Terroir: Navigating Places through Tea

A Short Dissertation by

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Terroir [terˈwär] traditionally refers to the bio-geo-chemical processes in the environment that impact tea flavors and other tea characteristics. Such processes are complex and dynamic. Terroir influences pigmentation of leaves, amounts of carbohydrates produced, minerals that gets adsorbed from soil among others. Thus, teas (similarly, wines) have become associated with certain places and their landscapes.

But because tea is a cultural experience as well, "places" and their complex physical and human elements contribute to the diverse experiences and perceptions of tea. Thus, the scope of "Terroir" can be extended to include the practices of processing the tea leaves, the "cultures" of tea consumption of a place, and the perception of places and tea by the drinker.

This work is an attempt to "map" the different physical and cultural factors that affect "flavors" and "experience" of and with Tea and Places.

Latitude

Latitude as a climatic influence dictate the length of sunlight hours and solar irradiation budgets of lands, and thus inherently affects the *Camelia sinensis* plant. Sunlight is important ingredient for the tea plant to produce **"polyphenols"** – a group of compounds (that include flavanols or "catechins") derived from amino acids and carbohydrates (sugars) though sunlight exposure, that are used by plants against insects and other animals.

Polyphenols also give plants the vibrant colors, oxidative damage protection, UV protection among others. Catachins or one of the polyphenols subgroups "flavanols" have been investigated for potential health benefits such as reduction of body fat in men[1], prevention of oxidative DNA damage in animals[2]. In humans, polyphenols have been noted to help with angiogenesis, promoting cardiovascular and mental health among many others.[3] The Canadian Institute of Nutrition and Functional Food suggests that polyphenols can impact diseases through its effects on the gut's microbiome. [4] And gut health and the brain are intimately connected. [5] Thus, the chemical composition of tea may have not just immediate sensorial effect but also a lasting mental and physical on humans.

Of these healthful polyphenolic compounds, **quinones** contribute to the aroma, and **thearubigins** contribute to taste and color of tea. The insoluble elements (in tea) include crude fiber, cellulose, lignin, proteins, fats, chlorophyll and pigments, pectins, and starches, all of which grow in response to light and other geochemical conditions.[6]

Plants that are exposed to less sunlight tend to produce less concentration of polyphenols. Thus, some tea bushes are deliberately shaded to enhance tea's amino acid content.

Of these amino acids, Theanine, is the most abundant. A particular **L-Theanine** is responsible for promoting alpha brain wave activity that also promotes relaxation. **L-Theanine** in concert with methylxanthines (caffeine) can induce a state of "mindful alertness" in the tea drinker.[7] This property and component of tea is perhaps the reason why tea is integral to Meditation traditions i.e. Buddhism. Teas that have been stimulated to produce more amino acids tend to acquire certain flavor as these amino acids tend to give the tea its "umami taste". [8]

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[1] http://ajcn.nutrition.org/content/81/1/122.full
[2] https://www.ncbi.nlm.nih.gov/pubmed/12587987
[3] http://articles.mercola.com/sites/articles/archive/2015/12/14/polyphenols-benefits.aspx
[4] Video: https://www.youtube.com/watch?v=8FIzKIyM3XQ
[5] http://www.health.harvard.edu/healthbeat/the-gut-brain-connection
[6] http://www.teamuse.com/article_111103.html
[7] Harbowy, Matthew E., and Douglas A. Balentine. "Tea Chemistry." Critical Reviews in Plant Sciences 16, no. 5 1997: 415–480 in: https://www.worldoftea.org/tea-chemistry/
[8] https://www.worldoftea.org/tea-chemistry/

Temperature and Precipitation

Camelia sinensis thrives in sub-tropical regions annual average temperature between 15-25°C. Basic requirement for precipitation is 1000-2000 mm per year. Tea buds grow quickly when daily average temperature falls between 15-20°C and leaves picked at this time is said to be of "best quality".

