

MIJOLOGÍA APLICADA

—— The Chemistry of Flavor - Tea ——
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Mijología

(mi.jo.lo.gí.a) n. (Spanish)

Etym. From the Spanish term mijo, an affectionate expression of closeness used in several Latin American countries, and the combining form -logía, from the Greek -logía, meaning "study," "treatise," or "discipline."

1. A discipline that studies lifelong learning as a process of exchanging knowledge, experiences, and perspectives among lifelong learners.
2. An approach based on the idea that every person can be both teacher and learner, regardless of age, experience, position, or specialization.

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Letter from the editor

Some people never go crazy. [...] What truly horrible lives they must lead!

~ Charles Bukowski

As August comes to a close, another year draws to an end, and the next one begins almost immediately, I find myself remembering something I wrote in an earlier letter: "I cannot say that everyone in the tea world is a good person. That would be too simple and, probably, too naive. [...] But I do have the pleasure of saying that, so far, every person who has shared their Tea Wisdom with me has done so with good intentions."

Today, I would like to add something to that.

The people who have been invited as special guests in the Journal are rare. They are crazy! And how wonderful it is that they are.

In one way or another, they have broken some paradigm imposed by that strange "general consensus" of what is right, what we should do, and what, simply because everyone accepts it, we stop questioning.

There is something recognizable in an eternal learner: the way they ask questions, their willingness to admit that there is still something left to discover, and their generosity in sharing what they have learned without believing that knowing something means they have stopped learning.

Each guest has walked their own path. They have fallen, gotten back up, and taken blows they could have used as an excuse to make things harder for whoever came after them. Instead, many have chosen something else.

There is an enormous difference between thinking, "I suffered to learn this, so you will have to suffer too," and thinking, "I suffered to learn this, so I will try to make sure you don't have to."

To me, that difference is also wisdom.

Much of the knowledge we possess today did not begin with us. We received it from those who came before, transformed it through our own experience, and, if we are humble enough, passed it on.

Knowledge is not a weapon. It is a tool. And like any tool, it can be used to build or to destroy.

Anyone who uses knowledge to destroy is nothing more than vinegar son of wine.

Two people can receive exactly the same knowledge and turn it into completely different things: one may teach, build, and open a door; another may humiliate, exclude, or use it to demonstrate superiority.

The knowledge may be the same. What changes is what we choose to do with it.

This time, I had the pleasure of meeting someone who embodied something I once heard Andrew Goodman say: "At the end of the day, tea came long before any definition."

This time, I had the pleasure of meeting someone who embodied something I once heard Andrew Goodman say: “At the end of the day, tea came long before any definition.”

That is also how knowledge came into the world: first there was experience, then curiosity, then questions, and finally the need to name something that already existed. The problem begins when we confuse the name with the thing it names and believe that knowing a definition means understanding its nature.

After three years of Satoricha.com, that is what I take away most from this anniversary.

Not how much I have learned about tea, but how many people have reminded me how much I still have to learn.

Each has walked a different path, built their own answers, and faced their own questions. But there is something they all share, something worth more than any amount of accumulated knowledge: none of them has stopped being a learner.

That is why I return to Bukowski: “Some people never go crazy [...] What horrible lives they must lead.”

I would rather keep meeting those rare ones, those crazy ones, those who still dare to question, challenge, and learn.

Because Tea Wisdom was never about knowing more than everyone else, but about recognizing that there will always be something more to learn and having the generosity to share it when we finally find it.

The girl with three hats

Human existence has never been easy.

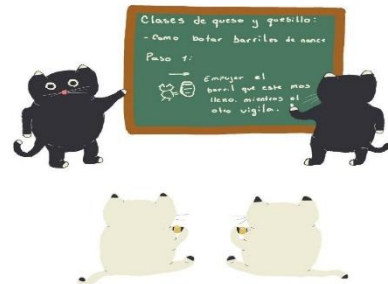
Every era has had its own realities, and rightly so, because we are all experiencing this life for the first time.

In an attempt to “spare” ourselves suffering along the way, we have developed, as societies, a kind of framework that, although it varies from one context to another, almost always pursues the same thing: success. And if it comes quickly, even better.

In a way, almost every society strives to reach the highest step, following a rigid structure that seems to begin from the moment you are born. From then on, somehow, you are already expected to know how to answer a question that has become almost a requirement: “Where do you see yourself in five years?”

Seth Godin puts it more bluntly, but also more humorously: “We run our schools like factories: we put kids in rows, we put them in batches (called grades), and we work hard to make sure there are no defective parts. We don’t let anyone stand out, fall behind, get ahead, or make a fuss.”

But who said it had to be this way?



Do you know the nourishment of life?

No, I don’t mean the one found in food, but the one we encounter in the parable of Cook Ding.

“Cook Ding was cutting up an ox for Lord Wen-hui [...] ‘Ah, magnificent!’ said Lord Wen-hui. ‘I never imagined that skill could reach such heights.’

Cook Ding put down his knife and replied: ‘What matters to me is the Way, which goes beyond mere skill. When I first began cutting up oxen, all I could see was the ox itself. Three years later, I no longer saw the whole ox. And now... I move with the spirit rather than with my eyes. Perception and understanding have reached their limits, and the spirit moves where it will.’”

