, give it another set of stretch and folds for a total of four. After the final set, let the dough rest for the remainder of bulk.

Add the sprouted buckwheat groats to the dough before the second set of stretch and folds. Spread a thin layer (about 1/4 of the total sprouts) on top of the rested dough with wet hands and do one fold.

Then, spread another 1/4 of the spouts and fold again. Repeat for four folds using all the sprouts.

I decided to end the bulk fermentation when I saw the dough look like in the picture below.

You can see that it's risen significantly, there are plenty of bubbles on top and just below the surface, and most importantly, the edge where the dough meets the bowl is domed, convex. This is a good sign your dough is strong enough and ready to be divided.

6. Dump the dough from the bulk container to an unfloured work surface.

   The dough will be sticky and a little slack, so rely on a bench knife and floured hands to gently preshape the dough into two round boules.

   Let rest 25 minutes uncovered.

7. Flour the work surface and the top of each rested piece of dough.

   Working with one at a time, flip the resting rounds over onto the floured surface. Fold the top half up and over to the middle and the bottom half up and over the recently folded top. You'll have a long horizontal rectangle sitting in front of you.

   Turn the rectangle 90° and grab a small portion of the top, pull up and fold over a little bit, pressing down to seal. Take the rolled top and continue to gently roll it downward toward your body with two hands working together.

   As you do each roll and work your way down the vertical rectangle, use your thumbs to gently press the dough into itself. Once shaped, transfer each to a basket lightly dusted with white rice flour, seam side up.

8. Cover each basket with plastic and place them in the refrigerator at 3-4°C (38°F) for 9-10 hours.

9. Next morning, preheat the oven for one hour at 260°C (500°F), or 275°C (525°F) if your oven can go that high.

   Then, take out both of the baskets from the fridge and cut a piece of parchment paper to fit over the top, quickly invert each basket onto each piece of parchment.

   Using a sharp razor blade fastened to a stick score the top of each at a shallow angle to the dough and just deep enough to cut below the top skin of the dough.

Start at the top of the oblong loaf and with a single decisive stroke cut from top to bottom with a slight outward bend.

Bake the loaves at 260°C (500°F) for 20 minutes with steam, then remove the steaming pans from inside the oven. Bake the loaves for an additional 5 minutes at 260°C (500°F), then turn the oven down to 230°C (450°F) and bake for an additional 25 minutes or until done.

CONCLUSION

At first sight this enigmatic bread spurs the question every time: "What kind of bread is this?" The deep dark fissures and a slight gray cast is a prelude to what this bread is all about. A touch of sweetness, slightly sour, earthy and creamy — a concert of flavors and textures in this sprouted buckwheat sourdough. This bread is a perfect companion for the cold days ahead.

Crust

Wonderful colors, ample crunch and yet very thin. The crust seems to have a little added color by the increased sugars from the sprouted groats — very evident at each bite.

When toasted even further, the crust transforms into a delicious and brittle cracker.

Crumb

The dark gray interior hue on the crumb is a stunner. It's something not usually seen in bread, and it only adds to the charm of this loaf — it breaks from the traditional baking color palette in an unexpected and delightful way. The interior texture is not gummy but rather soft and interjects with a crunchy chew at each sprouted buckwheat discovery.

Taste

This loaf met the expectation I had for it at the onset: I wanted a complex, multifaceted bread with a subtle sweetness from the sprouted groats, earthy flavors from the whole buckwheat flour, increased sourness from the longer proof time and rye flour and an overall balanced flavor profile when put together.

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While I still find myself dreaming of that steaming hot bowl of fresh soba I had in Japan several months ago, at least this bread, with its earthy whole grain buckwheat flavor and subtle sweet contribution from the sprouts, brings me back even if just for a moment.

I do know one thing for certain: this sprouted buckwheat sourdough is going to be a regular staple here in my kitchen through the entirety of this cold winter.

Buon appetito!

BABETTES ARTISAN BAKERY: IT'S ALL ABOUT THE FERMENT

Words: TIA INGLE

Photos: STEVE & CATHERINE SCOTT, TIA INGLE

Last August, while visiting my sister in Denver, Colorado, eager to explore the bakery environment around her, I stumbled upon one of Denver's best kept bakery secrets: The Source. Hidden slightly away from the more beaten paths of tourist treks, The Source is a re-purposed industrial building in downtown Denver where you can find a butcher, a baker and potentially a *candlestick maker.*

Inside this little community of specialty shops made up of artisan store holders, I found Babette's Artisan Bread, a bakery run by Steve and Catherine Scott — a husband and wife team who just celebrated a milestone of three years since establishing the bakery. And so, with my sister, our kids, and our hubbies, we made a late breakfast pilgrimage to their bakery on a Saturday morning.

The bread, as well as the *Viennoisserie* of croissants and Danish pastries, looked fantastic, making them almost impossible to choose from!

Apart from being rewarded by such bakery delights, I was excited about the possibility to have a good chin wag with Steve Scott, a baker with twenty years of baking experience from various artisanal bakeries under his belt. I have to say I am yet to meet a baker who doesn't like to have a good chin wag about making and baking bread!

Here's what Steve told me, in his no-nonsense approach to how good bread should be made and baked.

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YOU SAY SOURDOUGH AND I SAY LEVAIN

Although his bread is sourdough based, Steve prefers to use the word "levain" for his fermentation process. He finds that the term "sourdough" has the reputation of being sour in the mind of the consumer.

Of course, many sourdough bread varieties are sour in nature, and these tend to be an acquired taste which everyone does not necessarily like. But you can also produce naturally fermented bread with a sweeter tone on flavor — it's all to do with how you manage your ferment and balance its sour notes.

Hence, Steve's preference on calling it "levain."

Steve prefers to use the word "levain" for his fermentation process. He finds that the term "sourdough" has the reputation of being sour in the mind of the consumer.

REFRESHING YOUR LEVAIN

So how does he manage this process?

"Basically," Steve told me, "you need to refresh your ferment a couple of times in one day, after which — meaning after the second refreshment — you let it go for about 18 hours.

"Then you use the young levain to build into your dough within an hour to an hour and a half from this fermentation period."

This, he says, helps keep the sour of the levain at a very very dull level (in other words, sweeter) while still projecting a delicate balance that gives a little bit of tang to the flavor.

I asked Steve if he ever uses commercial yeast in his process. His response to this was, "only at the smallest minimum, something like 0.002%, to give the dough a greater element of strength."

He also said that his preference was on fresh yeast, as dry yeast were less consistent in performance.

MIXING & AUTOLYSE

I was curious to find out whether he did all his mixing by hand, the artisanal way, to which Steve just chuckled. The bakers at Babettes use a mixer to incorporate the ingredients. Then, after the initial mix, the dough is left to autolyse for three to four hours. I asked if he puts his salt in at the same time with other ingredients, to which I received an emphatic "No, no! Only after a long autolyse."

Once the doughs have been through their autolyse process and the salt has been added, they are left to bulk ferment for 3 to 3 1/2 hours at 26-28°C (80-82°F). During this time, Steve gives the doughs a couple of rotations/folds, looking for just a bit of development. He wants the levain to do the rest of the development in the refrigerator, where they are kept until 4 a.m. so that they don't move too fast and develop a good strength in readiness for shaping.

Steve's typical baking day commences at 4 a.m. when he starts dividing the well-rested doughs for his baguettes. Then, while the divided doughs rest, before shaping them into baguettes, he prepares the mixes for the next day's bake.

CRUMB VERSUS FLAVOR

As a baker, Steve doesn't exactly shout for that wide open crumb which is so in vogue with many. He is more particular in ensuring that a good long fermentation achieves that so important flavor he is after.

"I really go for the flavor and a nice thin crust," he said.

GRINDING YOUR OWN GRAINS

I'd also heard that Steve liked to grind his own grains ("once in a while," he says), so I asked him if it makes a difference.

"Heck, yes, there is definitely a flavor difference and the fermentation is a little bit quicker," he told me, explaining that the faster fermentation is due to the freshness of the grains.

HEIRLOOM GRAINS

Speaking of grains, we also discussed "heirloom" varieties. Steve's stance here was that, although he isn't as such against them, he doesn't use them much — mainly because he finds them highly unpredictable and not particularly consistent.

Apart from being rather expensive, the farmers that do provide them cannot guarantee consistency, and as a baker, earning his living out of this craft, Steve says he cannot rely on a grain product that doesn't provide him with a certain level of consistency.

As a baker, Steve doesn't exactly shout for that wide open crumb which is so in vogue with many. He is more particular in ensuring that a good long fermentation achieves that so important flavor he is after.

GRAIN MIXES

While his bread repertoire is not particularly seasonal (apart from some exceptions during Easter and Christmas), Steve likes to play around with his mixes — nothing is set in concrete. He likes to use what he feels is right at a given moment in time.

Part of his baking enjoyment is the freedom to bake what he feels is right and appropriate.

Right now, he says it's "mainly wheat and whole-wheat, and a rye mix."

HYDRATION

Having already done some baking at my sister's place, I had noticed that the flour I was using in Denver was able to absorb a higher quantity of liquid than what I typically used at home. This lead into a discussion regarding hydration levels and how they depend on the different flours and grains used.

Steve explained to me that American grain varieties tend to be a lot harder than many other grains around the world. A grain that is classified as "hard" has a higher level of moisture absorption than a softer grain. Winter grains are classified as hard grains and summer grains are soft.

THE ENVIRONMENT AND YOUR DOUGH

Denver has hot summers and cold winters, so you have to be conscious of your environment and weather conditions and how these will affect the behavior of your levain: your bulk fermentation times will fluctuate subject to changes in temperature, and you'll need to adapt accordingly.

For example, in the winter Steve will be more particular about the water temperature levels that get mixed into the dough, whereas in the summer the water can be cooler and the bulk fermentation extended.

UPPER CRUST SECRETS

All the loaves at Babettes Artisan Bread have a beautiful chocolaty colored crisp crust, so I had to ask Steve if there was any particular secret or knack to this.

He told me that he bakes his bread in the same even hot heat of a baker's oven with the usual steam and that the loaves get turned around during the baking. He reflects that, at home, you should be able to get the same effect by baking the bread in a large cast iron pot with the lid on for the first half of the bake and then off.

"People usually think that the success of a good bake is due to the grains/flour used (which to a point is part of the equation) or the length of the fermentation the loaf has undergone. However, they never ask themselves if it's the levain," Steve said.

He believes the levain is the biggest culprit when bread fails to perform as expected. To achieve that lovely loaf with open ears, you need a good ripe levain that has been lovingly cultivated, nourished and refreshed consistently.

LOOKING OUT FOR YOUR LEVAIN

According to Steve, there are three aspects to the approach of a good levain.

First, you know the levain is ready when it begins to be aeriated and you can pull it away from the sides of the container.

The second aspect you look for is that the levain has good legs to it — like a spider web with a sort of honeycomb texture.

Last, but not least, there is the float test, whereby you take a piece of the levain and toss it into water. If it floats, your levain is ready.

"These are all super simple things to look out for in your levain," Steve said.

"What most people don't appear to understand is that if you only refresh your levain once a week, you cannot expect it to perform with any strength and conviction. A good levain has to be fed every day — twice a day — to have it perform as expected."

IT IS ALL ABOUT THE FERMENT

Bread making is all about the fermentation and the upkeep of your levain. If your levain is vigorous and healthy, your dough is going to be awesome.

"What most people don't appear to understand is that if you only refresh your levain once a week, you cannot expect it to perform with any strength and conviction. A good levain has to be fed every day — twice a day — to have it perform as expected," Steve said.

I asked Steve whether his levain was one of those kept in perpetuity.

He laughed and told me that he tosses it out roughly once a year and starts a new one. My guess, as I forgot to ask, is that this happens around Christmas and New Year when he has a break.

Another point he wanted to get across is that the levain also benefits from being refreshed at regular times. He suggests that home bakers should coincide their refreshment times with their regular morning coffee or tea — it's all about finding a schedule that suits each individual.

At the end of our discussion, Steve also philosophized on grains such as Kamut and spelt, which seem to be the current tag word in grains around the world. All good and dandy, but before aspiring bakers jump on the grain bandwagon, it is more important that they should think bigger on their fermentation process. Only once you have mastered your fermentation, are you ready to go and play with the grains.

"If you don't master your fermentation first, not much will come out of any grain you choose to use," he said.

Such true and sage observations. Ultimately, wouldn't you agree that as a home baker, the mastery of 2-3 loaves is better than producing a multitude of mediocre ones?

"If you don't master your fermentation first, not much will come out of any grain you choose to use."

FEATURE: ARTISANAL BREAD IN THE MARKETPLACE

As a magazine that grew from the home baking and micro bakery scene, BREAD Magazine usually focuses on the more artisanal (or craft) side of things: how bread making looks like when you are just one baker, or a handful of qualified craftspeople working on the dough.

While that's not something we are planning to change, the bigger picture of bread is more diverse — and complex — than this.

The industry is always looking at what artisans are doing — and, believe it or not, they too are improving. And maybe, the difference between an artisan baker and one that chooses to bring in equipment to help isn't quite as big as you might think.

So, in our first feature section, it's time to be curious and to find out what the more technologically oriented bakers think about the craft, good bread and reaching more people through their breads.

