

Cultural Flocculation:
fermenting food. fermenting culture.
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The goal of this event is to empower the Bacteria, through the qualities of fermentation, to bring us into a synaesthetic experience through analogical thought in such a way that we are individually transformed through a type of fermentation, so that as we each flocculate to our unique life-dreams; we are then a seed, a culture that takes up residence in the dominant petri-dish; thus we experience aisthesis, harmonic and inspiring. Welcome.

Beginnings...We're going to spend just a few minutes going back, all the way to the beginning of the beginning, to the primordial soup...what do we find there? Bacteria!!!

"In the first 2 billion years of life on Earth, bacteria—the only inhabitants—continuously transformed the planet's surface and atmosphere and invented all of life's essential, miniaturized chemical systems."

-Lynn Margulis

and they still are...

"Coevolved symbiotic relationships between bacteria and multicellular organisms are a prominent feature of life on Earth. The importance of bacteria and our bacterial interactions *cannot be overstated*. We could not exist or function without our bacterial partners."

-Sandor Katz

I repeat: the importance of symbiosis with bacteria cannot be overstated!

Like all complex multicellular life-forms, the human body is host to an elaborate indigenous biota, with some geneticists suggesting that we are a composite of many species. In our bodies, bacteria outnumber the cells containing our unique DNA 10 to 1...that's 10 "not you's" to every one "you."

-Stephen Buhner

multi-speciel...lines really start to blur here

So at this point you may be wondering if you are in the right class; "I thought this was a vegetable fermentation class? What does all of this have to do with fermentation?" I can hear some minds questioning. It is my gut feeling (influenced by the micro-herds of healthy organisms living there) that the bacteria are working in conscious & close relationship with our Gaian provider to continue the thribal dance beyond time that has carried life thus far; and that the reason we each find ourselves sitting in this room right now is not simply because we are curious about fermenting food...

Perhaps each of us are here because we are being summonsed by the bacterial messengers & the Gaian Spirits themselves to be here as witnesses to the unfolding of a new renaissance, one in which we begin to recognize the beauty & sentience in all beings, from the tall to the small, beginning with bacteria, growing them, loving them,

eating them...excreting them.

in joyous symbiosis; and as we heal our guts, so our hearts and our spirits. May the Anti-Bacteria war end and awareness of the sacred value of these bacterial brethren manifest themselves fully in our species--literally & metaphorically. Let us be the voice for the voiceless; because if we don't listen, they *will* make themselves heard...

Just a few things to remember:

-Bacteria in our gut enable us to live. We could not survive without bacteria. They allow us to digest food, to assimilate the nutrients in our food and play a huge role, just beginning to be understood, in our immune functioning and in many other processes in our bodies. All life has evolved from bacteria and no other form of life has lived without bacteria. Our bacteria perform essential functions for us, and because we are continually attacking them effectively with all of the chemicals in our lives, simply replenishing and diversifying these populations has an under appreciated benefit for us...now you see the connection! We're living in a time right now of unprecedented cleanliness-which is often toxic. We swim in a chemical stew; our food is sterilized, pasteurized, homogenized, sometimes genetically modified, irradiated, refrigerated, & often shipped thousands of miles around the world before it reaches our tongues....what's a gut to do?

FERMENT IT ALL!!!

These are the things that I often ponder & why I love teaching this class. There is a huge connection between our relationship with eating & how we view the rest of the life on this planet. I feel that if we cultivate a deep & vibrant relationship with food preparation, preservation, presentation & the deep pleasure in nurturing ourselves & our beloveds, we can then collectively project that excitement onto our relationship with all beings, & enliven the healing of the planet. That is why this is a cultural revolution, a food roots movement to re-embrace life. Thank you for being part of it! May we all part ways with a deeply "Biophilic" world view, coined by biologist Edward O. Wilson, to refer to the consciousness of ourselves as coevolutionary beings, part of a greater web of life...each of us have an amazing part to play... and fermentation is a key piece in healing!