~ Chuang Tzu

Perhaps, after all, life is not so much about reaching a particular destination as it is about learning how to move along the way.

That is why our special guest this time has a path that is far from ordinary, and even farther from linear. Yet, as I listened to her talk about it, I pictured it as the intricate mechanism of a Swiss watch.

Not all gears move at the same time, nor are they all the same size. Some may seem small and insignificant; others, on the contrary, appear to hold much of the mechanism together. But each one has a purpose. Each one contributes to the movement.

And perhaps the most interesting part is that no gear works in isolation. One moves the next, the next turns another, and little by little, what first appeared to be a collection of independent pieces becomes a mechanism.

Because if one is missing, nothing moves.

The mechanism

Who better to speak about the mechanism itself than the master watchmaker behind it?

This time, that person is Shirley Chen, of Brew & Blossom.

But before we talk about chemistry (I know, that's what this section is called), or everything that takes place inside a cup, we have to go back to the beginning.

Because no gear appears out of nowhere.

Every piece has an origin, even if we cannot recognize its importance until much later.

In Shirley's case, that first gear began in a small mountain town, surrounded by tea:

"I grew up in a small mountain village in Shangyu, Shaoxing, in Zhejiang Province, an area with a long history of green tea production. Tea was part of the landscape around me long before it became something I studied academically. I later studied Tea Science at Hunan Agricultural University and continued in Tea Science at Zhejiang University.

What I had grown up around gradually became something I could understand through science, from the plant and its growing environment to processing, chemistry, microbiology, sensory evaluation, and ultimately what we experience in the cup.

My life then took me in a very different direction. I became increasingly interested in statistics, came to the United States for another graduate degree, and eventually worked as a software engineer. But even while I was away from the tea industry, one question stayed with me: Why does tea still feel so difficult to understand?

Even in China, where tea culture is deeply rooted in everyday life, traditional tea can still feel intimidating, especially to younger generations. In the West, that distance can be even greater.

After seven years of studying tea, many things that now feel intuitive to me can seem complicated to someone just beginning, but I don't think anyone should need years of Tea Science education to understand why a green tea and a black tea taste so different, what processing does to a leaf, or simply how to choose and enjoy a tea.

Years later, when I was living in Louisville, an older neighbor said something that stayed with me. We often talked about Chinese tea, and she told me that I had a way of “translating” it that made it much easier for her to understand, and that I should share that with more people.

She wasn’t talking about translating Chinese into English. She meant translating between worlds, between the producer and the drinker, between science and tradition, and between everything that happens at origin and what someone eventually experiences in the cup.

That is really where [Brew & Blossom](#) comes from.

It is a Chinese loose-leaf tea brand, but I think of what I am building as more than simply selling tea. I want to connect origin, science, craftsmanship, and flavor in a way that is accurate without being intimidating.

There is enormous depth behind tea, and I don’t want to take that depth away. I just want to make the doorway into it much easier to walk through."



A conversation beyond the cup

From this point on, we invite you to join the conversation.

Below, you will find the interview presented in a question-and-answer format. To make it easier to read, the questions will be highlighted in **bold**, while the answers are Shirley's.

S: Shirley

This interview aims to remain as faithful and close as possible to Shirley's original responses. However, as part of the editorial process, some adjustments have been made to the structure, order, and wording to improve readability and maintain the flow of the text, without altering the meaning of the ideas he expressed.

More than a simple collection of questions and answers, this section seeks to preserve the essence of the conversation: Shirley's reflections, nuances, and perspectives on the chemistry of tea

Join us in this exchange of ideas

MSc in Tea Science?

Tell us a little about what lies behind this Master's degree: what is it really about, and what does it encompass?

Although its name clearly defines its field of study, we would like to go beyond the label.

This is particularly intriguing for those of us in this hemisphere, where this type of academic training is still relatively uncommon. For example, Honduras has a strong coffee-producing tradition. Yet, there is still no widely accessible, comprehensive academic curriculum dedicated to the scientific and professional study of coffee, let alone tea.

With that in mind, what disciplines, areas of knowledge, and perspectives come together in an MSc in Tea Science? And how would you describe the true essence of the program beyond the study of tea itself?

S: Tea Science in China has its roots in agricultural science. Historically, it developed within horticulture, alongside disciplines such as fruit and vegetable science, and over time became a highly specialized field of study. That makes more sense when you consider the scale of agriculture in China: many economically important crops have developed very deep academic and research systems around them.

At the undergraduate level, we began with broad scientific foundations—organic and inorganic chemistry, mathematics, biochemistry, microbiology, and even agricultural meteorology. From there, the curriculum became more tea-specific, including tea plant cultivation, tea biochemistry, processing, sensory evaluation, and tea culture.

It was also very hands-on. We had extended processing practicums where we actually made tea ourselves. Because Hunan is an important green-tea-producing region, we spent a great deal of time making green tea, while also learning the processing principles of the other major tea categories. We also had field practicums in tea cultivation, doing things such as fertilizing plantations and pruning tea bushes in winter.

So you are learning to understand both the plant in the field and what happens to it after harvest.

As students move further into research, the field becomes even broader. My own undergraduate research leaned toward biochemistry, particularly tea polyphenols and catechins such as EGCG and their biological activity.