DANIEL LEADER:
FROM COUNTRY BAKER TO CEO OF A STATE-OF-THE-ART ARTISANAL BAKERY

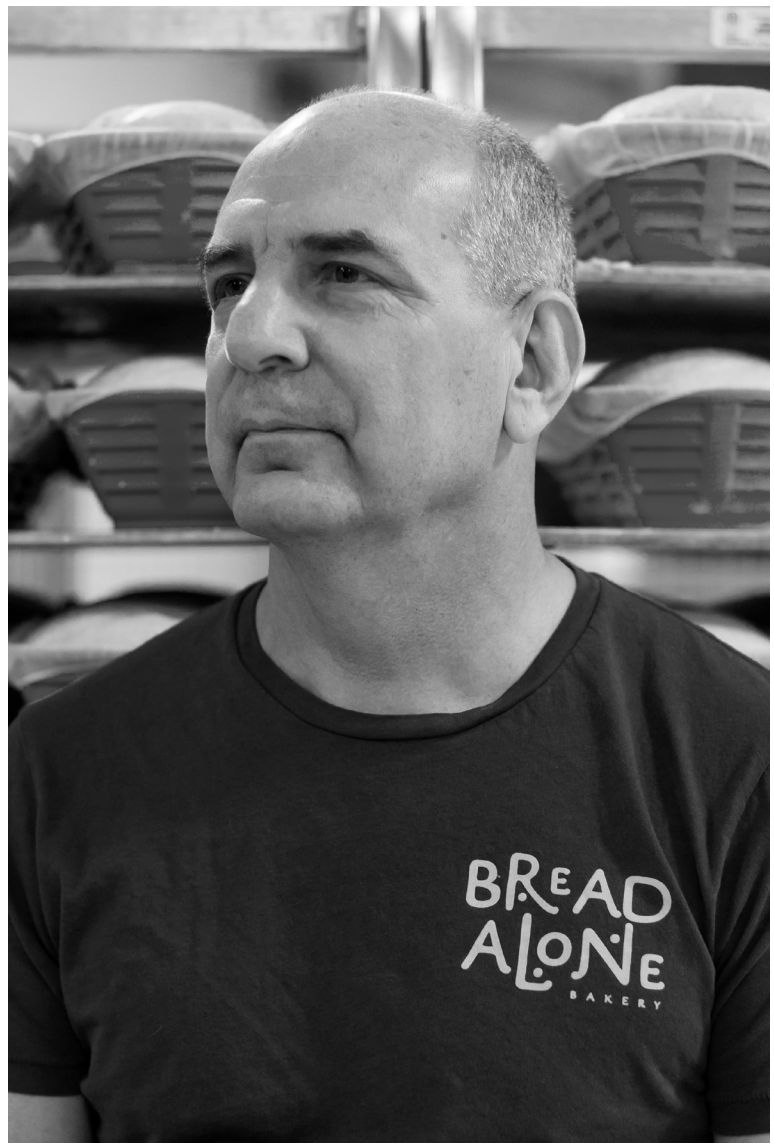
Words: FRANÇOIS THIBEAULT

Photos: COURTESY BREAD ALONE BAKERY

Daniel Leader founded Bread Alone Bakery in the Catskill Mountains (N.Y.) in 1983. Two large wood-fired brick ovens were built in a new bakery in 1987 by the French master mason André Lefort and since then, Bread Alone has produced more wood-fired, organic bread than most bakeries in North America.

Dan Leader is also the author of four books on bread ("Bread Alone," "Local Breads," "Simply Great Breads" and "Panini Express"). His fifth book, *"Living Bread,"* is forthcoming in 2018, twenty-five years after "Bread Alone," with a focus on farmers, millers and bakers driving innovation in the world of baking.

Today, Bread Alone is a very large baking business. In its new facility in Kingston (N.Y.), it can handle tens of thousands of pounds of flour every week. From "country baker" and "global village baker" (as he describes himself in his first book), Dan Leader has grown into a leader and spokesperson in the world of artisanal and commercial baking. He describes himself as a "very driven person," and it is without surprise that Bread Alone's website lists forward ambition, entrepreneurship and improvement as the bakery's core values.



Home and small-scale bakers who self-consciously adopt an "artisanal" approach to bread making usually argue that the modernization, mechanization and industrialization of bread are unreconcilable with craftsmanship and artisanship. The common view is that bread industries can only make "bad" bread; bread that is not healthy for people, not ecological and not legitimately artisanal. In other words, the view is that a bakery needs to be a small-scale business if it is to consider itself, or if it expects others to consider it, as artisanal.

There are enough reasons from both sides, from the one-baker operation to the large-volume bread manufactory, to let us assume that artisanship in the world of bread is a contested reality. Here are Dan Leader's opinion and observations on the matter.

EVOLUTION OF THE ARTISANAL BREAD MOVEMENT IN NORTH AMERICA

The American artisanal bread movement started in the 1970s, with "The Laurel's Kitchen Bread Book." It was a grassroots movement that revived the bread baking tradition from the ground up. The "*Bread Alone*" book may have been part of the second wave when a new generation of New World bakers traveled to Europe to learn from master bakers. Long time observers of the North American bread scene, such as Peter Reinhart and Jeffrey Hamelman, have much contributed to influencing the movement.

The third wave of the bread movement, inspired by Alan Scott, mainstreamed the use of wood-fired brick ovens by microbakeries operating at a local level. Now, the current trend is contributing to the popularization of ancient grains, whole grains, sprouted grains as well as home and bakery milling.

These waves have all been led and represented by passionate bakers. As Dan Leader commented: "The quality of artisanal bread has improved dramatically. Certainly, the artisanal bread movement has had a big influence on the industrial artisanal bread. The bread world is very different than it was twenty years ago."

"The quality of artisanal bread has improved dramatically. Certainly, the artisanal bread movement has had a big influence on the industrial artisanal bread."

VIABILITY OF THE "PURIST" ARTISAN BAKER

The widescale mainstreaming of an artisanal bread baking trend among newcomers on the bread scene, since the early 2000s, has led to the creation of many small-scale bakeries. These bakeries propose new business models based on proximity, small teams and the value of "authentic," "artisanal" bread.

According to Dan Leader, the success of such a model depends on the vitality of a particular niche market:

"Let's call these bakers the 'artisan purists.' The viability of the artisan purists is very limited to a specific, small market, that will support them every single day. Artisan purists are not going to open other spaces. It's a niche business.

"These bakers build a small wood-fired oven in their backyards, buy an old Hobart mixer, 80 bannetons, fill the oven twice and then go sell the bread for $6 a loaf at the farmers' market. They can survive, baking 2 or 3 times a week."

How, then, could a "purist" artisan baker run a viable bakery? Leader continues:

"To make artisanal bread the way the purists want to, you'd be mixing the dough in small batches, fermenting it for a long time, cutting and shaping every single loaf by hand, resting and forming the loaves, again by hand, dusting the bannetons perfectly and letting the loaves rise at the perfect temperature. These are all the fine traditions of artisanal bread baking. It takes a lot of work, a lot of time.

"You don't sell bread for ten dollars a loaf. Bread sells for four or five dollars a loaf. I would expect that a baguette from an outstanding baker would be $2.50. In a culture like Montréal where people go to the bakery every day, a small baker can survive. But in most of North America, the best artisan bakers will have a shop, they will sell at farmers' markets, they might sell to restaurants.

"It's a very complex puzzle. If it's a baker with two or three helpers, if they are in a market where they can sell in excess of 500 or 800 breads a day — which is a lot of bread for a small bakery — if they have a small market, if they don't deliver the bread too far, or better yet, they have a shop where people will come every day, they can make a go of it."

While purist artisans could possibly survive and even earn an adequate income from their activities, there is also a "burnout factor" that is associated with such a livelihood:

"But to stress on the typical artisan baker, why is it that you don't see an artisan baker who has lasted more than 10 or 15 years?

"I had a funny thing happened when I was 47. I was in Italy and visiting a baker who had a wood-fired oven in which he made a fire by putting wood sticks in it. It was artisan nirvana! The baker said to me: 'How old are you?' I answered: 'I'm 47.' He said: 'Huh! You only got three years left.' I replied: 'Why do I only have three years left?' He said: 'Because no artisan baker can make it past 50. The work is too hard. I have 12 years left. All my friends who worked like this were finished at 50. They can't pick up the peel anymore, they can't pull the dough from the mixer anymore.' Making artisanal bread in this way breaks your body.

"Right now, how many bakers are baking in wood-fired ovens in North America? Let's say that in all of North America, there are fifty bakers who are working the super artisanal tradition. How many of those have been there more than five years? More than ten years? How many were there 10 years ago that aren't there anymore today? The answer is: it's really hard.

"Why is it that you don't see an artisan baker who has lasted more than 10 or 15 years?"

"If you look at the whole new movement, these are people who have been around three, five or six years. But you can't look back to many small bakers who's lasted. They don't exist, because there is a natural pressure that is being put on the growth of a small bakery.

"People get tired of working from two in the morning to two in the afternoon, six days a week, with one or two helpers, which is what it takes if you want to have that purist bread model. It begs the question whether this is just an art form where you have these bakers making these beautiful breads? Or is it a viable business model?"

Niche market artisanal bread may be the answer for the viability of the purist model, but the price of such bread is usually not competitive. Dan Leader comments:

"If you bake 400 loaves, and sell them for $4 each, that's only $1600 a day. You have to pay for electricity, for rent. There are great farmers who currently grow and mill their own wheat, and sell the flour for $1 a pound. If you buy flour at that price, you have to sell the bread for at least $5 or $6 a loaf. Now, you are not selling daily bread, you're selling specialty bread. How many people are going to spend $6 for a loaf of bread?

"The reality is that farmers' markets are very limited markets. Nobody is going to sell a thousand breads a day in a farmers' market."

Whether a baker wants to sell one thousand loaves a day to make an income is a question that each baker will address in his or her own creative ways. The fact is, however, that the "purist" model of artisanal baking may actually share more similarities with a hobby than with a trade, Dan Leader says.

THE GARDENER AND THE BAKER

"Here is an analogy. Lots of people do artisanal gardening. They grow tomatoes, carrots, herbs and are very serious about it. It's a kind of an artisanal craft. Those people are not trying to sell their tomatoes next to the tomatoes at the supermarket. They might have a little farm stand at the front door, but they are now trying to compete in the marketplace.

"The problem with the artisanal bread world is that people go from a hobby and a craft to making a few loaves of bread, to wanting to sell them really quick, without thinking about the reality that they are competing in a big marketplace."

Does the global artisanal bread movement suffer from the rise and fall of many small-scale artisan bakers? Or does it thrive on such dynamism, creativity and alternative model of business?

We may as well ask who's problem it is in the end. Does the global artisanal bread movement suffer from the rise and fall of many small-scale artisan bakers? Or does it thrive on such dynamism, creativity and alternative model of business? There are quite a lot of "serious" hobby baker out there and their influence on the artisanal bread movement could possibly be significant.

However, it seems clear that the marketplace for bread today is more complex than ever. The mainstreaming of artisanal bread most probably depends on variables well beyond the hands of the independent artisan baker.

BREAD ALONE: FROM COUNTRY BAKERY TO STATE-OF-THE-ART ARTISANAL BAKING

Bread Alone adapted itself organically to the "natural pressure," as Dan Leader puts it, to grow out of its small-scale artisanal operation in Boiceville (N.Y.) and recently built a modern bread facility in Kingston (N.Y.) to become more competitive in the bread market.

Bread Alone started in a derelict building in Boiceville, where the French master mason André Lefort (who restored Lionel Poilâne's oven) built two large wood-fired brick ovens in the 1980s. And now, their Kingston facility has very modern equipment.

"Bread Alone is in a unique position because we are in the midst of reviving the old bakery, with the two wood-fired ovens. We are remodeling and renovating it this winter, we are going to make vegetable gardens there. We'll turn it into a restaurant and bake some breads there."

The old bakery won't be under pressure to bake large quantities of bread to be a viable business:

"We have our facility in Kingston, where we took all the back breaking work out of artisanal bread baking, without compromising the steps. There is a midrange of artisanal bread baking that allows bakers to follow all the core beliefs of being a baker, without breaking their body and breaking their lives. I'm sure a lot of people will argue with me that it is not the case.

"It's easy to point and say: 'He compromised.' But it's harder to point and say: 'Why isn't that baker there anymore?'"

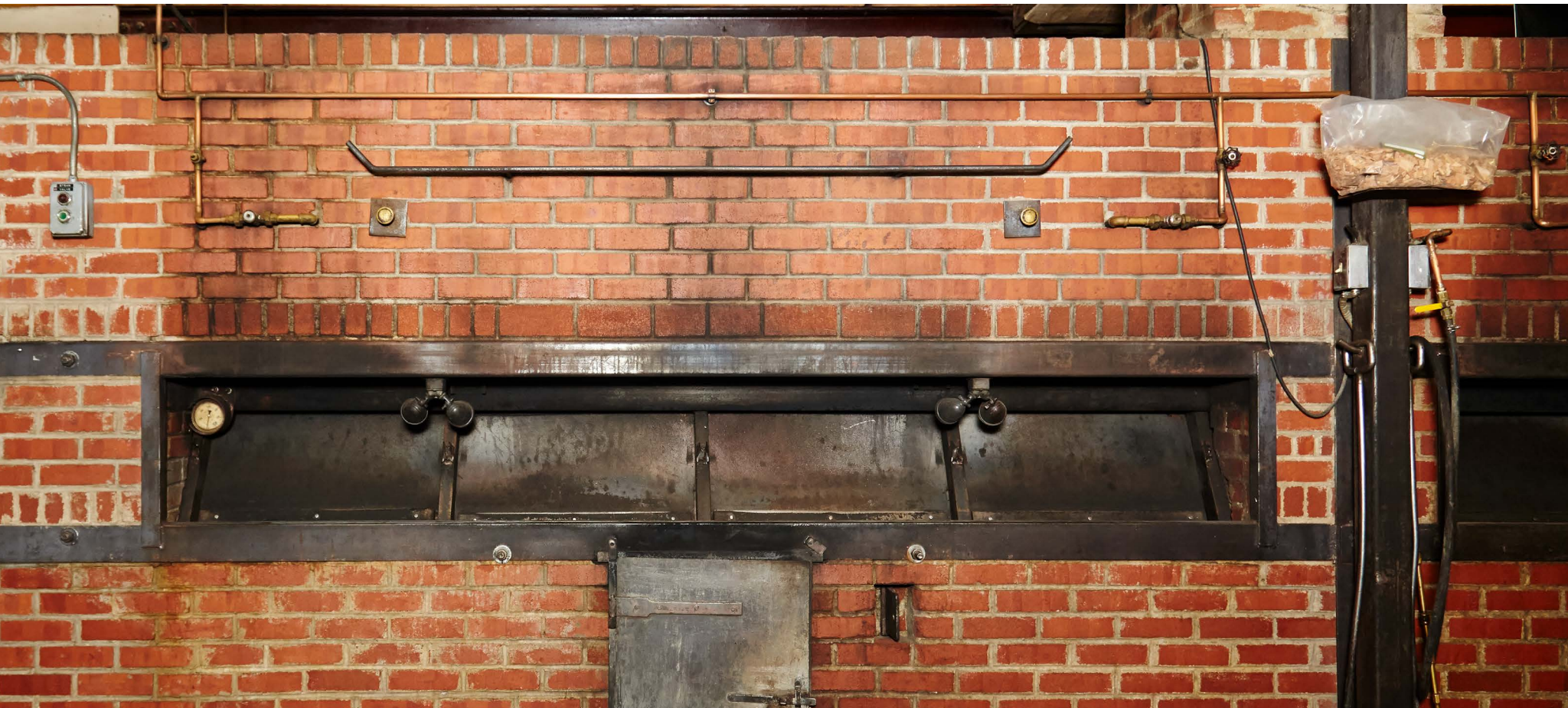
"I think the bread at Bread Alone is actually better now than in the early days. Because it is more consistent, we have much better processes, better temperature control. The quality of the flour I'm using today is certainly much better. I understand much more about sourdough and fermentation. We have these computer-controlled fermentation rooms. We're using these thermal oil deck oven from Germany. There is a furnace where the thermal oil is heated, and it gets circulated in the oven. You can get that soft, mellow heat the way you would get in a brick oven. Is there any artisan-ness that may be slightly lost? I don't think so.