"Most researchers indicated that higher (above 35-40°C) or lower (bellow 5-10°C) temperature repress shoots growth. Optimum temperatures for growth are different depends on the cultivars. Early cultivars like 'Inzatsu-131' or 'Makinohara-wase' grow very well above 20°C but late cultivars such as 'Yamatomidori' or 'Benihomare' grow slow at 20°C (Naka-yama et al. 1962). " -- Omae, 2007, Japanese Journal of Plant Science[9]

In tropical growing conditions, (i.e. in south China), tea growth is year round with variations controlled by amount of rainfall.[10]

"There are many studies that indicated that vapor pressure deficit in the day time is one of the important factors depressing shoot extension (Carr 1972). The effect of rain-fall on buds growth was also reported by several researchers (Kuranuki 1987; Kume et al.1994) using Japanese cvs. 'Yabukita' or 'Sayamakaori'. Both of them agreed that rainfall hasten the flushing time of both apical and lateral buds in first crop although period and effect of rainfall are different depends on the authors. A lower minimum humidity, thus, seems to negatively impact to tea growth in the model." -- Omae, 2007, Japanese Journal of Plant Science

Timing Tea Harvests

Carbohydrates are storages of energy that the plants produced during the photosynthesis process. These compounds help enzymatic reactions in the leaves during the oxidation process. [11] In plants, these reserves are affected by rainfall and frequency of cutting or pruning. In a study of tree physiology and agro-forestry in Nigeria, the frequently coppiced trees *Gliricidia sepium* (Jacq.) Walp. and *Leucaena leucocephala* (Lam.) De Wit was observed to have:

"*… starch was severely reduced in the stumps. In contrast, soluble sugar concentrations in roots and stems of both species were consistently maintained at or above the levels in uncut control trees, suggesting that sugar levels were maintained through the hydrolysis of starch reserves.*

[9] http://www.globalsciencebooks.info/Online/GSBOnline/images/0712/JJPS_1(2)/JJPS_1(2)95-102o.pdf
[10] http://www.viconyteas.com/directory/tea-encyclopedia/camellia-sinensis.html
[11] https://www.worldoftea.org/tea-chemistry/

Trees that were cut and then allowed to grow undisturbed during the wet season, replenishment of stem starch began within three months after cutting. Shoot regrowth after cutting decreased starch levels first in stems and, only after additional cuts, in roots. Dry-season cuts had little effect on reserve carbohydrates in G. sepium *but quickly reduced stem starch in* L. leucocephala*. Frequent cutting decreased dry matter production, and this decrease was correlated with reduced levels of reserve carbohydrates."* --- Latt, 2005, Agroforestry Systems (Journal) [12]

A study on fruit bearing citrus trees by Eissenstat and Duncan (1992) provides insight on effects of pruning (canopy reduction) in roots of plants. In their study on subtropical sweet orange evergreens, the stored carbohydrates in roots of plants did not immediately decrease following pruning. This suggests that other compounds produced on leaves of plants can trigger the decrease in root growth of pruned plant or tree.

The effect of flushing tea leaves and buds on the tea plants' physiology, similar to other plant or shrub species, is also likely to affect the carbohydrates stored in leaves, stems, and roots. And these effects can translate into particular flavors, aromas, and nutritional profile of tea drink.

Soil composition

The soil itself is a product of geologic settings and climatic conditions and their interactions. The tea plant soil pH is recommended to be 5-6, slightly acidic. From the soil, tea plants accumulate minerals that potentially contribute to flavors and aroma. Flouride, one of the important minerals for human health, was found to be taken up by *Camelia sinensis plant* (measured on leaf) in pH 5.5 – a more alkaline range of tea plant soil that was achieved by adding lime. [13]

The interaction of climate and geology results in unique soil chemical processes. Soils that receive considerable amounts of rainfall tend to be leached of nutrients and minerals on the upper layers. The roots of tea plant can grow vertically as deep as 2-3 meters. And minerals and elements such as Flourine, Manganese, Arsenic, Nickel, Selenium, Iodine, Aluminum and Potassium vary in concentrations in different soils available to tea plants. The combinations and concentrations of these minerals that gets adsorbed by the tea plants, all contribute to the flavor and character of the tea.