By graduate school, however, I had become increasingly interested in data analysis and in research that could address practical problems in the tea market. At the time, aged white tea had become extremely popular in China, and age misrepresentation was a real issue. My graduate research therefore moved in a very different direction: I used hyperspectral data and machine-learning models to investigate whether white teas of different ages could be distinguished and predicted more objectively.

That range is what makes Tea Science difficult to define narrowly.

One researcher may study tea plant genetics and breed new cultivars; another may study processing chemistry or microorganisms; someone else may investigate tea compounds and biological activity, or use spectroscopy and machine learning for authentication and quality control. There are also scholars whose work focuses on tea history and culture.

So to me, Tea Science is not really the study of “tea” as one narrow subject. Tea is the common object that brings together plant science, chemistry, microbiology, processing, sensory science, engineering, data science, culture, and even economics.

You can follow a tea leaf all the way from its genetics and growing environment, through processing and chemistry, to how it is evaluated in the market and finally what a person experiences in the cup.

Origin, science, taste, traditions, processes and so on...

In what you share through Brew & Blossoms' social media and website, Origin and Science are two tags that particularly stand out. Yet when it comes to tea, many other layers are at play: taste, tradition, processing, terroir, craftsmanship, and the realities of sourcing.

As a tea scientist, how do you navigate the relationship between scientific precision and the traditions and practices that shape tea? In practice, do they naturally go hand in hand, or are there moments when science and tradition pull in different directions, and, if so, how do you approach those situations?

S: I don't see science and tradition as opposites.

In tea processing, some of the most valuable traditional knowledge is empirical knowledge accumulated over generations. Science gives us another language for understanding it.

There is a phrase we use often in Chinese tea making: 看茶做茶 (kàn chá zuò chá), which roughly means "make the tea according to the tea."

A skilled tea maker does not simply follow a fixed recipe. The condition of the fresh leaves matters, as do the weather and processing environment. Tea made on a rainy day, for example, may require a different withering rhythm from tea made on a dry day.

Much of that judgment comes from experience.

A skilled maker may touch the leaves, smell them, look at their color and texture, and know that they need more time, or that it is time to move to the next step.

That knowledge is incredibly valuable, but it can also be difficult to transfer to someone who does not yet have decades of experience.

This is where I think Tea Science becomes very powerful.

Science does not need to replace that knowledge. It can help us ask: What exactly was the tea maker sensing? Why did that decision work under those conditions? What was changing inside the leaf?

One way I was taught to understand tea processing is to follow water.

From a fresh leaf to a finished dry tea, one of the most fundamental changes is the movement and loss of water. But this is much more complex than simply "drying a leaf." Changes in water status interact with the physical and biochemical changes that eventually shape flavor and aroma.

Oolong processing is a beautiful example. During the traditional shaking and resting stages, the leaves are not simply being bruised. Mechanical stress affects leaf tissues, water moves through the leaf, and physiological and biochemical responses follow. Tea makers learned to manage these transformations through generations of observation and experience, long before we could measure them in a laboratory.

Tea Science allows us to come back and investigate what is happening underneath those sensory observations.

It also helps us understand variability. The raw material changes, the environment changes, and human sensory judgment itself has variability. Even an experienced tea maker may need to respond differently from one batch to another, which brings us back to 看茶做茶.

This becomes especially important when tea production is mechanized. A machine has no intuition. It cannot look at a leaf and say, "This feels ready." It can only respond to things we can define and measure, temperature, humidity, moisture, airflow, time, mechanical force, or sensor data. If we want a machine to reproduce part of what an excellent tea maker does, we first have to understand what that tea maker is actually responding to.

So for me, science does not make tradition less meaningful. It helps us distill generations of experience into knowledge that can be understood, taught, tested, and sometimes translated into technology.

Tradition often discovered what works; science helps us understand why.

Kill the Green!?

In different sources discussing tea processing, the term “kill the green” is often used as a translation of the Chinese term *shāqīng*. For someone unfamiliar with tea processing, what actually happens during this stage? What is being “killed,” what is the purpose of the process, and what changes does it bring to the tea?

From a scientific perspective, how would you explain *shāqīng* in a way that makes sense both to someone new to tea and to someone already familiar with tea processing?

And, if you had to translate the term yourself, would you keep “kill the green,” or would you choose another expression?

S: I have to admit that I have never really liked the English translation “kill the green.” At least when we are making green tea, we are not trying to kill the green—we are trying to keep it!

What we are primarily trying to “kill,” if we want to use that word, is enzyme activity. During *shāqīng* (杀青), heat is applied to rapidly inactivate enzymes involved in enzymatic oxidation, particularly polyphenol oxidase (PPO). In green tea, we want to interrupt that process very early, helping preserve the relatively green character of the leaves and directing the tea toward the flavor profile we associate with green tea.

But fixation is much more than simply switching off enzymes. Water is being lost and redistributed, volatile compounds are changing, grassy aromas are dissipating or transforming, and heat is driving other chemical reactions. It is one of the major stages in which the final aroma and taste of a green tea begin to take shape.

I remember this very physically from learning to make green tea by hand. Before putting the leaves into the wok, one traditional way we judged the heat was simply by holding the back of the hand above it.