"It's easy to point and say: 'He compromised.' But it's harder to point and say: 'Why isn't that baker there anymore?'

"We're going to have certain products that we will make in the old bakery in Boiceville. We have a product line that we make at the Kingston facility. We'll do our more ultra-artisanal products in Boiceville and we'll do our artisanal line in Kingston. I think it's a good balance. Bread Alone could only have survived as a business, in the old bakery, if I would have been there, myself with two helpers, working every day, making 2,000 breads a day. There is no way you are going to be able to pay somebody $80,000 or $100,000 a year and make a living yourself in a small operation like that.

"With all things, there is a middle ground. Bread Alone sells to supermarkets, to a lot of farmers' markets in New York City and we have retail stores. I've worked for a long time and didn't make a lot of money. I always put the business first, and my personal wealth second. I'm very driven. There is a natural evolution outside of a mixer and a wood-fired oven that people get to very quickly.

"People from all over the world come visit Bread Alone and are impressed with how we are able to combine the artisan tradition with a volume production. I call this 'state-of-the-art artisanal baking.'"



While it is not necessary that any small-scale artisanal bakery would hire staff – after all, some artisan bakers prefer the laborious, solitary lifestyle they've created for themselves –, Dan Leader is adamant that staff should be well paid and that they should be made to belong to and thrive in a business in due form:

"We are a real business, we have retirement plans, health insurance, we pay vacations, maternity leaves. You can't do that when you are making 50 loaves of bread a day."

ARTISANAL BAKING AS A COMMERCIAL BUSINESS

When I asked how Bread Alone can avoid the opposition between "daily" (affordable, mainstream) and "specialty" (luxury, expensive) breads, with the Boiceville and Kingston facilities, Dan Leader answered:

"You have these artisanal bakeries that are now making parbaked frozen bread. There is this new bakery that is going to produce three tons an hour of organic bread, 24 hours a day, 7 days a week. They are going to have big sourdough tanks, a stress-free dividing system. The bread is going to have big bubbles in it because people think big bubbles is the whole thing now. It's going to have a perfect crust because it's baked in a two-million dollar thermal oil oven. Every supermarket in the U.S. will be able to buy this company's parbaked frozen organic bread. What do you think is going to happen to the price of bread? It's going to drop!

"The real issue becomes: can a bakery like Bread Alone continue to have bread at $5 or $5.50 a loaf, in supermarkets and stores, when there is going to be an organic 'artisanal' bread at a cheap price. If it's not a niche market, a little farmers' market, once you get into the bigger market, you have to be competitive."

In addition to the pressures of competition, any commercial baker in the U.S. will soon have to comply with the rules and controls laid down in the Food Safety Modernization Act by the Food and Drug Administration. U.S. bakers will have to adopt strict control for flour and grain storage, for pests, for bugs. They will need to have a master plan to comply with all the food and safety standards that any modern country has now.

I wondered aloud if such standardization was actually a reason for a massive, alternative uprise against such modernization, a motif for local, artisan bakers to promote their innovative and refreshing views and practices in a globalized world. Dan Leader replied: "It's the reality of the food business if you are going to produce food and have a commercial business. Bakers have to be part of this."

IS "ARTISANAL INDUSTRIAL" BREAD AN OXYMORON?

On the one hand, mechanization and modernization are not in strict opposition to the artisanal ways of baking. I had started to agree with Dan Leader's views on the growth model of Bread Alone as a "large volume artisanal bakery." On the other hand, I reflected on the possibility that some industrial, biochemical and standardized products, such as dough improvers or conditioners, could make their way into "artisanal" bread and that could become a serious issue.

Dan Leader's answers were once again straightforward and enlightening:

"At the Sourdough Symposium, I met scientists from all around the world, and yeast companies like LeSaffre and Puratos who have huge divisions where they are making sourdoughs. They ferment them to a certain point, dehydrate them into powders and then bakers put them into their breads instead of active sourdoughs. There is also a whole range of companies in Germany that make live sourdough cultures. Every week you buy the sourdough culture, and at the end of the week, you throw it out because you want it to be the same all the time.

"There are lots of artisanal industrial products. My answer is: An artisan product made by an industrial company is still light years better than the horrible bread that we have been eating for the last 50 years. If you take some whole wheat flour, put dried rye sourdough starter from Germany and mix the dough with 100% whole wheat flour, and there is no junk in it, it's certainly a better loaf of bread than what people were buying before.

"Nearly all flour companies add things to the flour. They add malt, ascorbic acid, amylase, wheat gluten. They may not add wheat gluten in a pure sense, but they could take a 16 or 18 percent protein wheat and mix it with a 13 percent protein wheat to get a 15 percent protein wheat. They are playing on gluten content. It's has been done forever.

"In Europe, in France, it is absolutely acceptable for mills to put natural enzymes in the flour. Sourdough creates enzymes. When I make a sourdough culture, I don't put 'natural enzymes' on the label. There is a company in France that grows natural enzymes and you put 0.25 g / kg of flour. This is done on a regular basis at the best mills in Europe. If you look at most commercial mills in the U.S., there are very few mills that use no additives. Even organic flour mills use malted barley flour, which contains active enzymes, and other enrichments.

"Some organic flour is the only flour that you can sometimes buy that has no enrichment in it. But even organic flour mills sell enriched,

"It's cheaper for me to import organic flour from France than it is to buy organic flour from Syracuse (N.Y.)."

malted flours. When you add the malted flour to flour, you're adding enzymes. But then, if an artisan baker puts enzymes in his bread, is he not a true artisan baker anymore?

"Even bread baker purists are using enriched flour, unless it's 100% whole wheat flour. Nearly all other forms of bolted, sifted flour have something in them. It's a very slippery slope, a complex ethical issue. Even the flour from the best French mills (which the best artisan bakers in the world will tell you is the best flour) is not pure, straight flour.

"The mill that we buy our flour from is considered the finest organic mill in France. When you go there, they have a dosing room where they can put in different doses of various flours and additives. They don't use ascorbic acid, but some extract from cherry pits, an organic oxidizer. I don't have any problem with it."

As I remarked that leaders and spokespersons of the current artisanal bread movement in North America praise locally sourced flours, grains and ingredients, as well as bakery-milled flours, Leader replied that the organic flour supply in the U.S. is scarce:

"We get 80% of our flour from France and 20% from local sources. When the dollar strengthened and the price of flour doubled in the U.S., I contacted my milling friends in Europe. We're getting flour from Pensylvania, Central New-York, and Champlain Valley Mills, but most of it comes from France now.

"It's cheaper for me to import organic flour from France than it is to buy organic flour from Syracuse (N.Y.). We buy full containers, and the price of wheat is cheaper in Europe than it is in the U.S. The price of transport has gone way down. There is not enough of local wheat to supply us. We use 60,000 pounds of flour a week.

"There aren't 3 million pounds of certified, organic local flour available to purchase."

When we take into accounts the many facets of mechanization, commercialization and industrialization, it may well be that "artisanal industrial" bread is not a self-contradiction. While the trend toward niche market artisanal baking and locally-sourced ingredients may be long-lasting, it's still only a part of the picture.

I had to raise the issues of heirloom, heritage or ancient grains, on the one hand, and that of bakery milling, on the other. These two trends seemed to be at the core of the artisanal bread movement and to have the potential for helping it (and its bakers) set artisanal bread apart from industrial bread.

OLD GRAINS ARE NEW

As our conversation continued, a realization that there is no clear-cut border between artisanal and industrial progressively dawned on me. It seemed that this separation was probably not as real as I had assumed or wanted it to be.

Dan Leader made use of the current and trendy discourse about "ancient," "heritage" or "heirloom" grains to state his point:

"Right now, there is a lot of discussion about 'ancient' grains, 'heritage' or 'heirloom' grains. 'Ancient grains' really doesn't mean anything. You say it's an old form of grain. In Kansas, they grow Turkey Red, which originated in Ukraine. It was brought here in the 1840s. We are working with Ukrainian specialists to find out the heritage of that grain. These specialists are trying to understand where that wheat came from and to dispel the myth that any cross-breeding of different types of wheat is bad.

"Right now the kind of headlines you see out there are: 'Heritage, heirloom and ancient grains are good, and modern wheat is bad because it was bred to be that.' In fact, we spoke to a plant geneticist, 98% of the genes of a particular type of wheat were identical to a type of wheat they found in the 1700s after the revolutionary war.

"People are blaming the wheat breeding for gluten problems. The fact is that many of the qualities that are good in wheat have been the same for thousands of years. I'm not trying to make a statement about people's sensitivity to wheat and gluten problems. I do want to make a factual statement that there is a lot of misinformation out there about what people are eating."

"Why are you doing it? Are you doing it for the headlines that say 'We mill our own flour,' 'We use ancient grains'? Or, is there a real reason that you can taste and feel?

Using "old" grains to produce new, innovative loaves of bread seems to appeal to my imagination as something that is really worth the effort. Lots of bread enthusiasts out there would agree that the turn toward ancient grains – and now freshly milled flour – is the insignia of avant-garde, artisanal bread.

BAKERY MILLING

Dan Leader, however, did not agree that the focus on bakery milling and freshly-milled, stoneground flour would necessarily do good service to the artisanal bread movement.

"I've been to many bakeries who mill their own flour. I did tests with the American Institute of Baking. If you take a kilo of whole wheat flour that was milled by stone and a kilo of flour that was milled by the baker, nutritionally, there is no difference.

"The baking qualities of the mill flour, which has been aged for 2 to 3 weeks, will be better. Now you have bakers who mill and say 'My flour tastes so much better.' I guarantee you if you take ten whole wheat breads made with flours from ten different mills and one that was made with stone-ground flour milled at the bakery, most people won't notice."

In my experience, freshly milled flour bought from the local farmer has always tasted better than the flour I could get from Quebec's largest organic mill. It also has been significantly different at the level of baking qualities, having poor strength and elasticity. I could manage it, but could see that any larger bakery operation would definitively have problems with it. I reluctantly agreed to Leader's point: we should not confuse anecdotal reports by ardent promoters of freshly-milled flour for evidence gained from large scale, systematic inquiries.

Reflecting on the possibility that miller-bakers could actually make a go in the marketplace, Leader doubted that most of them would be able to comply with the Food Act. So, would modernization actually impede how we imagine the future of artisanal bread?

STORIES OF BREAD: PANIMAGINATION

It made me reflect on the possibility that it is actually the stories and images of bread that we make up for ourselves and others that are the driving force behind the whole artisanal bread movement. The bread historian Steven L. Kaplan (in "Good Bread is Back") has called this form of bread imagination "panimagination" (from the Latin root *pani*, "bread").

On the future of old grains and bakery milling, Dan Leader had this to say:

"Why are you doing it? Are you doing it for the headlines that say 'We mill our own flour,' 'We use ancient grains'? Or, is there a real reason that you can taste and feel, and the bread is discernably better than if you buy flour from a modern, organic mill?

"I can't answer that question. The answer may be that the bread is that much better. That question has yet to be answered. But, it can't be answered 'because it makes a better headline.'"

Notwithstanding the fact that an artisan baker who mills his own flour puts himself at risk of burning out much faster, it seems that relationships between artisan bakers and customers dwell much on imagination, on the ways customers imagine food to be produced and supplied to them.

The panimagination is not only about how bread eaters and producers romanticize artisanship, but also about what makes the bread they eat and do stand apart from the rest. The difference could lie in the bakery's atmosphere, the warmth of the service or in any other intangible element that is part of the bread experience. About Bread Alone's story, Dan Leader said:

"At Bread Alone, we're telling the true story of Bread Alone. People driving by the Kingston facility will see the big chimneys and think it's a factory. But when they come in and see the people shaping the bread by hand, they think differently. Sixty percent of the breads are hand-shaped.

"I try to tell the truth and not tell a story for the sake of telling a story."

"Nobody, even in Paris, shapes baguettes by hand. Everybody has a *façonneur*. I try to tell the truth and not tell a story for the sake of telling a story. People want a story to which they can relate to, whether it's real or not. People want to believe the story."

I asked Dan Leader whether "artisanal bread" is a story bakers tell their customers, and a story customers want to hear and tell to themselves. I wondered if there were any objective criteria for artisanal bread.

He answered:

"That's a loaded question. Because if you read the bag of La Brea Bread, this bakery has six bread lines producing two tons of bread an hour. The story on the back of La Brea Bread talks about 'artisanal bread,' 'hearth baked,' 'slow fermented.' You have big industrial bakeries using exactly the same words that small bakers use. Sometimes it's even better written because they've got fancy publicists telling the story.

"This brings us back to the word 'ancient grains.' If I just make that statement: 'We use ancient grains in all of our breads. Our breads are slowly fermented.' I really haven't said anything about how they are fermented, how many hours — and I didn't say anything about the ancient grains. The problem is that if there isn't truth to the words, it doesn't mean anything.

"From a marketing point of view, whether it's Bread Alone or any other small bakery, with the social media world, we can actually use stories and pictures that are real. The big bakers can't use any of the stories and pictures that I use.

"The better the artisan baker tells the story, the better it is for the artisanal bread baking movement. Everyone who is making artisanal bread has to make better bread. For example, I can go to the supermarket a minute away from Bread Alone. There is a whole rack of bread that says 'Hearth baked, slow fermented, hand shaped,' all this stuff. It's all parbaked frozen bread right next to Bread Alone bread. We tell a better story, the package is better. But how is the average, uneducated customer going to know the difference?"

CONCLUSION

Artisanal bread baking is part of a much larger marketplace in which it tries to thrive through localness and proximity, niche markets, as well as through larger scale operations that contribute to creating viable businesses and sustainable employment opportunities. In the end, the whole artisanal and industrial scene cannot be depicted in terms of "the good, the bad and the ugly." Rather, it is a complex field in which many varieties of interests, goals and imaginations grow.