- I. **What & Why?** Fermentation is defined as the transformation of food by various bacteria, fungi & the enzymes they produce, often for the purposes of preservation, inebriation, assimilation & efficiency.
- A. **Preservation:** This form of preservation is not forever, like canned foods that you can put into a pantry or storm cellar and forget about for 10 years and still eat. These foods are alive and dynamic, and fermentation is an extremely effective strategy for preserving food through a few seasons, which is really the point. But think of an aged Parmesan & a glass of milk...big difference there in how something will last through the winter!
- Refrigeration & canning are relatively new inventions-only a few generations old; and yet people do not know how to live without them!
 - Acidification by fermentation is a brilliant safety mechanism for food storage, making it nearly impossible for pathogenic organisms to take up residence in most fermented foods.
* **THERE HAS NEVER BEEN A CASE OF FOOD ILLNESS DUE TO FERMENTED Veggies ON RECORD with the CDC...EVER!!!** So its much safer than many people believe.
- B. **Inebriation:** It is believed by some that before we captured fire as a species, & held the wisdom to use this magnificent tool, we were aware of, at least, if not deliberately harnessing the magic of micro-herds to create the inebriating effects of fermentation. (primates, elephants, mice, treeshrews, etc.)
- C. **Assimilation:** Fermented foods are good for you, predigesting enzymes, thus freeing up nutrients for the body to absorb, & often generating additional nutrients, as well as removing toxins.
- Healthy guts have been implicated with strong immune systems and even higher intelligence in many studies.
 - Fermented foods are often higher in B vitamins, micro-nutrients & culture specific enzymes than the raw materials before fermentation.
 - Detoxify: oxalic acid is broken down via fermentation, as is cyanide. Also, phytates (found in all legumes, seeds, nuts & grains, act as an anti-nutrient, binding minerals & nutrients) is broken down via fermentation, thus releasing & improving mineral absorption.
 - Some pesticide residues are found to be broken down via fermentation.
 - Pre & Probiotics are provided to nourish and heal the gut, as well as keep it all running smoothly! (metaphor of preparing garden soil for the seeds...pre is soil, pro is seed.)
- D. **Energy efficiency:**soaking saves cooking fuel; fermentation acts as a pre-digestive step, meaning that our bodies need to utilize less energy to absorb nutrition; less refrigeration necessary...
- II. **How?** "How can I have all of these wonderful benefits in my gut?" you say. Well, to begin, we will learn the four basic methods of vegetable fermentation: a liquid infusion, the brine method, the Kim Chi method, and the Kraut Method. Let's look at each of these in depth.
- A. **Liquid Infusion:** By fermenting veggies in a high proportion of water, nutrients infuse into the liquid, resulting in delicious sour, live-culture tonic beverages.
- Beet Kvass: 1 sm beet, 1 clove garlic, piece of ginger & turmeric, 2-3 Tbs salt, $\frac{1}{2}$ G H₂O; *hot pepper (optional)
 - Kaanji:delicious spicy Punjabi beverage:1/2 # chopped carrots (traditionally purple, or you can add a beet), 1-2 Tbs ground mustard seeds, 2-3 Tbs salt, $\frac{1}{2}$ gallon H₂O. Cover & ferment for about a week, strain & serve chilled!
 - Combine desired ingredients in 1/2 gallon jar w 2 Tbs salt, fill with tepid water, cover and wait!
- B. **Brine Method:** Very simple & exciting...fill jars with whole veggies (beets, radishes, garlic, small eggplant, okra, green beans, cukes (mouse mellons!), Brussels sprouts w/ pearl onions, squash, pumpkin(chopped into large pieces)...your imagination is the limit! Add herbs & spices, garlic, peppers, ginger, turmeric, horseradish, etc.; add oak, grape or horseradish leaves for tannins (to preserve crunch); add 3 Tbs salt Per Quart of veg for roughly 5% salinity; cover w water. *Note: burp these if you are doing many & they are sitting for awhile, as pressure can build.
- C. **Korean or Kim Chi Method:** Doing this method in its truest form is an art that has developed for centuries in Korea and throughout Asia. "Sweat" veggies first; this was traditionally done w sea water, evaporated to up to 15% salinity. Veggies are placed in strong brine for 10-24 hours then rinsed; or heavily salted and left to sit for 3-6 hours or more. In the past, these steps sometimes took 5-9 days! Ginger, garlic, chili, green onions & more are combined with a little wheat or rice flour and made into a paste. This is rubbed onto the leaves of the sweated napa cabbage, or mixed with the chopped veggies. It is this carbohydrate component that gives kimchi its characteristic effervescence. Also, it is often fermented for a much shorter time, only days in some cases. This works wonderfully in a fresh veg climate, and you can use more dark leafy greens. When Korea sent its first astronaut to space, he went w a specially developed kim chi because scientists feared

mutations happening via radiation in space; so they had to develop a kim chi that was bacteria free, but still maintained an authentic flavor, without driving the non-Korean astro's crazy with the pungent smells!