Once the leaves went in, we were constantly using our senses. At first there could be a strong raw, grassy smell and a great deal of steam. As fixation progressed, the steam changed, the leaves became softer and more pliable, and that raw grassy character gradually gave way to a much more pleasant tea aroma.

You were never watching only one thing.

You were feeling the leaves, watching their color and texture, smelling the changes in aroma, and adjusting the heat as you went. If the leaves do not heat sufficiently or quickly enough, enzyme inactivation may be delayed and oxidation can continue. Too much heat, on the other hand, can scorch the leaves and create undesirable roasted or burnt notes. The goal is not maximum heat; it is sufficient heat, applied appropriately for the leaves you are working with.

This is also a good example of the relationship between science and traditional craftsmanship we talked about earlier.

A tea maker learns to recognize these transitions through smell, touch, sight, and experience; Tea Science helps us understand what is happening underneath those sensory signals.

And shāqīng is not unique to green tea.

In oolong processing, we intentionally allow enzymatic oxidation to develop during the earlier stages. Once the leaves have reached the desired point, fixation is used to largely halt that progression.

In green tea, we close that door very early; in oolong, we leave it open for a while and close it when we have reached where we want to go.

So if I were translating shāqīng scientifically, I would probably use “heat fixation” rather than “kill the green.” “Enzyme inactivation” describes one of its most important purposes, but fixation encompasses more than that.

“Kill the green” is colorful and memorable, and I understand why the literal translation has survived. But especially for green tea, it almost sounds like the opposite of what we are trying to accomplish.

We are not killing the green. In many ways, we are preserving it.

Fermentation? Oxidation?

These are terms I'm almost certain have sparked more than a few heated debates within tea communities.

Yet reaching consensus isn't always easy when someone describes a tea as “fermented,” only for someone else to argue that it is “not fermented, but oxidized,” and vice versa. Could you help us make sense of this distinction?

Even the Chinese term fājiào can add to the confusion, as different sources often translate or describe it as either fermentation or oxidation.

From a scientific perspective, what does fājiào actually refer to in the context of tea? And when tea producers, researchers, or enthusiasts talk about “fermentation” and “oxidation,” what processes are they actually referring to?

S: I grew up and received all of my Tea Science education in mainland China, so the Chinese tea-industry vocabulary is deeply ingrained in the way I think.

We traditionally use the word 发酵 (fājiào), literally “fermentation,” very broadly. We talk about non-fermented tea, partially fermented tea, fully fermented tea, and post-fermented tea.

When I learned tea processing, this was simply the language we used.

The confusion begins when we translate fājiào directly into English. In modern food science, fermentation generally refers to transformations driven by microorganisms and their metabolic activity. Much of what Chinese tea terminology traditionally calls “fermentation,” however, is not primarily microbial at all.

Black tea is the clearest example. In Chinese, we traditionally describe it as a fully fermented tea, and the processing stage after rolling is itself commonly called fājiào. Biochemically, however, the major process we are describing is enzymatic oxidation.

When rolling disrupts the cellular structure of the leaf, catechins and oxidative enzymes such as polyphenol oxidase and peroxidase can interact much more readily in the presence of oxygen. The reactions that follow contribute to the formation of compounds including theaflavins and thearubigins, and ultimately to the color, taste, and aroma we associate with black tea.

Oolong presents the same language problem.

In Chinese, we commonly describe an oolong as lightly or heavily “fermented.” In this context, we are primarily referring to the relative extent of enzymatic oxidation, so in English I would usually say lightly or more heavily oxidized instead.

I would also be cautious with the percentages we sometimes see attached to oolong, “30% oxidized,” “70% oxidized,” and so on. These can be useful practical descriptions, but they should not be interpreted as precise biochemical measurements, as though exactly 30 or 70 percent of a particular compound in the leaf has been oxidized.

True microbial fermentation does, of course, exist in tea. Dark teas provide some of the clearest examples.

During the pile fermentation of ripe Pu-erh, or in the processing of certain Chinese dark teas such as Fu brick tea, microbial communities play an important role in transforming the chemistry and sensory character of the tea. In those cases, fermentation is scientifically a much more appropriate term.

So I don't think the answer is simply that the Chinese terminology is "wrong" and the English terminology is "right." Tea vocabulary developed historically, before we had the biochemical language and analytical tools we use today. The traditional term *fājiào* remained part of the industry even as our scientific understanding of these processes became more precise.

Sometimes the disagreement is therefore not really about what is happening to the tea leaf. We may all be looking at the same process; the disagreement is about the language we use to describe it.

Because of my background, *fājiào* is still so deeply rooted in my vocabulary that I occasionally translate it instinctively as "fermentation" when speaking English. Then the scientist in my head has to correct the translator!

If I am speaking scientifically in English, I prefer enzymatic oxidation for the transformations we are discussing in black tea and oolong, and I reserve microbial fermentation for processes in which microorganisms are genuinely important drivers of the transformation.

Sinensis, Assamica, Taliensis, Formosana? How much can we improve tea before we change it?

Tea science has given us an ever-growing understanding of *Camellia sinensis* and has allowed the development of countless cultivars, selected for particular characteristics and, in many cases, for producing better-adapted or more distinctive teas. But with so much emphasis on selection, improvement, and development, where do we draw the line between advancing tea and losing something from its past?