Dan Leader argued that living wages, social benefits and employment opportunities should be part and parcel of the artisanal bread economy. Such a larger vision, as commercial as it may be, is not necessarily in contradiction with an artisanal view of the bread making process.

The stories that make a baker or a bakery an artisanal one have to take into account not only the techniques or methods, the ingredients, the clientele or the social dimension of baking as a business but also the ways in which bread is imagined beyond tangible elements.

It may be that the "purist" artisanal baker, its utopian project and its ascetic endeavor make up stories we love to hear and share. Nonetheless, these stories help to frame the artisanal bread movement and contribute to making "good" bread more available to the masses.

The serious, hobby-cum-artisanal bakers are maybe part of a different world from commercial and industrial artisanal bakers. The former bake bread just as hobby gardeners grow tomatoes, cucumbers and other produce, without really trying to sell them or to compete in the marketplace. As Dan Leader concluded, "I don't care what the yield is when I grow tomatoes at home." He may also not care whether they are beautiful or not. However, I would suggest that most home and artisanal bread bakers see their craft as an art form.

Both aesthetics and taste contribute to the story of artisanal bread.

Sharon Burns-Leader and Dan's son, Nels Leader, stand with his father in front of the new baking facility in Kingston.

INDUSTRY AND ARTISANS – OPPOSITES OR SIMPLY BAKERS?

Words: JARKKO LAINE

Photos: JARKKO LAINE and JACQUELINE MACOU

Karl De Smedt speaks about good bread

At the end of September, I was invited to the Puratos Center for Bread Flavour in St. Vith, Belgium for a two-day workshop and the launch of The Quest for Sourdough. The event, filled with laughter and talk about sourdoughs, bread making and fermentation, was a rare opportunity to meet with an international group of talented and passionate bakers, make some new friends and to visit their Sourdough Library[1]. It was also a chance to get a glimpse of what bread making looks like when done on an industrial scale — the fermentation tanks Puratos uses to make their sourdoughs are majestic!

The biggest effect of this trip for me, however, started to dawn on me only once safely back home. As I discussed the experience with other bread enthusiasts on social media, I began to realize that my understanding of the relationship between industrial bread and the purist "flour-water-salt" type handmade bread I make myself was based more on assumptions and prejudices about the industry than facts.

The more I processed the experience, the more evident it became to me that this should be the topic of this article. Instead of focusing on Puratos and their sourdough initiatives, I'd use this space to explore how the more technology-driven side of the baking world thinks about the quality of bread, the differences between artisanal and industrial baking and the quest of bringing good bread to as many people as possible.

A couple of months after the trip, I set up a phone call with our host at the event, Karl De Smedt, who manages the Center for Bread Flavour to interview him on these questions.

A baker-confectioner by trade, Karl shares my passion for good bread and sourdough, and so the friendly discussion lasted well over an hour, with Karl gently challenging my assumptions about bread and bakeries.

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1 See our Autumn 2015 issue for Danielle Ellis's story on the Puratos Sourdough Library.

BREAD IS BECOMING BETTER

As we gathered inside the Sourdough Library in St. Vith, Karl showed us a slide with the text, "The future of bakery lies in its past."

We nodded in agreement: this is what we've been saying for quite some time. It fit the narrative of how bread — once a cherished staple food made by grandmothers and talented village bakers, healthy and baked with pride for the craft — became bad when the industrialists took it over and created the Chorleywood process.

But Karl didn't stop there.

After asking us for our opinions, he stated his claim: The bread our grandparents grew up eating 60-70 years ago wasn't what we imagine, he told us. Sourdough baking methods had already been lost, and there wasn't all that much knowledge about the science of bread making available yet.

Now, as we talk over the phone, he adds that at that time, the Chorleywood process "was suddenly something that offered people better quality than what they had in their bakeries."

Painting a picture of continuous improvement and evolution rather than a series of revolutions, he says that while everything in history happens for a reason, as time passed and more knowledge accumulated, the process became obsolete:

"Now we have a better understanding of how to make good bread, and so, we're bringing back the tradition of sourdough that was lost completely and that had no place in the Chorleywood process. It's a change that has already been going on for the last twenty years, where you see that there is this interest in slower fermentation, longer fermentation, fermenting at colder temperatures and so on."

And the results are showing.

"Where do teachers get their information? It comes from universities. And where do universities get their money? It's partially from the governments, but mainly, it's from companies like us who create these projects to understand what's going on and to see what we can do to improve."

While a lot of the objection against industrial bread still focuses on the sliced sandwich breads sold for pennies at the supermarket, the quality of bread as a whole, Karl says, has increased:

"I'm 100% confident when I say that the bulk of the bread that you find in the market today is better than thirty years ago. And 10 to 15 years from now, the bread will again be better than what we have today in the bulk of the bakeries."

This, Karl says, is something the more "purist" bread bakers often forget (or conveniently leave out) when talking about the quality of bread: while we still can't say bad bread is a thing of the past, in many countries, you can already find excellent bread in supermarkets.

"Because the industry — the guys who produce these breads — have invested tremendously in their equipment, in the way they are making the breads, in their ingredients. They use sourdough. They use long fermentation. And so, their bread comes with qualities that are very nice," Karl says. He adds that it's the industry, companies such as Puratos, who fund most of the studies on the health implications of things like slower fermentation and sourdough:

"Where do teachers get their information? It comes from universities. And where do universities get their money? It's partially from the governments, but mainly, it's from companies like us who create these projects to understand what's going on and to see what we can do to improve.

"I think that bakeries will go more towards the trend where processes become longer and the amount of yeast used will decrease. This will imply that bread becomes better — because time is the most important ingredient in bread."

Artisanal bakers and the industry are moving in the same direction.

Likewise, to be able to keep improving the quality of bread, bakeries of all sizes face the shared challenge of getting the buying public to appreciate bread as something more than a commodity that you put your meat or cheese on. To do that, Karl suggests, bakeries as well as their suppliers have to keep increasing the quality of their products while listening to their customers and helping them understand why bread deserves the same kind of appreciation as other fermented goods such as beer, cheese and sausages are already receiving.

"If you want to stay in business," Karl says, "you have to listen to the consumer. You have to be in line with what they want."

Which, according to market research done by Puratos, is taste.

"More than 90% of the consumers say: 'For me the most important is taste.' Secondly, it's the freshness and third, it's the shape or the price, depending," Karl says.

INDUSTRIAL BAKERS WERE ONCE ARTISANS TOO

On the plane to Belgium, as I thought about what to expect from the visit, I wondered why Puratos should be interested in me, a writer who mostly writes to home bakers, artisans and other small-scale bakers. I saw them as a company catering to industry, one that had very little to do with me or artisanal bread in general. In my mind, the lines were clear and steep.

But that's the thing about learning: the more you know, the less clear-cut your answers become. Even to seemingly simple questions such as what the difference between an artisanal bakery and an industrial one is!

"All the big industrial bakeries you see today started as small bakeries," Karl says, "You can see this if you go to the websites of some industrial bakeries. It's, 'my grandfather started this small artisanal bakery in 1958, then my father took it over and improved it,' and so on. That's how it works."

It's a gradual change that happens as an artisan baker is successful and the demand for his or her bread grows. Karl explains:

"Take the example of a friend of mine in Paris. He's an artisan baker — a *'Meilleur ouvrier de France'* — who started his bakery selling baguettes. The first months, he made 500 baguettes a day. If you make 500 baguettes a day, you can still make them by hand.

"But today, he's selling more than 3,000 baguettes a day. And he's not making the baguettes by hand anymore; he's just throwing them through the baguette sheeter.

"Is that bad? I don't think so. A baguette doesn't suddenly become better just because it is shaped by hand. The machine always does the same, so if you manage to make the right dough to put through it, there's no problem with it.

"I don't think having equipment is affecting the quality for the worse.

"A baguette doesn't suddenly become better just because it is shaped by hand. The machine always does the same, so if you manage to make the right dough to put through it, there's no problem with it."

"On the contrary, I think that if you have a machine, your quality becomes more consistent. If your baker is ill and someone less skilled has to do the work, human factors start to impact the results. Maybe he's working slower so the baguettes are fermenting longer on the table, which is not good because the oven cannot follow at the right time.

"A baguette machine, or a ciabatta machine, or a machine to make the Danish... It's guaranteeing you that the product is better because it's more consistent."

If the change from artisanal baking to running an industrial operation happens as a natural evolution, one machine at a time, it means that it's difficult to find one defining moment where a baker moves from the realm of artisans into that of the industry.

While an entirely industrial bakery is very different compared to a small bakery run by one or two craftspeople, the middle ground is much more nuanced.

So, maybe these worlds aren't quite as separate as we might like to think?

"Even if a loaf of bread is baked in an industrial production, you want that artisanal look, that artisanal feel, the artisanal flavor because, in our mind, we think that artisanal is always better," Karl says. "And the majority of artisan bakers worldwide, they all use improvers or sourdoughs that they buy from us or our competitors."

This was something I had not realized earlier: as an almost 100-year-old company, Puratos was founded well before the rise of industrial bakeries, to cater for the needs of the small bakeries of the day. Karl says:

"The history of Puratos is one of artisanal bakeries: When we started in 1919, there were no industrial bakeries. It was not existing, except for a couple of large bakeries in the U.S. or England. For the rest, the whole market was artisans. And little by little they grew."

Since then, the market has evolved. In some countries, industrial bakeries dominate, and in others, smaller bakeries are getting more attention and appreciation. Both types of customers buy products and expertise from Puratos and their kind: large bakeries do so to manage the scale of their production and small ones to ease their workload and maintain a healthy work-life balance while increasing their production and improving their breads.

"These small artisanal bakeries use our solutions to give their breads more freshness, more crustiness, more volume, to allow them to freeze their products," Karl says.

A small artisanal bakery can save a lot of energy by splitting the work intensive products to different days of the week. While they may sell croissants, chocolate breads and Swiss rolls every day of the week, it makes sense to make enough of them for the whole week at once, freeze them and bake the batch for the day just in time.

"So, you need a little bit of added gluten, for example inside an improver, to sustain the freezing. These are products that we sell," Karl says.

Is it possible to work without improvers? Absolutely. But it is more demanding to the baker, both physically and skills wise — and not just in an industrial setting, Karl reminds me.

IMPROVERS AS A SEATBELT

A medium-sized artisanal bakery is a busy place with bakers working in careful orchestration on a tight schedule to deliver the orders from their customers in the quality they expect — by sunrise. There isn't much room for surprises. Karl explains:

"The first thing our customers require, because it's what the end consumers require, is that the quality of the bread is the same every day.

"You go to a particular bakery or buy a specific bread because you like the taste and you know it's good. The bread has to be the same every day. It can't be baked black one day and not baked enough the next. It can't have big holes one day and a closed structure the next.

"The first thing our customers require, because it's what the end consumers require, is that the quality of the bread is the same every day."

"That is the biggest challenge to our customers because flour is changing, the weather is changing… A baker might leave and be replaced with someone used to working in a different method. There are so many factors at play in a bakery that make it hard to deliver consistent quality. And that's why customers come to us."

Now we're getting to the heart of the discussion! What is it actually that these bakeries get from using products from companies such as Puratos?

"A seatbelt," Karl says.

Comparing bread making to driving a car or sitting on an airplane, he says:

"Most of the time, you do not need your seatbelt. You could drive thousands of kilometers without your seatbelt. Then, one day you might need it because there is something that you have to break for: an animal that walks on the street, a child that runs over, a car that is coming.

"In the bakery, it's the same.

"You can make bread with just flour, water, yeast and salt, and everything can go well. Then one day, there's a breakdown in the oven and you have to repair it. Or the temperature is not high enough and you'll have to cook longer.

"At those moments, it helps to have a little bit of support from what we call improvers. It could be an enzymatic solution that gives you a little bit more tolerance and consistency in your bread, or a carefully controlled sourdough that offers you the same flavor even if you prove fifteen minutes longer or less.

"That's why our customers come to us. We offer consistency and quality."

In an industrial setting, assuming that we accept the premise that the seatbelt does what it promises, the math makes sense. Karl explains that just a 20-minute breakdown on a baguette line making 5,000 baguettes an hour can lead to throwing away thousands of baguettes!

But what about the artisan?

A skilled craftsperson can work around these problems using nothing but her skills. But, Karl reminds me, even if the head baker is a true craftsman, the other bakers might not have the same level of competence. And a busy bakery is not the same as your quiet, calm kitchen where you alone are the judge of whether the bread you make is good enough or not.

"Even if the head baker is a true craftsman, the other bakers might not have the same level of competence. And a busy bakery is not the same as your quiet, calm kitchen where you alone are the judge of whether the bread you make is good enough or not."

It's also not just a question of small 2-person bakeries versus huge factories. In between, you'll find for example the bakery chains with 6 or 7 bakeries — small enough to be artisanal, but big enough to require quite a bit of hired employees and to suffer significant losses when things break in the process.

Improvers, just like machinery, make the work of these bakers a little easier, and we can legitimately feel they undermine the craft of the baker. But that's not the biggest question when it comes to improvers. (Karl points out that with the help of improvers, bakers get to spend more time on decorations and making their breads stand out.)

The real question is if these improvers are something those consuming them should be worried about.

Not surprisingly, while Karl begins by reminding me that he's not a doctor, he says the products are safe and exist for a reason:

"Ascorbic acid is transformed in the baking, so let's say it's gone. Enzymes are not even an ingredient. They're a process aid, like scissors that help cut the ingredients. They're a screwdriver, or a key to open a certain door. But they are not something that will affect our health.

"It's about how you perceive things, but I think making bread with an improver is not a bad thing. Because I know the difference. At home, when I bake, it's just flour, water and salt — and my sourdough. But often, I am disappointed with the bread that I make at home because I know that with just a little bit of one our improvers based on enzymes, I would have so much better results.

"The technology of improvers has changed a lot over the last 50 years and the range of enzymes that is available out there is a tremendous aid for the bakery. You see on Facebook, everybody likes their bread to have 'ears.' It's very difficult to create ears, but if you have the right blend of enzymes, you can increase those ears because the enzymes will have helped during the mixing to strengthen your gluten network and to prolong the moment of your oven jump in the oven."

We artisanal bread advocates often talk about the importance of educating the public, be it about the benefits of sourdough and long fermentation, using whole-grain flour or how people without gluten sensitivity shouldn't feel they need to go gluten-free. Karl says the same applies to the bread improvers they produce:

"If bakers were able to defend the fact that they use ascorbic acid, for instance, in their bread, the consumer would not have a problem with it.