[12] http://link.springer.com/article/10.1023/A:1006427221557
[13] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4242264/

Altitude and Humidity

Altitude and humidity are elements of place that dictate atmospheric pressures and chemistry, humidity, temperatures, solar irradiation, ecology among others, all of which can influence the character of tea plants and their leaves. For example, the mist that is formed in the mountain slopes provide conditions that tend to "stunt growth [limited sunlight exposure and possibly catabatic winds] of tea that are excellent for the development of aromas". Gascoyne *etal* (2014)[14] also wrote that the limiting effect of mist to tea plants' sun exposure tend to slow down the tea plants' growth. This decelerated growth allows for the concentration of aromatic oils in the next new shoots of tea plant growth cycle.

Gao Shan Cha trees are grown at 1000 meters above sea level in Taiwan. Similar to Sri Lanka, Taiwan distinguishes high-altitude teas from low-altitude teas. The foggy climate on the mountain slopes filters the sun's rays in the morning and at night. The resulting plant has darker green shoots with more amino acids and nitrogen compounds. And because the leaves are moistened by the fog, they also remain tender and supple. Gascoyne *et al* (2014)

Changing Climate and Tea

A changing climate can trigger a series of biological responses from plants. In a unique greenhouse experiment simulating increased water availability and pest pressure (climate change) impacts on tea plant growth, Ahmed *etal* (2013)[15] has found that:

1) "Higher water availability significantly increased total methylxanthine concentrations of tea leaves"

2) Reaction to pest pressure and increased water in a controlled experiment demonstrated increased growth in tea plant leaves.

3) Increased water availability significantly lowered concentrations of epicatechin 3-gallate

4) Increased water availability significantly higher total phenolic concentrations

In an investigation by Cheruiyot *etal* (2008)[16] a significant correlation between catechin production in tea plants and soil water content and soil water stress index.

"Compared to the spring drought, tea growth during the monsoon period was up to 50% higher. Concurrently, concentrations of catechin and methylxanthine secondary metabolites, major compounds that determine tea functional quality, were up to 50% lower during the monsoon

[14] Gascoyne, K., F. Marchand, J. Desharnais, H. Americi (2014) *Tea History, Terroir, Varieties*, 2nd Ed. Buffalo, N.Y.
[15] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3922301/
[16] https://www.ncbi.nlm.nih.gov/pubmed/18460799

while total phenolic concentrations and antioxidant activity increased. The inverse relationship between tea growth and concentrations of individual secondary metabolites suggests a dilution effect of precipitation on tea quality. The decrease in concentrations of tea secondary metabolites was accompanied by reduced farmer preference on the basis of sensory characteristics as well as a decline of up to 50% in household income from tea sales. "[17] – Ahmed *etal* (2014) PLoS One

These studies invite more research on possible effects of abiotic and biotic variables and their interactions on tea plants and tea estate ecology in a changing climate. These are reminders that the "Terroir" is a dynamic state and concept.

Expanding "Terroir": Tea and "Places"

Tea, similar to many (if not all) other commodities is a weave of places, from its source place, its distribution network, to the place of retail, and to the place of consumption. Each of these places contain characters, perceptions, and memories that are influenced and created by humans and their culture and that in turn, influence our very sense and experience of tea.

One of the primary and defining characteristic of any tea is its smell and aroma. This chemical repertoire is influenced by the chemical smell-landscape of places that it gets exposed to. Similarly, as the chemical melange of aromatic molecules in a tea is released to the environment, it interacts again with other volatile chemicals in the air. Thus, technically, tea experience is unique each time.