We often hear about the value of old tea trees and the character that age, genetics, and terroir can bring, yet old or less commercially desirable plants are sometimes discarded in favor of newer cultivars. As a tea scientist, do you think there is a point at which the pursuit of better, more efficient, or more distinctive teas risks causing us to lose genetic diversity, traditional varieties, or characteristics that cannot simply be recreated?

S: I don't think cultivar improvement itself is the problem. Plant breeding has brought enormous value to tea agriculture, and I think it is important to remember that farmers are part of this conversation.

When we say that a new cultivar is "better," my first question would be: better for what? Better yield? Earlier budding? Greater disease resistance? Easier mechanical harvesting? Higher amino-acid content? A particular aroma? Better suitability for making a specific style of tea?

In plant breeding, "better" almost always means better for a particular objective.

Longjing is a good example from my own home region. Cultivars such as Longjing 43 and Wuniuzao have become very attractive to growers partly because they bud early and can enter the spring tea market sooner. That matters enormously economically. The earliest spring teas often command the highest prices, so for an individual farmer, replacing a later-budding traditional seed-grown population with an earlier cultivar can be a completely rational decision.

This is why I don't like romanticizing the issue as simply "old varieties are good and modern cultivars are bad." Improved cultivars can increase farmer income, improve consistency, solve agronomic problems, and make excellent tea.

The risk comes when one definition of "better" becomes so economically successful that it begins to erase everything that was not selected for that particular goal.

Traditional seed-grown tea populations are fundamentally different from clonally propagated cultivars. In a clonal garden, plants are propagated to preserve a relatively consistent genetic identity.

In an old seed-grown population, individual bushes can be genetically different from one another. That heterogeneity may be inconvenient if your priority is uniform budding, standardized harvesting, or highly consistent processing, but from another perspective, it is also a reservoir of genetic diversity.

This is personal to me because some of the tea I source from my hometown comes from old, seed-grown bushes, including a garden with bushes more than eighty years old. They bud later than many modern cultivars, which puts them at an economic disadvantage in the early spring market. That is one reason I intentionally chose to work with them, not because I think old seed-grown tea is automatically “better,” but because it can be valuable for different reasons.

In fact, that diversity is part of what inspired my Tea from Home project. Working with the same old seed-grown population, we have made two different green teas, a black tea, a yellow tea, and a white tea. For me, that is fascinating because these plants were not bred around one narrowly defined processing objective. There is a range of possibilities in that material, and I want to explore what it can become.

So when we talk about preserving old tea trees or traditional genetic resources, I think economics has to be part of the discussion. We cannot simply ask farmers to preserve something because scientists, historians, or tea lovers find it valuable. If keeping an old garden means consistently earning less, eventually many farmers will make the rational choice to replace it.

As a tea curator, I cannot reverse the direction of an entire agricultural industry, nor do I think that should be my role. What I can do is choose what I bring forward, seek out cultivars and traditional seed-grown populations that I believe deserve to be seen, explain why they matter, and create opportunities for consumers to experience them.

To me, curation can also be a form of preservation.

If something has value but the market does not understand that value, helping make it visible can also help create economic value for the farmers who continue to grow it. That makes preservation far more sustainable than simply asking them to keep old plants for the sake of tradition.

Perhaps the question is not how much we can improve tea before we change it. Agriculture has always changed tea. The more important question may be whether, in deciding what “better” means, we leave enough room for qualities we did not think to select for.

Sometimes what looks like inefficiency from one agricultural perspective may look like possibility from another.

Tea as a cure-all?

Tea is sometimes presented as a remedy for almost everything. What is your take on that? As a tea scientist, as a tea merchant, and simply as someone who drinks tea herself, how do you personally navigate all these claims surrounding tea and health?

S: One thing I tell my tea guests all the time is: please don't treat tea as medicine. Treat it as part of a lifestyle.

That does not mean I dismiss the health research around tea. Quite the opposite, I used to participate in this kind of research myself. During my undergraduate studies, I worked with tea polyphenols, particularly catechins such as EGCG, and used *E. coli* as a model organism to study biological activity. There is an enormous body of research investigating tea and its compounds in cell models, microorganisms, animals, epidemiological populations, and human clinical studies.

That is why many health claims around tea did not simply appear from nowhere. There may be scientific studies behind them. The important question is: what exactly did the study demonstrate?

Showing that EGCG produces a particular effect in a cell culture is not the same as showing that drinking tea will produce that effect in a human body. Animal models can tell us something valuable about biological mechanisms, but a mouse is not a human being. Even human observational studies showing an association between tea consumption and a health outcome do not automatically demonstrate that tea caused that outcome.

Bioavailability adds another layer.

Tea catechins can show very interesting biological activity under experimental conditions, but after we drink tea, those compounds have to be absorbed, metabolized, circulate through the body, and reach the relevant tissue at a sufficient concentration. The amount that ultimately becomes systemically available can be very different from the concentrations used in laboratory experiments.

That is a very important distinction between saying "this tea compound has biological activity" and saying "drinking this tea will treat or prevent a disease." Those are completely different scientific claims.

Dose matters as well. More is not automatically better.