"If someone says 'I don't want ascorbic acid in my bread,' I laugh at these people. Ascorbic acid is vitamin C. When you are ill, you go to the doctor to get some vitamin C to feel better! I think no clinical study has shown ascorbic acid to be bad for us.

"But then again, if you go to these people and look into their cupboards, you'll find all these breakfast cereals, with high levels of salt inside, preservatives... Suddenly, that's not a problem anymore. And the muesli that they eat is sweetened with sorbitol to lower the sugar level. Then, it's not a problem."

Maybe that's not a fair comparison as many people are indeed careful with all of the food they choose and not just bread. But it does give some perspective to the discussion.

"Bread is often seen as a very easy thing to target," Karl says.

A BETTER WAY TO ADVANCE GOOD BREAD?

This far into the discussion, it's become clear that Karl defies being pushed into a fixed slot on the artisanal/industrial baking continuum. He is an artisan baker who enjoys spending his birthday baking sourdough bread in a wood-fired oven, but he also consults industrial bakeries. He is committed to improving the quality of bread around the world and making good bread available to everyone, yet he sees nothing wrong in using dough improvers in a bakery.

This is a view that, I suppose, most bakers in the global artisanal bread movement will not ready to adopt. Some more, some less, these small-scale artisan bakers find themselves at odds with the industry.

But is this black-and-white way of thinking really the best way to make a difference in the bread people eat around the world? Why is promoting the purist ideals of simple, beautiful bread so often done by labeling other breads and bakers as bad — or fake, even?

When I ask Karl about this, he laughs. It's a question he is faced with daily as he engages bakers in social media.

"Often, these purists, they do not have a total view of what they are doing," Karl says.

"It's easy to call yourself a purist and say: 'I just bake with water, flour and salt.' But the flour they use is a flour that they buy from a miller where the flour has already been 'doped' with a blend of enzymes to give it more volume, with some amylases, with some oxidizers. They think that they are not using improvers — but unless they go to a local miller and see him put the grains in the mill and flour come out, they are!

"So, I'm always cautious when I talk to these people because it's very easy to say that you are a purist. But if you scrape the surface, there are a lot of unexpected things that do rise."

"It's easy to call yourself a purist and say: 'I just bake with water, flour and salt.' But the flour they use is a flour that they buy from a miller where the flour has already been 'doped' with a blend of enzymes to give it more volume, with some amylases, with some oxidizers."

While I might not completely agree with Karl on improvers, I think he makes a point worth hearing out when he says that the loudest voices complaining may be those of bakers who have trouble competing with the industry.

"I think you shouldn't shout and say that everything the industry is doing is bad unless your own bread is outstanding. I believe the bakers who make really outstanding breads have nothing against the industry. And they have nothing against supermarkets," Karl says.

Then, he goes on to explain how in France, many artisan bakers consider a supermarket's entrance hall an ideal place for a bakery. They know how to run their businesses and therefore are not afraid that their customers might choose supermarket bread instead of theirs, he says:

"Those artisans make better bread than what the supermarket is selling. So consumers, when they come out of the supermarket, go to that artisanal bakery. And you do not hear these bakers saying that the bread from the supermarket is bad or that it's industrial. They understand what they have to do in order to be different.

"An artisan baker can never compete on price with an industrial bakery, simply because he's buying maybe 3 to 5 tons of flour per month whereas an industrial bakery uses 50 to 80 tons of flour, per day!"

But if artisan bakers take their businesses seriously and, instead of spending their efforts on fighting the industry, focus on what they do best, Karl is convinced that they have a good chance at making it in the market — even as industrial bread keeps improving:

"You have to compete with stuff that the industry cannot make: more seasonal products, products where you have put a bit more time in the decoration or cutting the bread differently, or shaping the bread differently. Things that artisans can do.

"I believe the bakers who make really outstanding breads have nothing against the industry."

"When you go to your artisan baker, you want to be informed. They have to sell you a bread. They should say: 'This is a new recipe my husband created,' or 'This is a bread with a special fruit that we have included,' 'It's something new,' 'It's for the barbecue,' and so on. That's where the artisans can make a difference."

Why? Because while industrial bakeries are fast in pushing out loaf after loaf, they are slow when it comes to creating new products and changing course. Karl says:

"In industrial baking, all the ingredients have to be approved and standardized. They have to define the parameters and quality control to be able to make the bread on the line. For a product launch from idea to realization, it might take between six months and two years, depending on the size of the bakery.

"A skilled artisan, on the other hand, can ask his customers on Wednesday: 'What would you like this weekend? I see the weather will be nice so I'm going to make some special barbecue bread. What are the flavors you like?' Customers answer 'Oh, I like the Provencal,' or 'Please make something with dried tomatoes.' And the baker can do that!

"But artisans should not shout and argue against the industry. Because artisans have the advantage of the artisanal image, the freshness of their products is better, and then there's the contact — the people in the shop who can give the customers information about the bread! These are the things that artisans should focus on."

❊❊

In the end, I think Karl is right: a healthy competition based on making the best possible bread and focusing on what each does best can only lead to better bread for everyone.

"Because if the quality from the artisan bread bakers goes up, industry will have to follow. It is only beneficial. Quality can only bring quality," Karl says.

IN SEARCH OF A SUSTAINABLE APPROACH TO ARTISANAL BREAD

Words: JARKKO LAINE and FRANÇOIS THIBEAULT

Photos: STOCKSNAP, LUÍS BAÑOS,
JACQUELINE MACOU and COCOPARISIENNE

On the cover of Wing and Scott's book "The Bread Builders," published in 1999, we see young Chad Robertson unloading a batch of sourdough bread from his Alan Scott wood-fired oven. The perfect example of what could be called a "purist" artisan baker, for six years, this is how he made his living: baking bread in an old-fashioned way, without using any modern equipment whatsoever.

Daniel Wing dedicated a whole chapter to narrating Robertson's baking lifestyle, which he ended up describing in this manner: "Natural leavens. Masonry ovens. Small-scale bakeries. Right livelihood. Amen."

The model that "The Bread Builders" contributed to set up inspired many of us to get started with bread baking. It instilled in us the idea that this was what it really meant to be an artisan. Isn't the realization that you don't need fancy or expensive equipment to benefit from the magic of fermentation hugely empowering?

The model that "The Bread Builders" contributed to set up inspired many of us to get started with bread baking. It instilled in us the idea that this was what it really meant to be an artisan.

What we don't see in that picture are the downsides of this way of working.

At the Wired 2015 conference, Chad Robertson — introduced as a "traditional baker" — told a technologically savvy audience about those years. He told the story of long hours dictated by the weather and how the dough was behaving. Working seven days a week, Robertson rarely left his combined home and bakery. Sleep deprived, he says he often felt like a caged animal. While working this way was his choice and he enjoyed the meditativeness of it, in the long term it was anything but sustainable.

At the conference, he explained how Tartine was innovating in new directions: "Technology is at the heart of everything we are going to do," he said. Wouldn't that turn down those of us who believed that "true" bread could only come from those bakers who "build" it from the bottom up, using wood-fired ovens and no machines or technology at all?

In this issue of BREAD Magazine, Daniel Leader, founder of Bread Alone Bakery, asks: "Why is it that you don't see an artisan baker who has lasted more than 10 or 15 years?"

A purist, "flour-water-salt" approach to bread making is worthy of praise and an excellent way to learn the craft inside and out. Nonetheless, physically — when you do it professionally — it's not a way to build a career that lasts until the old age.

So, what are the options? How is a baker who values the artisanal aspects of bread baking to make a decent living without sacrificing his or her values? And what should we, as part of a global artisanal bread movement, encourage bakers to do?

WHAT MAKES BREAD ARTISANAL?

The word "artisanal" has all but become a marketing term for a particular style of bread (hearth-baked, with a dark crust, often lending attributes from sourdough breads). "Artisan" is still the only word we have for the type of baker who makes bread relying mostly on his or her manual skills and honoring the "tradition" of his or her craft. This has become the catchphrase of artisanal baking.

In their struggle against large and industrial bakeries, but mostly against "bad" bread, small-scale French artisan bakers lobbied in the 1980s to create laws that would protect their trade.

Their efforts led to the 1993 Bread Decree in which artisanal bread was framed by way of three major legal definitions regarding "homemade bread" (i.e., bread mixed, shaped and baked where it is to be sold), "pain au levain" and "French traditional bread" (i.e., bread that has been made without deep-freezing and ad-

ditives, and that contains only wheat, yeast, salt, water and permitted adjuvants such as malt flour).

The Decree did not state what procedures were to be used. Thus industrial bakeries took the opportunity to market their own versions of French traditional bread, alongside that of small-scale bakers who — of course — also benefitted from the Decree.

Creative people and industries will always find ways to make the best out of their given conditions.

Can a baker use machinery and still be accepted as a true artisan? What about when the operations grow, like Dan Leader's Bread Alone or Chad Robertson's Manufactory? Is there a turning point where a bakery stops being artisanal and becomes industrial? Or, is artisanal compatible with commercial, large-scale or even industrial bakeries?

When we dig deeper, we quickly find more and more shades of gray: Can a baker use machinery and still be accepted as a true artisan? What about when the operations grow, like Dan Leader's Bread Alone or Chad Robertson's Manufactory? Is there a turning point where a bakery stops being artisanal and becomes industrial? Or, is artisanal compatible with commercial, large-scale or even industrial bakeries?

To answer these question, we have to deconstruct our appreciation for bread: we have to look at the traits we value in bread and ask ourselves why we value them. It is only when we understand our values that we can properly apply and protect them.

It's also worth noting that this is a personal — if also communal — exercise. As we study our beliefs, we notice that there isn't one unified artisanal bread movement but a loosely linked collective of people with overlapping values and ideals. There are also subcultures with different emphasizes, connected by the internet as well as local campaigns and organizations.

This looseness sometimes leads us to take some of our assumptions for granted and to expect our fellow bread lovers to share all our ideas about good bread. Classifications can very easily be used to draw battle lines where there should be friendly disagreement and discussion.

Quality

One way the artisanal bread movement has defined itself, especially in the U.K. is through the quality of bread. In the land of the Chorleywood bread process, "real bread" has, quite naturally, become the rallying cry against the industrial, white, low-quality breads of the past. In this environment, good bread has come to mean the opposite of industrial. Quality has become an important way to frame the artisanal bread movement.

As evidence for the health benefits of slowly fermented and sourdough bread piles up, this can seem like the most natural way to define artisanal bread: through the characteristics of the bread and the processes used to make it.

But making good quality bread doesn't equal being a Luddite. Moreover, the health benefits from specific bread making methods we know of aren't limited to handcrafted bread. Through innovation, with a strong focus on the best parts of the tradition, industrial bakers can create machinery to make bread with the qualities of a skilled baker — or at least to ease the work of these craftspeople significantly. Industries are doing this already.

Also, health claims are a moving target: if bakers place too much of their identity on a specific scientific finding, they are at a risk when new evidence pointing to the opposite direction is found. Because of this, it's a good idea to be curious and open to new findings, while at the same time staying agile enough so as to be able to pivot quickly without losing the center of focus and identity.

Size

Quality and the properties of the bread are just one of the reasons people might appreciate artisanal bread. Jarkko has written that what he loves about a loaf of bread made by a craftsperson is the touch of the baker — the fact that each loaf is a bit different and made by a person instead of a machine.

It's what Steven L. Kaplan calls *"panimagination."* It's what draws us humans to artisans and craftspeople and makes us want to follow in the young Chad Robertson's footsteps: the stories that we tell and how they fit in our worldviews.

While there is no objective way to separate a bread made by a human from one made by a machine, that doesn't mean that this difference isn't meaningful. The human touch can be an important aspect for some customers, even if it doesn't add anything to the taste or healthiness of the loaf of bread.

Most of the time, it brings pride and joy to the baker. But not always. A small size bakery is not necessarily invested in quality

When artisanal baking is seen through the lens of community, it means that the baker is in touch with the people who eat his or her bread, is aware of what they like to eat, eager to please them through baking as well as anything that happens around it.

(maybe the bakers lack skills, or maybe they are overworked and can't produce their best products). It can also make use of some machinery in its procedures. Some small bakeries can model their procedures on industrial ones. Conversely, some large industrial bakeries try to model their procedures on those of small-scale, craft bakeries.

For example, Tribeca Oven, a bakery in Carlstadt (New Jersey) makes about 90,000 par-baked loaves per day. Head baker George Erasmus said: "We make bread the way your grandmother used to. Clean, simple ingredients to make the best possible loaves." The logo on their bags reads: "Tribeca Oven – Artisan Bakers. Small batch. All natural. Hand Crafted." Watch the video on their website and ask yourself: is this still artisanal bread?

Community

Finally, an artisanal bakery can have a focus on community. Many fine bakeries have been started with the idea of revitalizing a neighborhood, bringing jobs to hard-to-employ people and other noble causes.

When artisanal baking is seen through the lens of community, it means that the baker is in touch with the people who eat his or her bread, is aware of what they like to eat, eager to please them through baking as well as anything that happens around it. There can be bread making classes and community events such as bread and wine tastings.

For these bakers, bread baking is a lifestyle rather than a regular job.

A HEALTHY WAY TO ARTISANAL BREAD

BREAD Magazine has always been on the side of curiosity and the positive, rather than fighting for a strict set of rules or beliefs. At the same time, the bread we really care for is bread made by hand by people who take pride in their craft. We also admit that we look at the world through the lens of small bakeries and home bakers.

Because of that, we'd like to offer a positive way for our loosely bound artisanal, small-scale and home baking movements to make a lasting difference in the world, even if the industry keeps growing in both quality and size.

In the interviews in this feature, Daniel Leader and Karl De Smedt say the same thing: to succeed in the long term, artisanal bakers need to be smart in their businesses and to keep making better bread. De Smedt goes as far as to say that the really good bakers don't even feel the need to fight the industry because they already understand how their business can thrive regardless of what the "big guys" are doing.

For some bakers, it means growing the operations carefully to bring in some machinery to help with the repetitive and back-breaking work. Some may embrace coolers (we should remind ourselves that cold fermentation was, and still is, debated among all types of bakers) and even freezing their doughs.

As Robertson says, technology can give your arms more strength when it's used to aid the artisanal process, not to replace it.

To get the best results, though, it's important that we as artisanal bakers find our place in the bigger picture of bread. We should appreciate the fact that the larger bakeries exist for a reason and that they are not inherently evil. They may even see themselves as a part of the same movement for good bread as we do!
Small bakeries cannot and should not compete on price. As Karl De Smedt says, they have something the industry can never have. They have a direct contact with the customer. They can change rapidly and bake different breads depending on the season and the customers' preferences. Artisanal bakeries can create experiences that feed more than the stomach. As Dan Leader says, artisan bakers can tell stories that the industrial bakeries cannot even think of.