When we consume tea, these mixtures of aromatic molecules provide "sensory input that goes directly into our limbic system and the cerebrum, without getting processed by the hypothalamus."[18] There are two (2) ways to perceive with our olfactory senses: 1) "smell" through direct olfaction, and 2) "aroma" through retro-nasal olfaction i.e. when the liquid is in our mouth Gascoyne *et al* (2014)

Each individual may receive and process these molecules differently. However, aroma can register some signatures in our brains and thoughts. And our personal and cultural conceptions also influence the meanings we might attach to these signatures e.g. the Frangipani flower scent is reminiscent of funerals in the Philippines, while in India or Hawaii, this sharp and lingering flower scent punctuates happy celebrations …

[17] https://www.ncbi.nlm.nih.gov/pubmed/25286362
[18] Hoover, K. http://www.utpjournals.press/doi/abs/10.3138/carto.44.4.237

Tea Growing and Processing

Various tea processing traditions and techniques have been developed in different places to create tea specific characteristics and blends of teas.

While most of the picking has been tasked to women, industrial picking technology is also being used. The mix of cuttings, and the manner of cutting the leaves and buds will have an impact on the overall profile of the tea harvest.

Girdling of Huang Zhi Xiang Oolong tea has been demonstrated to increase catechin levels:

"*The study demonstrated that girdling treatment increased significantly the levels of (-)-epicatechin, (-)-epigallocatechin, (-)-epigallocatechin gallate, (-)-epicatechin gallate, total catechins, simple catechin, and catechin gallate present in fresh leaf of tea trees.*" -- Chen *et al* (2009), Plant Foods Human Nutrition

The timing of harvest affects the chemical profile of the tea leaves. More aged leaf extracts of Yerba-Mate (*Ilex paraguariensis* A. St. Hil., Aquifoliaceae) have been found to contain more methylxanthine and phenolic acids that also correlated to higher antioxidant activity.[19]

Catechin levels also varied according to the age and the oxidation level of tea leaves. In a study on commercial tea samples, Lin et al (2003) has found that "total catechins in tea varied: green tea (old leaves) > green tea (young leaves) > oolong tea > black and pu erh teas".[20]

Volatiles are substances in tea leaves are largely responsible for the tea's flavor and aroma, many of which are derived NOT from leaves themselves, but from substances during the processing of tea. Thus, the term "aroma complex" reflects the variety of combinations of volatile compounds that gives a certain tea, identity.[21] These combinations of volatile compounds may be from various sources that have interacted with the tea leaves during different phases of its lifecycle, e.g. from storage to consumption.

The characteristics of different additives to teas such as milk, sugar, lemon etc, are also influenced by their cultural and physical environment. The species of the cow have been associated with certain odours i.e. volatile compounds. Among the people of Dassanetch in Ethiopia, the odour signature of the cows can influence and categorise even the odours of the herders. Conditions and traditions of raising milking cattle, citrus fruits etc, in various places and locales exert influence in overall tea taste and experiences.

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[19] Blum-Silva *et al* (2016) http://www.sciencedirect.com/science/article/pii/S0102695X15000332

[20] http://www.pubpdf.com/pub/12643643/Factors-affecting-the-levels-of-tea-polyphenols-and-caffeine-in-tea-leaves

[21] https://www.worldoftea.org/tea-chemistry/

Tea drinking Rituals and Habits of Places

Tea experience are enriched by various cultural traditions and rituals in different places. Additives and external elements of music, meanings, symbols, similar to the bio-geo-chemical effects of terroir, can influence the "taste" and "aroma" of tea.