Concentrated green tea extracts taken at high doses, particularly in supplement form, have been associated with cases of liver injury. Drinking a cup of tea and consuming a highly concentrated extract are very different exposures, and that distinction can easily disappear when health benefits become the primary marketing message.

There is an interesting example on the pharmaceutical side.

Sinecatechins, a standardized preparation derived from green tea extract, has been approved by the U.S. FDA as a prescription topical drug for a specific medical indication. I think that example illustrates the distinction beautifully. When something becomes a medicine, we are talking about a defined preparation, a controlled dose, a specific route of administration, a specific indication, and evidence evaluated for that use.

That is very different from a cup of tea.

So when I see tea marketed as if it can make you lose weight, prevent cancer, reverse aging, control diabetes, and solve every other health problem, I become very uncomfortable. Science can easily become a marketing tool when we take a real study, remove its limitations and context, and turn its conclusion into a much bigger promise than the research actually supports.

And I don't think tea needs that.

There is human research suggesting associations between tea consumption and certain positive health outcomes, and there are many fascinating questions still being studied.

But tea does not need to cure a disease in order to have a meaningful place in a healthy life.

Find teas you genuinely enjoy. Drink them because you enjoy the flavor, because the ritual fits into your day, because they give you a moment to yourself or a reason to sit with someone else. If tea also contributes positively to your long-term lifestyle, wonderful.

But tea is still tea.

It is not a cure-all, and I would never want to sell it as one.

What should sell a tea?

Following the idea of wearing three different hats (as a tea scientist, a tea merchant, and simply as someone who drinks tea) what do you think is the best way to market tea? What should we be communicating to consumers, and what do you believe should ultimately speak for the tea itself?

S: I think the tea itself should ultimately sell the tea.

A large part of what I do is education, but I don't see education as persuasion. I'm not trying to convince someone to buy my tea, or anyone else's tea. What I am trying to do is make tea easier to understand, so that people can make better decisions for themselves.

Sometimes a person simply does not like a certain flavor profile, and that is completely fine. I think people in tea can occasionally overestimate the power (or even the purpose) of education. If someone fundamentally dislikes the earthy character of a tea, explaining its cultivar, chemistry, processing, and history for another twenty minutes may make the tea more interesting to them, but it may not make it taste better to them. Nor should that be the goal.

Where education becomes valuable is when it removes a misunderstanding. Someone may have had one badly brewed or poorly made green tea and concluded that green tea is inherently bitter. Better context may encourage them to approach the category again with a different expectation.

But even then, education should open a door, not tell someone what they are supposed to like.

For me, that is what good tea marketing should do as well. It should help people predict whether a tea might be right for them.

I want someone to be able to encounter a tea and understand relatively quickly: Where does it come from? What is it? How was it made? What kind of flavors might I encounter? And most importantly: Does this sound like something I would enjoy?

That is why I care about transparency around origin, cultivar, harvest, processing, and flavor. Those details can give a tea context and explain why it is interesting, but they should not be used as a substitute for the drinking experience.

A prestigious origin does not guarantee that someone will love a tea. Neither does an old tree, a rare cultivar, or a complicated processing method. Those things may help us understand why a tea is distinctive, but they cannot decide whether it tastes good to the person drinking it.

Good or bad becomes very personal once the tea reaches the cup.

That idea is also behind the way I think about Brew & Blossom: premium Chinese tea for everyday life.

To me, "premium" does not mean that tea has to become precious, intimidating, or reserved for special occasions. I would much rather help someone find a tea that makes them think, I could drink this every day.

A consumer should not need a degree in Tea Science to get there.

This is also why I like offering small samplers. Rather than asking someone to make a large commitment because I have given them a convincing story, I would rather give them enough information to think, This sounds like something I might enjoy. Then they can try it and decide for themselves.

For an online tea business, this matters even more because there is one enormous limitation that no amount of beautiful photography, writing, education, or web design can completely solve:

I cannot pass a cup of tea through the screen.

That is one reason I continue to do in-person tea tastings. I don't structure them around selling products. I want people to experience the tea first, and the conversation around it can help them understand what they are experiencing.

If someone drinks a tea and thinks, This really speaks to me, then they already have the best reason to come back to it. I don't need to manufacture another one for them.

So what should sell a tea?

The tea should.

My job as a tea curator and educator is to build the bridge, to make the tea understandable, approachable, and honestly represented enough that the right person can find their way to it.

But once they arrive, the cup has to speak for itself.

“For in much wisdom there is much grief, and he who increases knowledge increases sorrow.”

After so much theoretical and practical knowledge about tea, I wonder what happens when you return to the simplest part of it: drinking a cup.

Are you still able to simply enjoy tea without analyzing it, questioning it, or thinking about everything you now know about what is in your cup? Or has knowing so much inevitably changed the way you experience tea?

S: I understand that feeling very well.

The more I know about tea, the harder it is for me to drink it without thinking. Especially when I am doing serious evaluation (choosing between batches, deciding which one speaks to me more) that process can actually be quite exhausting.

Professional tea judging is very different from casual drinking.

When I am evaluating seriously, I am often looking for problems. Is there a flaw in the aroma? Is the bitterness too persistent? Is the mouthfeel thin? Is the structure unbalanced? Is there something in the processing that feels slightly off?