That doesn't mean that we, as participants of the global artisanal bread movement, should remain quiet! We can speak about the things we care about: community, the beauty of a handmade bread and the joys of giving bread away as gifts. We can talk about health. Sometimes, what we say supports the claims of the bigger corporations and we must acknowledge it when they do good. At other times, we will have to point out their wrongdoings or contradictions, but be humble enough to recognize ours at the same time.

This way, in a healthy interaction with the different parts of the bread-making world, we can each keep learning and questioning our beliefs. Most likely, it will help to bring better bread to the whole world!


RALPH'S
BAKERY
819

PANETTONE

Words and Illustration: SUZANNE DUNAWAY

Photos: SUZANNE DUNAWAY, NATALIE FOX and NICOLA

When I was living in the heart of Italy at Christmastime, I had no reason on earth to make panettone. Many bakeries offered fresh ones, and commercial brands hung from the rafters like brightly colored Chinese lanterns or were stacked in sweet pyramids in the beautifully decorated windows of food shops.

But back home, full of nostalgia for my Roman Christmas — musicians from the Abruzzo with their plaintiff music from bagpipes made of sheepskins, the smoky smells of roasting chestnuts on every corner, children bundled up as round as soccer balls, warm, perfect espresso ristretto coretto ("corrected" with a splash of grappa!) on chilly late afternoons of shopping and people watching — I cheered myself up by making my own.

Homemade panettone is unequivocally on another level from commercial bread and must be made with lots of good butter and fresh eggs. It helps if you make your own candied zest[1], but if you cannot, use freshly grated orange and lemon zest along with raisins plumped for a few minutes or overnight in rum or cognac — and be sure to toss in toasted almonds. Some bakeries sprinkle roasted pine nuts on the top of the panettone before baking. I sometimes ice them with the same pink sugar icing I use for the Russian Easter bread, kulich[2], but panettone is so good as is that it really needs no adornment.

Homemade panettone will never be the lightweight vanilla-laden commercial confection with a texture that crumbles and dissolves in a cappuccino. Instead, you will have a lovely, fruit-laden bread that may be sliced horizontally for toasting or eaten fresh from the oven with butter, ricotta, jam or nothing at all. It's that good.

Homemade panettone will never be the lightweight vanilla-laden commercial confection with a texture that crumbles and dissolves in a cappuccino. Instead, you will have a lovely, fruit-laden bread that may be sliced horizontally for toasting or eaten fresh from the oven with butter, ricotta, jam or nothing at all.

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1 See recipe on page 73.

2 A cup of powdered sugar, a pat of butter, a dash of vanilla, and a little Cognac or rum added to get the right spreading consistency, plus a drop of red food coloring.

Loaves of panettone must always be cylindrical in shape with a domed tops, and always taller than wide. Empty coffee cans brushed with olive oil or melted butter give you the correct shape for your breads, while they will rarely stick because of their butter content. For this recipe, you will need two 900 g/36-ounce or four 340 to 400 g/12- or 14-ounce coffee cans.

It is very hard to find a good panettone now, even in Italy, except at very best shops. The crisis has pushed purveyors into cutting corners on the eggs and butter and fruit, I think, and this is all the more reason to butter up your coffee cans and turn out your own delectable holiday treats for family and friends.

ORIGINS OF PANETTONE

So many legends have been attributed to the origins of panettone that it is hard to choose which one sounds like the real thing!

An enhanced bread by a young baker wanting to impress his sweetheart is one of the stories.

Another one attributes the bread to a young cook named Toni, who created it for a nobleman after having burned the real dessert — and called it *"Pan di Toni."*

This is a bit nuts, no pun intended, because "pane" is bread and "panetto" is a small bread, and the suffix, "one," simply means "big" so panettone is a larger panetto and has nothing whatsoever to do with Toni!

FORMULA

Sponge:

Ingredient	Quantity
Unbleached all-purpose flour	120 g
Lukewarm milk (30-35°C/85-95°F)	120 g
Active dry yeast	30 g
Sugar	5 g

Panettone:

Ingredient	Quantity
Golden raisins or roasted grapes (buy seedless red grapes and let them dry in a moderate oven until they look like raisins)	150 g
Cognac or rum	1/4 cup
Large eggs, separated	2
Unsalted butter, softened	225 g
Sugar	300 g
Large eggs	4
Grated orange zest	15 g
Grated lemon zest	15 g
Pure vanilla extract	5 ml
Unbleached all-purpose flour	675 g
Salt	5 g
Toasted, chopped almonds (or walnuts or pecans or hazelnuts)	150 g
Mixed candied lemon and orange zest (see next page)	75 g
Toasted pine nuts, for garnish (optional)	35 g

To make the sponge:
Thirty minutes before mixing the dough, stir together the flour, milk, yeast and sugar in a small glass bowl. Cover and set aside.

To toast the almonds:
Spread the almonds on a baking sheet, spritz with a little water, sprinkle with salt and toast in a 180°C (350°F) oven for about 15 minutes, stirring once or twice. Set aside to cool.

To make the panettone:
In a bowl, soak the raisins in the cognac or rum.

In another bowl, beat the two egg whites until they hold soft peaks. Take out 30 ml (2 tbsp) for brushing the tops of the panettone.

In a large bowl, using an electric mixer, cream the butter and sugar until fluffy. Add the remaining eggs and egg yolks, one at a time, and beat well. Add the orange and lemon zest, and the vanilla extract.

Sift the flour with the salt and add to the batter. Mix on low speed, gradually adding the sponge until incorporated.

Add the raisins and their liquid, and continue to beat on low speed for a minute or so. Add half the almonds and beat until incorporated. The dough should not be too firm but should look buttery and a little rough and ragged.

Remove the bowl from the mixer and fold in the beaten egg whites.

Turn the dough out onto a floured surface, oil your hands and knead for 3 minutes, pushing the dough away from you with the heels of your hands, folding it in half over on itself and repeating the motion. The dough will become smooth and shiny very quickly.

Transfer the dough to an oiled bowl, cover, and let it rise in a warm place until doubled in volume, about 2 hours.

Turn the dough out on a work surface and flatten into a rectangle. Spread the remaining almonds and the candied zest across the dough down its length. Starting at a short end, roll the dough over the nuts and candied zest.

As you roll the dough, knead the nuts and candied zest into it to distribute equally. This takes about 2 minutes with a steady pressing motion of the heels of the hands. Let the dough rest 15 minutes.

CANDIED ORANGE AND LEMON ZEST

Makes about 150 g (1 cup)

Candied zest, the outer peel of citrus fruits, made at home is far superior to the zest found in little plastic containers in markets at holiday time, which, to me, often have a chemical taste. If you can find them without preservatives or the odd flavors that sometimes surface in the commercial zest, use them, but I believe you will always taste the difference in your bread.

I once experimented by ordering very expensive candied zests from Europe. One sniff was enough to toss them all into the circular file! This is not to say good zests do not exist somewhere in the world — I just haven't found them.

- 150 g (1 cup) Slivered or minced assorted lemon, orange, or tangerine zest
- 225 g (1 cup) Sugar
- ¼ cup Water

Place the zest in a heavy pot and pour enough boiling water over it to cover. Reduce the heat to medium-low and simmer for about 15 minutes or until the zest is transparent and tender. Drain well.

Add the sugar and water and boil until syrupy, about 3 to 4 minutes.

Spread the zest out on a smooth, oiled surface in one layer to cool until crystallized. Store in an airtight jar in the refrigerator or freeze. It will last indefinitely.

To shape the panettone:
Thoroughly butter two 900 g (36-ounce) or four 340-400 g (12- or 14-ounce) coffee cans. Divide the dough into 2 or 4 pieces, depending on the number of coffee cans. Shape each piece into a ball and place the balls in the cans (the dough should fill cans about half full).

With a sharp knife or kitchen shears, cut an X in the top of each, about 1 cm (½ inch) deep. Brush each with the egg whites, then decorate the tops with the pine nuts, pressing them into the dough.

Cover and let the loaves rise until doubled in volume, or about one hour. Due to the sugar, the dough may be active at this point and rise quickly, so you may not need a full hour's rising, but a generous rise makes a light panettone.

To bake the panettone: Preheat the oven to 200°C (400°F). Uncover the loaves, place them in the oven and reduce the oven temperature to 180°C (350°F). Bake for 40 minutes for large coffee cans or 25 to 35 minutes for the smaller cans. Cool in the pans for 15 minutes.

Carefully remove the loaves from the cans and cool completely on wire racks. Serve toasted on Christmas day or during holidays with Vin Santo. I like mine sliced horizontally into rounds and toasted.

A MEMORY OF PANETTONE

Even with the best company in the world, Rome can be lonely.

Especially during Christmas and on New Year's Eve, families gather together, trim trees, wrap presents, eat, drink and make merry, with the particular warmth and intensity of Italian families which draws us back to Rome again and again.

My husband and I had taken a villa for six months to be near his children, and New Year's Eve was about to ring in. Many of our friends had gone off to other parts of Italy and, as Romans are very private, we found that it takes some time for foreigners to be included in friends' family events.

My stepdaughter and her boyfriend were off at parties, Don's young son was sleeping over with cousins and friends, and Don's ex-wife and her new husband were off to some lively and intimate gathering (I conjured up the best of Fellini's party scenes) with champagne flowing and that warm camaraderie among Italians that foreigners long for — always just out of reach no matter how long one lives abroad.

I thought of our landlord and neighbor, Principe Ruffo, off with his family to Sicily — the scent of oranges in the air, large groups of children laughing and gathering their horns and clackers for the stroke of midnight — and I wanted to be with them, eating the requisite panettone and other holiday favorites, the soft air of Sicily and family, family all around me.

I imagined other friends, Marisela and Alberto, in Spoleto at with their daughters, all of them taking turns at stirring polenta for a sun-dried tomato sauce or sitting around their walk-in hearth, toasting their panettone (and each other) to eat with prosecco.

And here we were, like Dante's lost souls, destined to wander through Rome's deserted streets until midnight, when, I had been told, people would toss old china, sinks or anything broken and used out the window to make a clean path for a new year. I could not miss that!

In short, it was a bleak night.

My husband, with an curious look, suggested we simply go home. The thought of our warm villa was better than gazing at shop windows full of tinsel and panettone. And home we went. We did not wish to be among the smattering of Rome's tourists, searching for New Year's Eve.

We wanted to be Roman and only Roman, eating our own panettone and toasting the world's most beautiful and haunting city.

Our footsteps ticked away the minutes until yet another year began, we arrived at the villa and I found that my husband had laid out smoked salmon, caviar, crystal and silver to surprise me.

Suddenly we both realized that the only thing missing was the panettone!

Inspired by a chilled glass of prosecco, I started my sponge, stirred up my recipe with cranberries and pistachi that I reserve for special occasions. As the New Year rang in from bell towers all over Rome, my golden loaves emerged from the oven to complete our New Year's supper.

No one had tossed any bath fixtures or pottery out the window, as far as I knew. Instead, we hurried to our terrace, attracted by the sudden brilliance of a sky lit up by Italian fireworks in all their glory. As we watched the glorious show with all of Rome, my stepdaughter and stepson called to wish us *auguri* — and weren't the firework wonderful? Gabriella and Giuliano rang to invite us to New Year's Day lunch and traditional games with all of our extended family — and had we seen the spectacular fireworks?

And oh, would I possibly have time to make my special panettone with pistachios and cranberries?

"I'll see what I can do," I said and my husband and I raised a toast to family.

THE LITTLE THINGS THAT SUSTAIN US

Words: DON SADOWSKY

Photos: lovelyheewon, Rocky Mountain Laboratories, Elizabeth Lies, Devanath, Benjamin Combs and Francesco Gallarotti

"No man is an island"
– John Donne, Devotions upon
Emergent Occasions

It's pretty amazing when you think about it. The humble wheat kernel, that tiny staple of much of humanity, containing everything it needs to wrest water and nutrients from the soil by some mysterious magic of botany, enabling one kernel to become many. And those kernels are turned into bread by the alchemy of baking, to be eaten by human beings who have evolved the ability to break apart the breadstuff and extract nourishment and energy. Humankind and wheat, close and exclusive partners over the course of millennia.

Amazing, yes, but not quite right.

What if I told you that the wheat kernel is a little bran-coated fraud, taking credit for the work of a host of even smaller living things? What if I told you that the very concept of the individual that digests the wheat is but an illusion? Would you take the blue pill or the red pill?

Back in the days before instant yeast, before grindstones and even before electric toasters, we lived in a world of the senses.

We saw our food as we stalked it. We felt it as we pulled it off the tree, stabbed it with a spear or dug it out of the ground. We heard the grunt of the pig we were about to slaughter for dinner. We smelled our leftovers to figure if they were still good to eat.

What we saw was what we got. Maybe there was some sort of god or natural essence inhabiting the thing, but still a wheat stalk or a banana or a dyk-dyk was an entity unto itself.

Then that van Leeuwenhoek[1] fellow took the still-primitive microscope, improved it, pointed it at everything he could think of and wrote obsessively about it. He blew the lid off the senses-only view of the living world; all kinds of little creatures were swimming, crawling and squirming everywhere, but we couldn't see them without mechanical help.

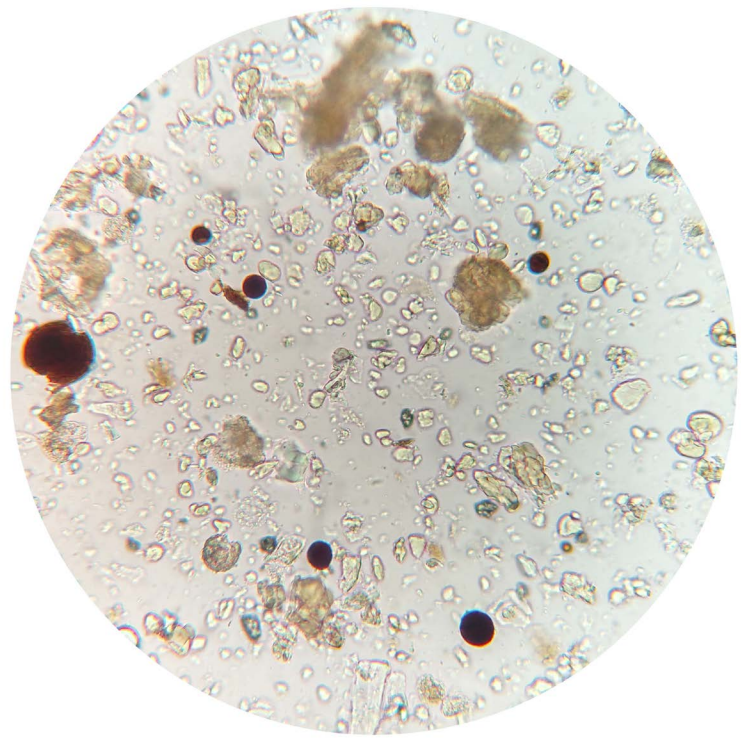
Pasteur came along and showed us that these creatures mattered. They fermented our beer and made silkworms curl up and die. While we couldn't see them walking down the street, we knew they were there, a few friendly allies but mostly hordes of enemies waiting to sicken or kill us. Ugh, germs!