In a study investigating effects of two (2) tea cultural brewing methods (Western tea bags *vs* Asian loose tea) the methylxanthine content in Western tea bag brews have been found to be twice as much as in Asian loose tea leaves brew. [22]

Lemon juice is typically added to tea i.e. British tea traditions. Adding lemon juice inhibits the binding of the tea's polyphenols to iron and calcium. Thus, adding lemon juice to tea makes the polyphenols in tea available for bio-absorption. However, the acids from the lemon juice may interact with tea cup material i.e. Styrofoam cups and can impact sensory experience of the tea. Milk is also a popular additive to tea consumed in various places, e.g. "London Fog". If added in certain large quantities, the milk will interact with about 30% of un-oxidized polyphenols that could cause irritation in the stomach. Adding milk to tea, as in practiced in many countries and traditions, may impact gut health that will vary with drinker health conditions.[23]

Case 1: Almond Milk in Chai

In 2013, I was tested for various food sensitivities. I have been found to produce (delayed) allergic reactions to dairy products. Although my responses to lactose in food are not severe, I notice heightened mucus production in my nasal-pharynx-larynx tract when I ingest dairy products. The mucus that can linger for days, affects my senses of smell and taste; and sometimes when mucus built up extends to my ears, my hearing is slightly affected. I have been advised to consume less, if not avoid, dairy products all together. Thus, my Chai recipes have been substituted by almond milk. I steep the black tea (orange pekoe) and let it cool for a bit. I add the almond milk which I warm separately. The Masala spice is added last and is not cooked.

With increasing number of people being diagnosed with certain food allergies and sensitivities to dairy, cultures of preparing teas might have to adapt e.g. finding milk substitutes. Also, as people age and change capacities to process lactose, tea drinking habits might have to change among different demographic cohorts.

[22] Hicks *et al*. (1996) http://www.sciencedirect.com/science/article/pii/0963996996000385
[23] http://www.teamuse.com/article_111103.html

Summary of Published Characteristics and Cases of Terroirs:

Country	Region	Notable features	Land morphology and Climate	Tea Characteristics
China	Yunnan	Red soil, abundant organics,	Tropical sea level to 2000m ASL,	Ancient tea plants
	Fujiuan	Mountainous Wuyi region famed for Wulong	Subtropical	Known for white teas
	Zhejian	Long lineage of vintage and traditional processing methods.	Coastal province with tropical climate and alluvial soils	Gunpowder Brand - coastal plains grown tea; exported industrial tea Mountainous region for “best teas”.
	Anhui	Best teas produced at altitudes: 300-800m ASL. High iron content in soils.	Huang Shan (Yellow Mountains). Temperate climate with red soil and high humus production.	Mao Feng – fame as one of the best green teas Keemum – fruity tea, “China tea sweetness” Tunxi – yellowish green tea with strong after taste Taiping Hou Kui – long leaves, one of top 10 teas in World Expositions Huoqing Tea – higher quality Gunpowder tea, tightly rolled Jing Ting – Snow Green Tea Chrysanthemum – Tisane used in traditional Chinese Medicine
	North Yangzi Jiang River	Distinct 4 season climate, Colder tea growing region	Colder average ground temperatures of 12C. Yellowish to brown soils, resembling desert terrains	Lu An Gua Pian – “Lu An Melon Seed tea” yellow flowers with hints of iodine. Known for vegetal character with avocado flavors Xin Yang Mao Jian – hairy tips, harvested best before April before the “Grain rain” season
Vietnam	Thai Nguyen	Densely planted tea estates surrounded by rice and corn plantations at 300-500m ASL	Geology is volcanic and sedimentary, with ancient alluvial soils. Rainfall is at 2000mm and temperature ranges 13-29C	Local tea tree is called Trung Du La Nho. 60% production is black and 35% is green tea; and 5% jasmine, lotus and wulong teas