- D. **Dry Salting or Kraut Method:** This is the method I employ most often and is comprised of 5 basic steps: chop, salt, bruise, pack, wait.
1. **Chop** desired veggies into pieces that please you; there is no right or wrong way. Do consider the rate at which things will ferment, for ex., carrots are very hard & dense & ferment more slowly than shredded cabbage; beets are in between, etc. Things with very strong flavors such as garlic, ginger, turmeric, etc. should be diced finely to disperse their flavors evenly and avoid big bang bites. Have all of your little piles or bowls of ingredients ready, along with your spices and salts. In a large bowl (or two if you want to have fun experimenting with different styles), layer your ingredients in proportion and sprinkle on chosen salts & spices as you go. A base measurement of salt is between 2-3 Tbs per 5 pounds of veggie material; however salting is complex (see below).
 2. **Salt...**oh, salt! I love salt; it is a magical substance found in so many different forms all around the world. Different salts have a different "saltiness" according to their size and origin, so get to know your salts. Avoid iodized salts if possible. Salt & temperature have a very important role, which we discuss in class, but in general, remember: longer time and/or higher temp=more salt; less time/colder temperature=less salt. A good rule of thumb when salting ferments is to salt your finished veg mix a little saltier than you would like to eat.
 3. **Bruise** the veggies to release liquid as you crush the cell membranes. This is done by using a pounder or wine bottle for large batches; or I just use my hands squeeze and massage the veggies for smaller batches.
 4. **Pack** the veggies once they are nice and soft from bruising into chosen vessels a few inches at a time, being sure to push out any air pockets! Keep adding kraut & pressing as you go until jar is full and veggies are submerged in brine. Weight with folded cabbage leaf or clean stone & cover.
 5. **Wait...**this is the hardest step! And the most fun & rewarding. Have fun getting to know your ferments, but avoid eating off the top too much. Pack a jelly jar full to taste as you go to gauge readiness, and leave the other jars to rest. Burp if you seal the lids.

III. **Troubleshooting:** There are various mysteries that can find their way into your ferments. The following are the most common and how to deal with them.

- A. **Discoloration:** can be from oxidation, Kahm yeast, or molds. No problem, just scrape & discard.
- B. **Yeast & Mold Blooms:** these are usually harmless yeast blooms and can just be scraped and discarded. They remain on the surface so the remaining food is still good. However, sometimes a mold grows on top of the yeast; these are not desirable to eat and should be removed and discarded sooner than later. White, beige, green, grey are all fine. Be careful of very black or pink to red molds.
- C. **Bugs:** Fruit flies and gnats love to lay their eggs in ferments and around the rims of the jars. If you see little white wigglers, scrape off the top inch or so & discard; the rest is fine as these critters cannot live or penetrate below the liquid level.
- D. **Sliminess** is common, especially with carrots. I recommend keeping your ratio of carrots to other veg low, or knowing that you are going to have to wait for that stage to pass, as the next stage produces an enzyme that cleans up the sliminess.
- E. **Smell.** Sometimes ferments can smell bad, and still taste delicious! Many ferments go through a farty stage; but be patient. The end result is usually worth it!

IV. To conclude, remember: The rule of thumb is as many different kinds of fermented foods as often as possible...variety truly is the spice of life, and the health of the gut! We must increase bio-diversity in the gut in the face of bio-diversity genocide in our culture; but remember: these foods are medicines; more in *variety* does not mean more in *quantity*... a little goes a long way. And as you connect more deeply with the time honored traditions of food, and the flora and fauna who inhabit our own selves, may you find joy. Now, go home & ferment something!

"Unquiet souls. In the dark fermentation of Earth, in the never idle workshop of nature, in the eternal movement, yea shall find yourselves again."

-Matthew Arnold

"Civilization rests on two things," said Hitzig; "the discovery that fermentation produces alcohol, and voluntary ability to inhibit defecation. And I put it to you, where would this splendidly civilized occasion be without both?"

-Robertson Davies