Cholera, gangrene, pneumonia, influenza. Call for more antibiotics and bleach! Reject the unsanitary practices of the past and make bread scientifically, free of all taint—billowy and whiter than white. Wonder Bread and antibacterial hand soap to the rescue!

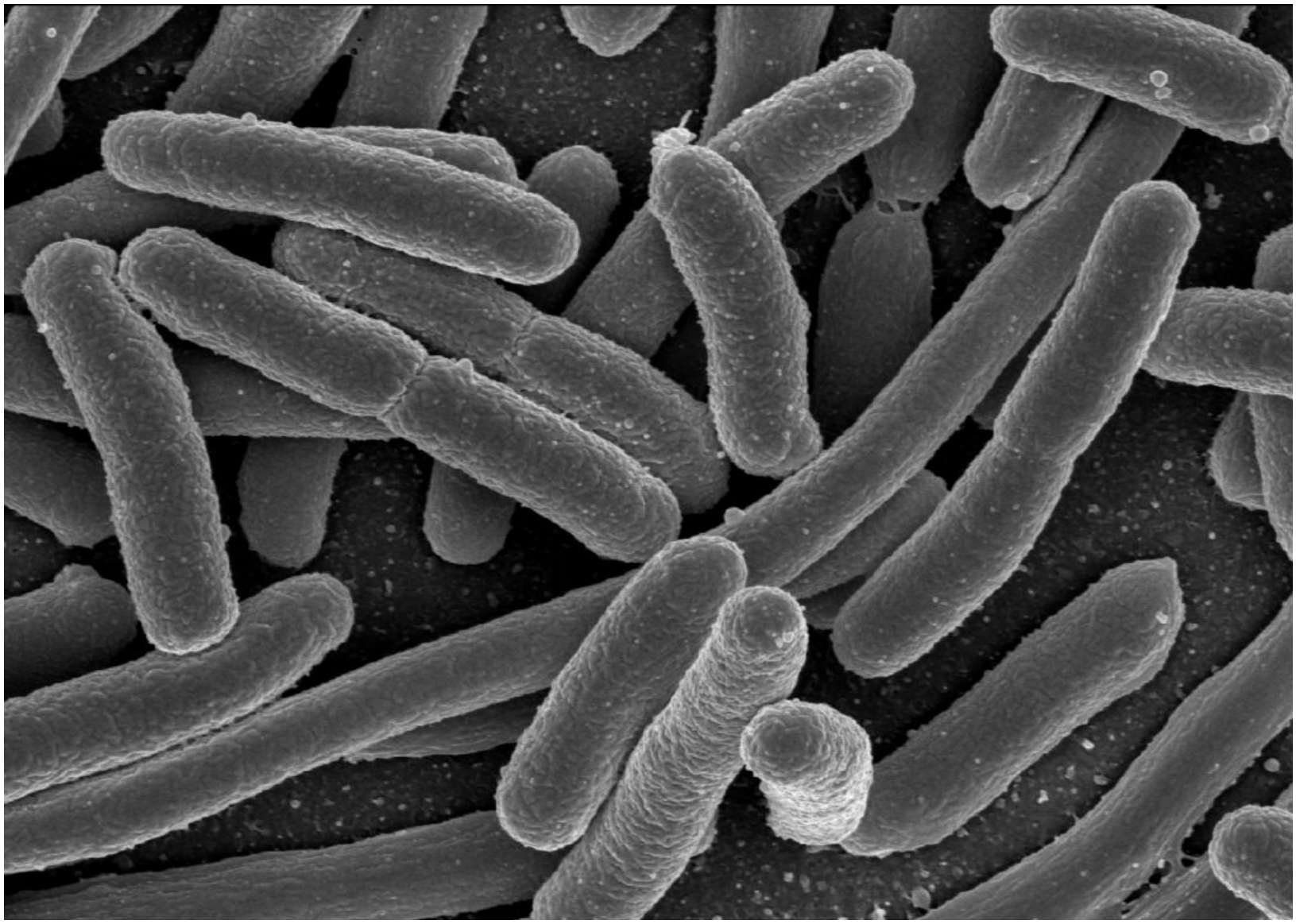
Over the past couple decades, cracks have appeared in our antimicrobial armor, and the desire for a total war on microbes is beginning to abate. Those wiley bacteria seem to be defying our best efforts to control them with antibiotics (a scary prospect). Probiotics and fermented foods are ever more widely seen by the public as the new superfood. And, of great interest to bakers, bread leavened by the wild yeast and bacteria in a sourdough culture is not only coming back with a vengeance (even industrial bakers want to get in on the act) but there are tangible benefits associated with the digestion of wheat during fermentation.

But that's just the tip of the paradigm shift in the thinking about the role of the microbial world in the everyday life of us non-microbes. We are now beginning to understand how microbes are in us, of us, and part of us.

Cholera, gangrene, pneumonia, influenza. Call for more antibiotics and bleach! Reject the unsanitary practices of the past and make bread scientifically, free of all taint—billowy and whiter than white.



1 *Antonie Philips van Leeuwenhoek* (1632–1723) was a Dutch tradesman and scientist commonly known as "the Father of Microbiology" and considered to be the first microbiologist.



YOU ARE WHAT YOU ATE A BILLION YEARS AGO

We're all a bit besotted with ourselves, aren't we? Here we are, the product of billions of years of evolution (or a few days of divine creation, if you prefer), lifted above the commonplace unicellular beings whose neighborhood we moved out of as soon as we had the means, proud discoverers of agriculture and fermentation and baking. Our miches, pizzas and bagels are the fruits of human ingenuity. We did it, we humans — with a little help from our microscopic friends.

Deep inside our cells are little structures called mitochondria, the internal combustion engines of the cell, metabolizing the end products of our food; we moving creatures need a way to convert energy fast. But the very mitochondria themselves were once free-living organisms that were ingested by some great-to-the-nth-degree grandparent a billion and a half years ago, now mindlessly slaving on our behalf. They are part of us.

Similarly, the chloroplasts in plant cells that convert the energy from sunlight into chemical bonds were once freelancers but are now permanently employed by plants and algae. Thus we are not alone — we never have been since we were one-celled creatures floating in the primordial seas.

But if that were the extent of our microbial partnership, it would be but a curiosity of evolution, just one of those neat stories they teach in biology class. However, microbial partnerships (and rivalries) are an everyday part of life. Scientists now use the term "microbiome" to describe the ecological community of microorganisms that share space with or surround larger organisms, and interact with them.

GIVE DIRT A LITTLE RESPECT

Basic botany: plants take nutrients from the soil and use them, together with the energy from sunlight and carbon dioxide from the atmosphere, to capture energy and build plant tissues. The soil is popularly thought to be an inert source of those nutrients, which plants absorb through their roots, like sticking a straw into a milkshake.

It turns out, though, that soil is not mere plant food waiting to be sucked up by the roots, and that plants need a considerable amount of help in taking up what they need. Nitrogen, for example, a key nutrient, can exist in a variety of forms in the soil and the atmosphere, some of which can be easily absorbed by plants and some that cannot. In the absence of microbial assistance, soils would be depleted of the absorbable forms and plants would starve in a sea of useless nitrogen, like a mariner on a lifeboat dying of thirst in the middle of the ocean.

The plants, being no fools, have found a way to deal with this problem.

In the absence of microbial assistance, soils would be depleted of the absorbable forms and plants would starve in a sea of useless nitrogen, like a mariner on a lifeboat dying of thirst in the middle of the ocean.

The roots of this solution, so to speak, lie in the different strengths of plants and microbes. Plants are powerful green factories. They create food. Lots of it. Fungi and bacteria are chemists. They are good at converting soil chemicals into other forms. (By the way, they are also very good at waging chemical warfare upon one another, which is where we get antibiotics.)

The plants exude various types of food chemicals from their roots, recruiting the necessary microbes to convert nitrogen (as well as phosphorous and potassium) from forms the plants cannot absorb to ones that they can. Plants release between 10 to 40 percent of their photosynthetic output just for this purpose. That's an awful lot, so this must be extremely important to the plant's welfare.

If this kind of arrangement sounds familiar, it should. Plants also provide insects, birds and bats with nectar and pollen to transport some of that pollen to their neighbors. They feed delectable fruit to a variety of animals so that the seeds contained therein can be dispersed far and wide.

Plants perfected the art of institutional bribery long before lobbyists started throwing cocktail parties for legislators.

This microbial feeding frenzy takes place in the rhizosphere, which constitutes the area just outside the roots as well as the roots themselves.

Some of the microbes colonize the surface of the roots, while others take up residence inside the roots. Plants turn on or off the buffet as they need and vary its contents to favor one set of microbes over another. Complex and ever shifting relationships exist among the plants, bacteria, fungi and invertebrates in the soil. A parasitic fungus attempting to invade a root can be more easily repelled with the help of other soil fungi.

If plants and microbes have been doing this dance for uncounted millions of years, what happens when we humans come along, domesticate the plants, and turn them into crops? There are indications that the transition from natural to agricultural systems reduces soil microbial diversity, which may impair beneficial interactions between plants and microbes.

The microbes that are left may not play as well with others. For example, breeding can reduce the ability of corn to secrete chemicals that recruit mercenary nematodes to fight against pathogenic insects.

And this is before we get to the fertilizers and pesticides used in petroleum-driven agriculture. Fertilizers can either decrease or increase diversity of the microbiome, depending on the crop involved. Pesticides are a wild card thrown into the mix, promoting the growth of some species and depressing others. Tilling the soil has adverse effects on biodiversity of organisms associated with key nitrogen cycle processes, and may magnify the degree of nutrient waste and runoff by altering nutrient cycles through changes to microbial communities.

Modern industrial agriculture, with its reduction of genetic diversity among crops, breeding for specific traits useful for food characteristics and shipping stability, and its substitution of massive fertilizer and pesticidal throughput for biological nutrient cycles and control systems, creates crops that are dependent upon these same industrial practices for their livelihood. Not surprisingly, these crops become less able to successfully manipulate the soil microbiome.

Does this matter? It's the same old debate between conventional and organic agriculture, only now with more information as to why organic agriculture is better for the soil.

That debate is beyond the scope of this article, but what I've learned about the complex and beneficial interactions between plants and the many organisms they live with has inspired me to change how I approach gardening.

I've gardened organically (for the most part) only with respect to what I didn't do: adding pesticides and fertilizers. Now I am working on developing the biological potential of my garden, hoping to create the conditions that support a diverse soil community. Wish me luck!

WHEAT, FINALLY

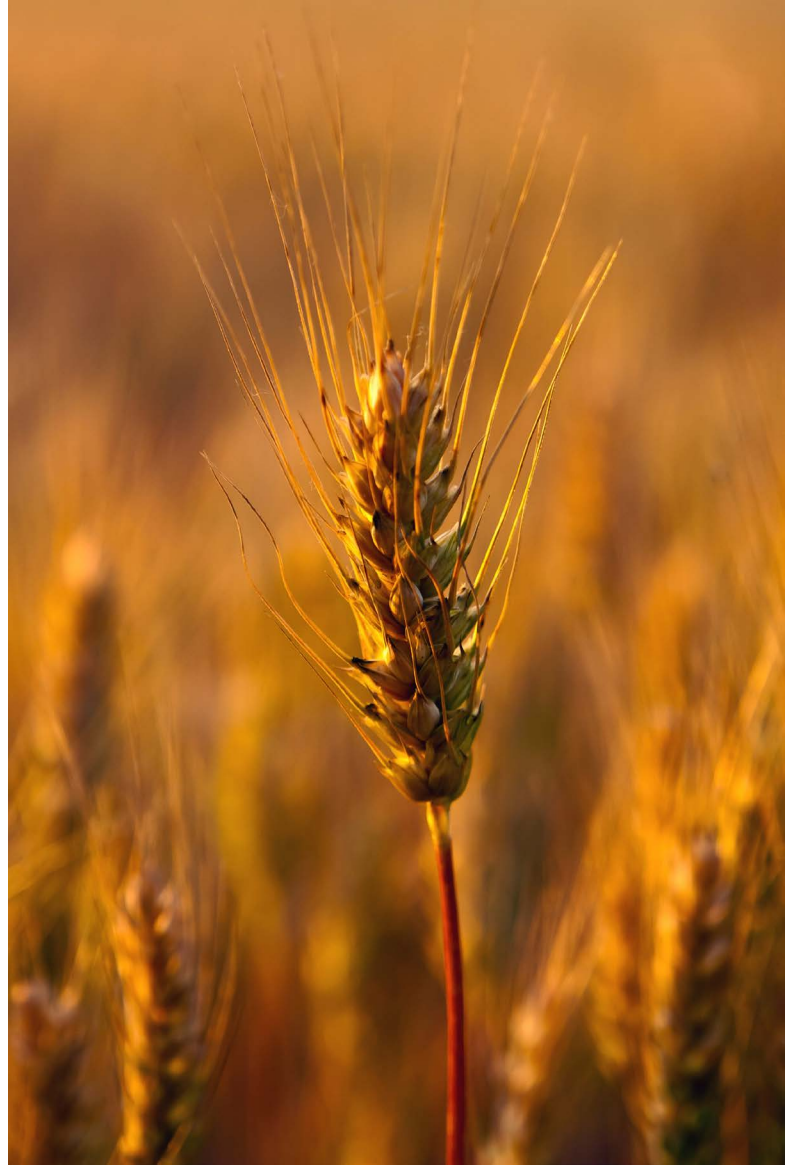
As a reader of BREAD Magazine, you likely have a particular interest in wheat (going out on a limb here). Although researchers still have much to learn about crop microbiomes in general, they are starting to do some interesting things with wheat.