Taiwan	Nantou	Sun Moon Lake teas and plentiful harvest in this interior mountains e.g. Mt Dong Ding and Shan Li Xii.	Inland ponds and lakes. Average temperatures 20-23C, and rainfall from 1750-2800mm.	Mountains are covered with tea plantation, popular tourist destination, and creates notable highland teas. Mt Shan Li tea gardens are named after Chinese astrological signs.
	Taipei	Pinglin and Mucha mountains are noted for wulong and "roasted" teas	Abundant rainfall (2000 mm) with temperatures higher than 13C.	Firing techniques in Mucha region gives the tea a "roasted" flavor. Pinglin style of Wulong is twisted leaves.
	Chia Yi	Ali Shan and Yu Shan Mountain – famous high altitude tea (700-1700m ASL)	Mountainous terrain, with dense evergreen vegetation. Rainfall from monsoons and typhoons.	Gao Shan Cha – high altitude tea, colder and slower growing conditions results in increased concentrations of aromatic oils.
	Hualien	Organic cultivation, mostly at low elevations	East Coast hit by typhoons and ocean storm surges.	Various tea production from green, to wulong, to black, and to floral teas
	Taichung	Recent growing of tea but has older tradition of fruit tree growing.	Li Shan Mountain or Pear mountain (600-2650m ASL)	Late harvested teas. Highest tea gardens in the world at 2,600m ASL
Japan	Shizuoka	Long history of tea production. Accounts for more than 50% of national tea production.	Pacific coast, relatively harsh climate.	Assortment of complex green teas that grew up in variable, sometimes tough weather conditions. Yabukita – is a hybrid variety known for the intensity of its flavors. It is planted in 90% of Shizuoka.
	Kyoto	Accounts for 3% of Japan's tea production. Ancient temples and shrines with teas being integral to their histories.	Damp, subtropical climate with very humid summers.	Uji region is famous for Matcha and Gyokuro teas.
	Kagoshima	Accounts for 20% of domestic tea production.	Subtropical climate, south of main island, Honshu.	Produces a wide variety of teas: Sencha, Bancha, Kabusecha and Gyokuro
	Nara and Mie	Renowned tea region of Yamato Plateau at 200-500m ASL	Higher altitudes of tea gardens in Nara produce Sencha, Bancha, and Kabusecha. Mie has	Nara is also famous for crafted tools and materials for the tea ceremony *Chanoyu*.

			lower altitude and produce mostly Kabusecha and Sencha	
India	Darjeeling	Himalayan mountainside steep sloped tea gardens, can be exposed to some frost. “Champagne of black teas”	Acidic soils 5.5 pH, temperature range: 8-25C. Fairly continental climate with constant fog during monsoon.	Delicate tea from complex environment where new shoots could be developed with help of mountain breezes.
	Assam	“British taste” to be added milk into i.e. base of Chai	Tropical region, low altitude, surrounded by tropical rainforest, and the Brahmaputra River.	Rich aroma and full bodied, destined for milk and chais.
	Nilgiri	Hilly terrain with tropical climate. Best picks are in the winter/ January-February. Tea mostly for domestic market.	Plateau setting on the Western Ghats (Blue Mountains) with mineral-rich soils.	Structured, spicy, and fruity teas. C.s. var Assamica
	Sikkim	Darjeeling variety of tea plants.	North of Darjeeling, between Nepal and Bhutan. Continental geology and climate.	Temi gardens were planted with species from Darjeeling. “Explosive” aromas
Sri Lanka	Nuwara Eliya, Dimbula, and Uva	“Ceylon Tea” appellation an the Lipton Tea industry	Growing area ranges: 0-600m ASL; 600-1200m ASL; 1200-2000m ASL Hot and humid climate, best harvest from January to end of March.	Uva region on the eastern slopes of central mountains is affected by different climate patterns, best harvest is in August.
Nepal	Terai Plains	Black teas mostly for the domestic market	< 300m ASL Landscape is composed of tea plantations and Betel nut farms.	Black teas are affected by foggy monsoons