In that setting, you are not simply asking, “Do I enjoy this?” You are constantly asking, “What is wrong with it, and why?”

That is probably the moment when knowledge feels heaviest to me.

Even in my everyday tea drinking, though, I cannot completely turn that part of my brain off. I may drink a tea that I loved when I first bought it and suddenly think, Why does this taste so different now? Did I store it incorrectly? Was this tea never particularly suitable for aging? Is the change related to the raw material, the cultivar, or the way it was processed??

Or I will drink a green tea from the previous harvest that I have kept refrigerated and be surprised by how good it still tastes. Then instead of simply enjoying that fact, I immediately start wondering: How long can this tea actually maintain this quality under these storage conditions? What exactly is being preserved?

I do this constantly.

I taste something, enjoy it, and then almost immediately start asking why. Why does this tea have this texture? Why is its aroma different from another tea I know? Is it the cultivar? The ecology of the garden? The processing? The storage?

Knowledge has definitely given me more layers to notice, but it has also given me more questions. I think I am always looking for the next “why.”

But I don’t think that has made tea less enjoyable for me.

There are also many days when I am extremely busy and I don’t want to analyze anything. I just put some green tea into a simple brewer and keep it beside me while I work. Sometimes, if you ask me what tea I want in that moment, the answer is almost: any tea.

I simply want tea there with me.

On other days, I may choose more intentionally. Maybe I want something lower in caffeine. Maybe I want something woody and warm. Maybe I open my personal collection and realize I have far too many choices.

But even with all of that knowledge in my head, a really good cup of tea can still give me exactly the same pleasure. That part has never disappeared.

So I would say that knowledge has changed the way I drink tea, and certainly the way I think about tea, but not necessarily by making it less enjoyable.

Perhaps the “grief” is that I can no longer experience tea without seeing all of the questions behind it.

But the reward is that every cup can keep opening another door.

And maybe that is why I am still so interested in tea after all these years: I rarely finish a cup with fewer questions than I had when I started.

What is your Tea Wisdom?

While the question is framed around tea, your answer does not have to be. Feel free to interpret it as "What would you tell your younger self?", "What advice do you wish you had received when starting your career?", or "What is your life motto?" At its heart, the question is about sharing a lesson or insight from your career or life that you wish more people knew.

S: If I had to describe my "tea wisdom," I don't think it would be that tea taught me to slow down. If anything, tea taught me to keep asking, keep exploring, and keep trying.

The more I learn about tea, the more questions I seem to have. And strangely, that has also been true of my life. My path through Tea Science, statistics, software engineering, and now entrepreneurship has been a continuous process of exploration. Through all of that exploring, I think I have gradually come to understand myself better.

So perhaps my tea wisdom is actually less about what I have learned about tea, and more about what this constant curiosity has taught me about myself.

My career has never been a straight line. Sometimes I joke that I am someone who is always 折腾 (a Chinese word that is difficult to translate perfectly).

It means something like constantly trying things, changing things, exploring, and perhaps making life a little more complicated for yourself because you cannot stop looking for another possibility.

For a long time, I might have looked at those changes as detours. Now I don't really see them that way.

Every field I entered taught me something different, but more importantly, each one helped me understand myself a little better: what I am good at, what I am not good at, what kind of environment I work well in, what kind of problems keep me curious, and eventually, who I want to work for.

Right now, the answer to that last question is myself.

Building Brew & Blossom has probably accelerated that process of self-discovery more than anything else I have done.

In its first year, I have learned not only about running a business and about the Western tea world, but also about my own strengths, weaknesses, and the kind of work I want to build around myself.

Because Brew & Blossom is still a very young brand, I am constantly experimenting, with how I communicate tea, how I present it, how much science is useful to a consumer, and how tea can fit naturally into everyday life. I try something, watch how people respond, learn from it, change it, and try again.

In that sense, building this brand feels surprisingly similar to the rest of my life.

But underneath all of those experiments, one question has remained remarkably consistent. It is a question that interested me when I first entered tea school: How can we make tea easier for people to understand?

Not how can I convince more people to drink tea. Not how can I convince them that one tea is better than another. But how can I take something extraordinarily deep and make the entrance into it easier?

That question still shapes the way I work today. Whether I am curating a tea, explaining processing, creating content, or thinking about how someone encounters tea for the first time, I am still trying to make that bridge easier to cross.

Tea Science taught me to keep asking why. Statistics taught me to be careful about what evidence can actually tell us. Working in technology taught me another way of solving problems. And entrepreneurship is teaching me something entirely different: understanding a problem is not enough. Eventually, you have to try something, put it into the world, see what happens, and be willing to change it.

I don't know exactly where Brew & Blossom will be several years from now. It is still young, and I am still finding the path that fits both the brand and the person I am becoming.

But I know that I am very glad I chose to try.

If I could say something to the younger version of myself who had just entered tea school, I don't think I would give her a career plan. I would probably tell her:

**Keep asking why,
including about yourself.
And keep trying.**

You don't have to know where every path is leading in order for it to become useful. Sometimes something that looks like a detour becomes the perspective you needed later. Sometimes an experiment doesn't work, but it tells you something you could not have learned without trying it.