Water availability, chronically low in many parts of the world, will get even lower in many places due to global climate change. Plant breeders have tried to increase drought tolerance in wheat via genetics, but progress has been slow. Now, rather than monkeying with the wheat genome, some scientists are starting to explore applying bacteria that live in the rhizosphere of plants growing in dry environments. One study reported 78% greater plant biomass and five-fold higher survivorship under severe drought, using this technique. Application of the bacteria increased root density and length, demonstrating the effects of the microbiome on plant development.

With GMOs being controversial for a number of reasons, and whose use according to the New York Times "has not accelerated increases in crop yields or led to an overall reduction in the use of chemical pesticides," the promise of the microbiome in dealing with urgent agricultural issues is most welcome. Similarly, other researchers are developing what they call biofertilizers, specific strains of plant growth promoting bacteria added to the soil instead of mass quantities of nitrogen, phosphorous and potassium.

Of particular interest to me is whether different varieties of wheat are associated with different sets of soil microorganisms. What differences are there between commodity wheat varieties and heirloom varieties? Might the microbial interactions in heirloom varieties have an impact on the improved digestibility of those varieties for some people with bread tolerance issues?

An ongoing three year study in Brazil is comparing the diversity, identity, and function of microbial communities associated with seeds and roots of modern wheat cultivars and their ancestors. Another project is intended in part to assess whether ancestral wheat plants are better able to recruit and sustain more beneficial microbial interactions in the rhizosphere than cultivated wheat plants.



An intriguing paper reported that different varieties of wheat can have distinct and lasting impacts on the health of the soil in which they are grown. A soil fungus called "take-all" infects the roots of wheat. A bacterium in the soil (*Pseudomonas fluorescens*) can affect plant growth and disease resistance. Planting different varieties of wheat affected both the amount and particular strains of P. fluorescens in the soil, and consequently the resistance to take-all.

The most interesting part was that when one variety of wheat was planted in Year 1 and another variety in Year 2, the variety of the wheat grown in the first year is what controlled the characteristics of P. fluorescens and the resistance to take-all during Year 2, rather than the variety of wheat planted as the Year 2 crop.

I HAVE A GUT FEELING ABOUT THIS

So, now we know that it takes a microbial village to grow a wheat plant. And another village to ferment flour into sourdough bread (or an Army of One if you use commercial yeast, *Saccharomyces cerevisiae*).

But the depository of all this microbial bounty, otherwise known as the human gut, is a veritable metropolis by comparison. There may be 100 trillion bacteria, of perhaps a thousand different bacterial species, living on and in us, many of them in our digestive tract. There are even viruses that are part of the microbiome, important to gastrointestinal health.

Each critter has its own set of genes that are at our disposal (or which, when things go wrong, can dispose of us), multiplying by perhaps 100 the amount of genetic material available to work with. After all, who cares if they're our own genes or the genes of our resident microbiome that help out? All hands on deck.

"While the inherited genome remains almost stable during lifetime, the microbiome is extremely dynamic and can be influenced by a number of factors, among which, age, diet, hormonal cycles, travel, therapies, and illness."

The beauty and essence of the human microbiome was stated nicely in Science Direct:

> *We have two genomes, one inherited from our parents and the other acquired, i.e., the microbiome. This concept is the basis of the definition of humans as 'superorganisms.' The most important difference between these two genomes is that, while the inherited genome remains almost stable during lifetime, the microbiome is extremely dynamic and can be influenced by a number of factors, among which, age, diet, hormonal cycles, travel, therapies, and illness. [...] To date, a number of functions have been associated to the core microbiome, including polysaccharide digestion, immune system development, defense against infections, synthesis of vitamins, fat storage, angiogenesis regulation, and behavior development.*

The influence of the human microbiome has been explored in everything from Alzheimer's disease to zinc deficiency. All kinds of claims have been made as to the function and benefits (and the hazards) of the microbiome, so much so that there is even a popular "Overselling the Microbiome Award" among microbiome researchers. Here, for your amusement, is a sample of over-the-top microbiome titles I found on Amazon:

- The Microbiome Solution: A Radical New Way to Heal Your Body from the Inside Out
- The Microbiome Diet: The Scientifically Proven Way to Restore Your Gut Health and Achieve Permanent Weight Loss
- Brain Maker: The Power of Gut Microbes to Heal and Protect Your Brain–for Life
- Microbiome Diet: 14 Day Microbiome Superfoods Meal Plan-Rebalance Your Gut Bacteria With Probiotics, Prebiotics, And Healthy Foods For Decreasing Inflammation

Consider yourself duly warned.

FORGET LOW CARBS, BRING ON THE WHOLE WHEAT!

It's well known that acidic conditions suppress the growth of pathogenic bacteria, both in your gut and in that jar of pickles in your refrigerator. It turns out that a lack of carbs makes the gut more alkaline, making it easier for the bad bugs to grow. Whole grains, in addition to whatever glycemic benefits they may provide, can increase beneficial bacteria and microbiome diversity.

And while we're at it, let's do a hit on the Paleo diet as well. Part of the justification for a Paleo diet is the idea that human genes evolve so slowly that our genome has not caught up with changes in diet (even that assumption may not be accurate). But the gut microbiome changes very quickly, both in what is living inside us and in their much more reactive selective adaptation. This has been documented with respect to yeast: yeast contains a complex carbohydrate called alpha-mannan that is difficult to digest, but Bacteroides *thetaiotaomicron*, a common gut bacterium, has developed the ability to metabolize alpha-mannan — so that we may enjoy our beer and bread.

THE ELEPHANT IN THE WHEAT MICROBIOME ROOM: CELIAC DISEASE

Much space has been devoted to theories about the reasons behind gluten sensitivity and celiac disease[2]. By now you should not be surprised that researchers are starting to elucidate a role for the microbiome.

An important concept regarding the microbiome is the difference between symbiosis and dysbiosis. Symbiosis, at least as currently used regarding the microbiome, refers to a harmonious interaction among the organisms involved. Dysbiosis is when the growth and interactions of the organisms are inharmonious, for example when problematic or even pathological organisms are present in significant numbers.

The gut microbiome plays an important role in making the immune system work correctly, so as not to overreact and initiate an inflammatory response to otherwise harmless substances. Celiac disease involves dysfunctional immune reactions to gluten. A review article from 2015 in the journal Nutrients reports that most studies of the gut microbiomes in celiac disease patients find intestinal dysbiosis, regardless of whether the patients follow a gluten-free diet or not. The dysbiosis, which may involve increased prevalence of possibly pathogenic bacteria and decreased prevalence of beneficial ones, is associated with gastrointestinal symptoms.

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2 See our Summer 2016 issue for a comprehensive look at the recent findings on the topic.

There are even studies suggesting that the gut of someone with a genetic predisposition for celiac disease is colonized during development by a different set of gut microbes as compared to someone with a different genotype, even before symptoms are present. Gut microbiota can affect the structure and function of the cells lining the gut, so that dysbiosis may expose those cells to inflammation.

Even non-gluten related wheat intolerance may be affected by the microbiome. Alpha-amylase and trypsin inhibitors that are found in wheat can cause inflammation in a reaction similar to that caused by a viral infection, leading to speculation that dysbiosis may be involved there as well.

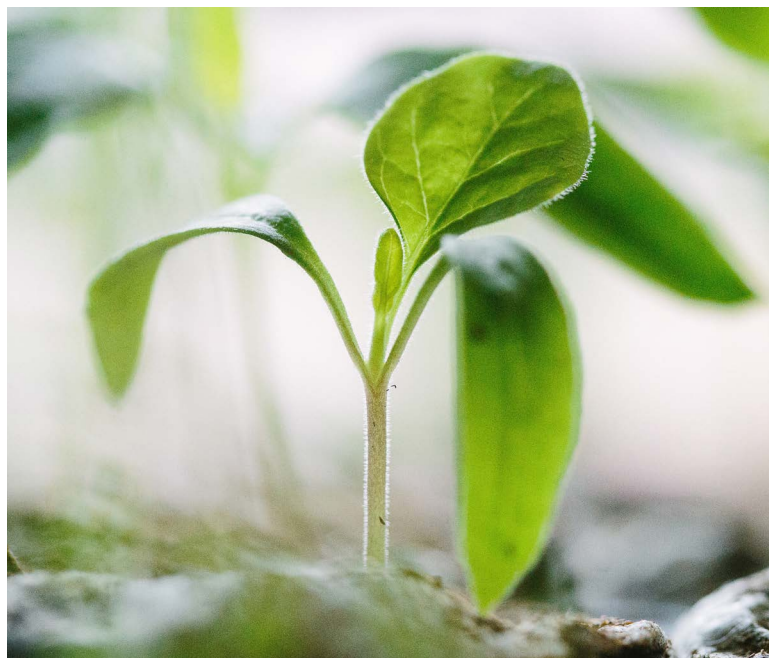
Much of this research is preliminary. There are powerful investigative techniques out there, but also a fair amount of speculation, plus a good portion of snake oil. Feed that gut feeling with a few drops of healthy skepticism, and you'll be just fine.

FURTHER READING

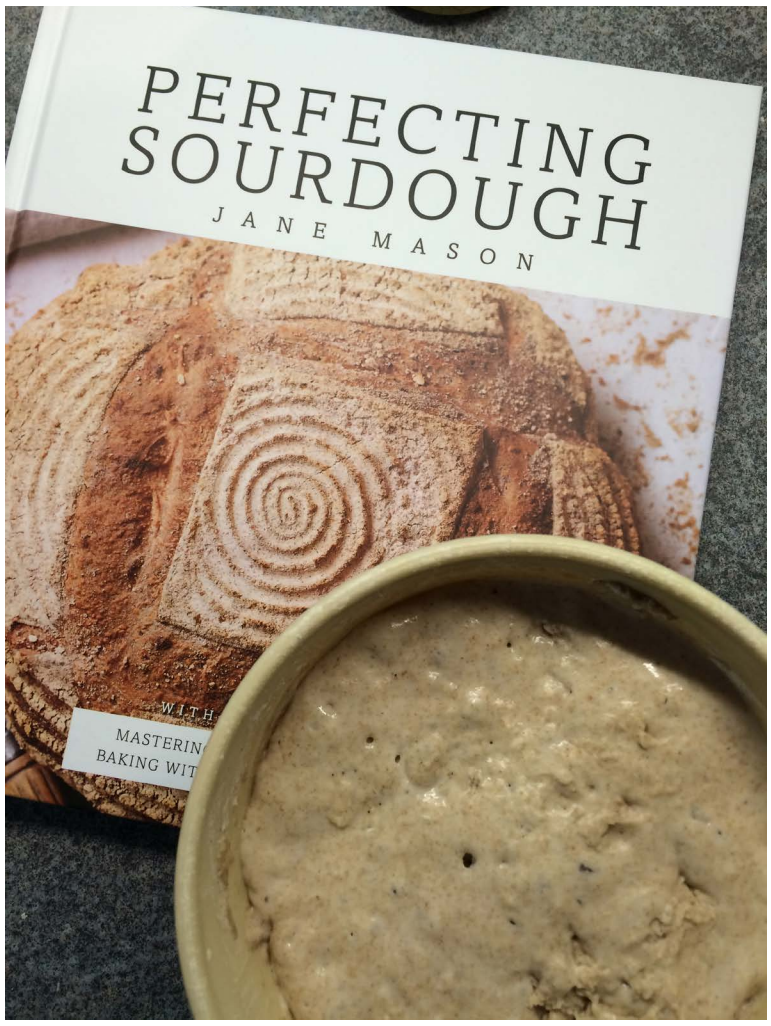
Both of these books are enthralling and illuminating.

David R. Montgomery and Anne Biklé. "The Hidden Half of Nature: The Microbial Roots of Life and Health." New York: Norton. 2016.

Ed Yong. "I Contain Multitudes: The Microbes Within Us and a Grander View of Life." New York: HarperCollins. 2016.



BOOK REVIEW



PERFECTING SOURDOUGH

by Jane Mason
Published by Quintet Publishing

There are so many books on making sourdough bread that I sometimes think that the more you read, the more confused you become. I've read books that tell you to refresh the starter so often that you'd never sleep. Others give you challenging instructions on how to get your starter going by using exotic ingredients, making you feel that it's all too much trouble.

Reading and working from Jane Mason's book, "Perfecting Sourdough," is nothing like that: you feel as though you've got a best friend on hand. The sort of friend who's supportive and down to earth but who speaks to you frankly and honestly. You are in safe hands.

Do you want to know what went wrong with your bake? The book gives you photographed examples that explain the problems and how to avoid them the next time. For example, the first time I tried one of the recipes, I could see I was far too eager to bake.

How should you look after your starter and what happens when it goes wrong? Jane calmly presents the options and declares, "If you kill your starter, it's not the end of the world — you can make more in four days."

The book is great if you're new to sourdough, as it covers the practicalities of how to prepare a starter, the equipment you'll need, how to store and use your precious first batch and how to tell when it is ready to bake.

However, I'd suggest that it's a useful book also if you've been baking sourdough for a while and tend to stick to the same recipes. With "Perfecting Sourdough," you can expand into sweet doughs, try batters (breads that don't need kneading), or explore something as exotic as "Beijing Sesame Buns." I tried the "Swedish Limpa," a bread baked in a tin. Its subtle fennel, caraway, and orange flavors make it a great bread for sandwiches and so much more practical to cut — I think this bread would win over many sourdough skeptics.

Some of the loaves in the book are quite small, so if I could change one thing, I'd love Jane to include how to scale up the recipes (perhaps a mention of baker's percentages?). However, the book has clearly passed the test: it's one I keep going back to.

Danielle Ellis

WHAT'S NEXT?

You have now reached the end of our twentieth issue, which completes the Year 2016 Bundle.

In 2017, we will publish three new issues of BREAD Magazine, filled with stories, advice and articles that will inspire and support you on your bread making journey.

In the next issue, which will be published on May 15th, 2017, our feature section will focus on the craft of milling: the skills it requires, the different ways it's being done today and more. If you'd like to contribute or suggest an idea, email us at editor@bread-magazine.com.

Most importantly, however, to make sure you'll receive the next issue right when it's published, buy the 1-year (3-issue) subscription now.

Normally, the individual issues will be priced at $9 and the 3-issue subscription at $24. But now, using the coupon code "BREADNEWYEAR" at checkout, you will receive a 20% discount and only pay $19.20. The code is valid until January 31, 2017.

Thank you for reading, and happy baking!

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