	Ilam, Panchthar, Taplejung and Dhankuta	Mountainous region teas with similar character as Darjeeling	300-2500m ASL, Subtropical forests.	Black teas that are fruity, woody, and flowery. Some cultivars were from China.
Kenya	Milima, Marinyn, Kangaita	Third largest grower of tea in the world. Supplies about 50% of breakfast tea in the UK	1500-2000m ASL gardens	Mostly black teas; processed using orthodox or CTC method. Teas are known to be malty and robust.
Malawi	Thyolo and Malanje	After cotton, tea is the primary commercial crop.	Subtropical climate, distinct wet and dry seasons	Varietal is mostly Assamica from India, mostly used for tea blends; although small family estates also produce orthodox whites, greens and oolongs.
South Africa	Cedarberg region and subareas	Rooibos only grown in South Africa Honeybush tea a medicinal traditional beverage of the Khoi-San Bushmen, grows in the Fynbos biome on the western coast of South Africa.	Mediterranean climate on west coast of South Africa, low to high altitude gardens, with varied soils: sandy – mineral rich	Algeria – mostly produces wild teas to be processed elsewhere Citrusdal – mild temperatures in the summer transforms green rooibos and does not ferment quickly maintaining a fresh citrus flavor. Gifberg – extreme temperature ranges lead to full bodied teas Nieuwoudtville - stressful temperature and altitude ranges create sweet to robust rooibos teas Clanwilliam subarea – hot and windless terroir produces drier tea Honeybush - *Cyclopia spp,* deep yellow flowers with characteristic honey scent. Non astringent and with no caffeine. Contains pinitol which has apparent blood sugar lowering effect. Also contains flavanols which can help in menstrual symptoms and cough. Consumed popularly with milk and sugar.

Table compiled from various sources printed and online publications:

*Gascoyne et al (2014) * http://www.itmonline.org/arts/honeybush.htm * http://www.capeandcape.com/magazine/en/rooibos-one-plant-many-terroirs/ * https://www.paperandtea.com/journal/*

Tea, Place Meanings and Memories

The culture of tea plants and "tea/ tisane" varieties holds lands and landscapes together, literally and metaphorically.

The role of tea plants and tea plantations have also been investigated in land morphological studies i.e. slope stabilization.[24] And the stories of the tea gardens are part of the broader history of places and countries.

To drink tea is an opportunity to travel through the terroir in both space and time. The aromas and flavors of the tea become parts of our memories and stories as we journey in life.

The experience with teas is "dialectical": the tea provides us with flavors and aroma that punctuate and enliven our stories; conversely, that moment with the tea will define what the tea could mean in our lives.

I remember fondly the seaweed and algal aroma of the green teas my father used to bring us from Japan. As a young girl growing up in a suburb of Manila, I would imagine the landscapes of Shizuoka and the places my father traveled in Japan. When I was sent to study in Kobe, Japan as a university student, I was finally able to experience green tea in the place I just used to imagine. I was transported not just to Shizuoka, but also to my childhood and to my father.

I was also introduced to the Oolong tea by Korean exchange students and friends in Japan. I loved the grainy, full bodied flavor of oolong, its deep rustic color, and the robustness of its aroma. My great grandfather who was originally from Amoi, now Fujian province, used to trade tea and import them to the Philippines. Although I never had the chance to try his tea selection which likely included fruity oolongs, I feel that I can connect with him and his story through the memories and flavors of the oolong teas. I was not just transported to Fuijian province, but to the life and history of my great grandfather.

I met my husband in Stockholm, a predominantly coffee drinking city. And I was surprised to have come to know that he also enjoys tea. He has a great selection of fruity teas which he shared with me. Most of them are blended black teas, or tisanes of dried fruits. Black fruity tea to me, reveals not just the character of the climate or the acidity of the soil in India or Sri Lanka. But black teas can conjure romantic images and stories in me as well…

Terroir, I would argue, is not merely a summary of physical components that influence the flavor of tea. Terroir can also be extended to our perceptions of the places that the tea brings us to. Tea is not just any dried leaves from lands far away. Tea is a memory, a time-space capsule, of meanings and stories of places and peoples.

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[24] https://www.academia.edu/948416/Influence_of_tensile_force_of_agave_and_tea_plants_roots_on_experimental_prototype_slopes