Perhaps that is what tea has ultimately taught me. Not to slow down, but to stay curious. To keep asking why, to keep exploring, and to be willing to try before I know exactly where something will lead.

The more I learn about tea, the more questions I find. The more I build Brew & Blossom, the more clearly I understand what I want it to become. And the more different paths I have taken in life, the more clearly I have come to understand myself.

I don't think any of those processes ever really end.

And I think I am okay with that.

Glossary

B

Biological Activity. The set of mechanisms and processes through which a substance interacts with biological systems, ranging from the cellular level to complex systems within the organism. (Diallo, 2020)

Bioavailability. A pharmacokinetic parameter that indicates the fraction of an administered substance that reaches the systemic circulation in its active form, as well as the rate at which it does so. (Clínica Universidad de Navarra, 2026)

Biochemistry. The experimental science that studies the chemical and molecular processes underlying life in living organisms. It provides a fundamental basis for disciplines such as biomedicine, biotechnology, and bioremediation. (Universidad Europea, 2025)

C

Catechins. A type of polyphenolic compound with antioxidant properties that occurs naturally in tea. Catechins help protect cells from damage caused by free radicals and are the subject of research into their potential role in the prevention and treatment of various diseases. (National Cancer Institute, 2026)

Clonally. In a clonal manner, that is, through vegetative reproduction from plant structures without the involvement of seeds. This process produces individuals that are genetically identical or highly similar to the parent plant and can occur through structures such as stolons, rhizomes, tubers, bulbs, or shoots. (Alpandino, 2026)

Clonal Garden. An area dedicated to cultivating selected clonal plants obtained from previously studied and registered mother plants. Its purpose is to preserve and provide plant material with known genetic characteristics for propagation and use. (CENTA, 2024)

E

E. coli. A bacterium whose scientific name is *Escherichia coli* that normally inhabits the intestines of humans and animals. Most strains are harmless, although some can cause infections and gastrointestinal illnesses. (Mayo Clinic, 2026)

EGCG. Abbreviation for epigallocatechin-3-gallate, one of the main catechins found in green tea. It can interact with proteins and phospholipids in cell membranes, activating intracellular signaling pathways, and can reach different cellular compartments where it exerts various biological effects. Its effects depend on the cell type, stress conditions, and its concentration. (Melisa Institute, 2021)

Enzymatic Oxidation. A process in which certain enzymes catalyze the oxidation of compounds present in plant tissues when they come into contact with oxygen. It can cause changes in the color, flavor, and composition of foods, as occurs during enzymatic browning. (Institute of Food Science and Technology, 2026)

Enzyme. A protein that acts as a catalyst for specific chemical reactions in living organisms, accelerating processes necessary for biological functions such as digestion, blood clotting, and metabolism. (MedlinePlus, 2025)

G

Genetic Diversity Reservoir. An area where a species exhibits high genetic diversity and particular adaptation to the conditions of its environment, constituting an important source of variability that may contribute to its ability to adapt to different environmental conditions. (Contreras, 2016)

H

Hyperspectral Data. Detailed spectral information obtained through hyperspectral sensors that record the response of materials across multiple wavelengths. These data make it possible to identify and characterize materials and objects based on their distinctive spectral signatures. (Computer Science Review, 2026)

P

Peroxidase. An enzyme that catalyzes oxidation-reduction (redox) reactions using a peroxide as the oxidizing agent and another compound as the reducing substrate. It is widely distributed among living organisms. (Química.Es, 2026)

Polyphenols. A group of bioactive compounds found primarily in plants, where they perform functions related to protection against environmental factors. They are present in foods such as fruits, vegetables, tea, wine, and cocoa, and are notable for their antioxidant properties and their importance in the study of nutrition and health. (YesWeLab, 2025)

Polyphenol Oxidase (PPO). An enzyme that catalyzes the oxidation of phenolic compounds in plant tissues, contributing to enzymatic browning. Its activity can affect the color, flavor, nutritional properties, and shelf life of foods, and has also been associated with defense mechanisms and other physiological processes in plants. (National Library of Medicine, 2017)

S

Sinecatechins. A standardized extract obtained from the leaves of *Camellia sinensis*, the tea plant. It consists of a mixture of catechins and other polyphenols naturally present in the leaves. (ScienceDirect.com, 2026)

T

Terroir. A concept referring to the combination of natural, cultural, and historical factors that influence the characteristics of an agricultural product. It encompasses elements such as climate, soil, environmental conditions, cultivation practices, and the identity of a region. Rather than being limited to a place of origin, terroir helps explain how a specific environment contributes unique characteristics to a product, distinguishing it even from others produced in nearby areas. (Satoricha, 2026)

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MIJOLOGÍA APLICADA

This volume features an interview with Shirley Chen, guest of The Chemistry of Flavor, a section dedicated to exploring the stories, experiences, and perspectives of those who are part of the world of tea.

As part of Mijología Aplicada, this conversation represents an exercise in learning and knowledge exchange through the experiences, practices, and reflections of those who contribute to the world of tea.

We preserve her contribution as part of [Satoricha's Library](#): a space dedicated to gathering and sharing diverse voices, stories, and learnings related to tea and hospitality.

If you know of stories, practices, or reflections that deserve a place in this library of knowledge, we warmly invite you to [get in touch with us](#).

