

Wine Culture & Infrastructure
A Preliminary Experiment in Mapping Wine Culture Topology
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Working Sub Title: A Web of Wine, Terroir, Heritage, Legislation, & Cipher

Research Questions

What is the prominent infrastructure of wine culture? How does this infrastructure influence modern wine culture?

Abstract

The culture of wine appears to be a symphonic transdisciplinary network of subcategory disciplines, ranging from geography, history, anthropology, politics, economy, and terroir, to viticulture, vinification, chemistry, biology, aesthetics, language, literature, identity, memory, and semiotics. This paper will explore the infrastructure entwining through the various categories and the dynamics working in concert to create the present mystique around the glorified object known as wine. I will seek to reify the aesthetics of the wine object with the agricultural

commodification of wine by unveiling the infrastructure woven throughout. In doing so, I aim to uncover the current forces limiting consumer choice and potentially damaging a significant object and tradition of historical and cultural heritage.

Key Words

Infrastructure, Actor-network theory, wine, wine culture, terroir, wine laws, heritage, varietals, wine regions, vinification, viticulture, mapping, AOC schemes, wine cipher, economics.

Introduction:

What is wine? Wine is the sum of wine culture infrastructure. It is a binary of agricultural commodity and cultural aesthetic object. The wine object is an emblem of a tremendous network of interlacing parts that prop it up and make ‘it’ work. Wine is the logo of an entity called the wine industry, which is a specific subculture, situated in a macro wine culture. It is a three dimensional system with tentacles reaching into many disciplines and aspects of social, political, and economic spheres. This network has taken an ancient agricultural product and over centuries, developed it and refined it into an exclusive luxury good. Early in human history, wine began to address “the needs of urbanity overlaying the necessity of agriculture” (Latour, 2017: E-reader location 339) by providing humans with a nutritious, preservable, transportable, form of sustenance and commerce. Over the course of the last millennium, a clear infrastructure began to develop around the wine object; as a means of discussing, legislating, and distributing wine in a cohesive, global manner.

This course, Metaculture II, in providing a series of readings and group discussions, revealed a concept of infrastructure that is one of a living assemblage that organizes life through a series of objects and relations. The infrastructure platform decides what it frames and how it frames, as it is unfolding in time, to handle (new) circumstances, encode relationships, or dictate logistics. Infrastructure provides a certain form of exclusivity by only allowing actors or actants with the right access to participate in the established infrastructure. In a sense, infrastructure is quite like an evolving fence or backbone, propped up by forces from the outside and inside. In this same sense, wine laws and cipher are the backbone foundation for wine culture infrastructure.

Theory and Method

Keller Easterling, in the introduction to her recent work, *Extrastatecraft*, states that “the shared standards and ideas that control everything from technical objects to management styles (also) constitute an infrastructure.” (Easterling, 2014: E-reader location 77) Easterling points to a

seemingly invisible structure to the world that informs, influences, and constructs the social societies in which we engage. While she illustrates her point by referring to credit card networks, cell phone systems, and the urban structure, in particular, this concept can be applied to nearly every aspect of existence, including wine culture. In her attempt to define infrastructure, Easterling connotes that “infrastructure space has become a medium of information. The information resides in invisible, powerful activities that determine how objects and content are organized and circulated. Infrastructure space, with the power and currency of software, is an operating system for shaping the city.” (Easterling, 2014: E-reader location 99, 110) Easterling goes on to analyze material, economic, and political structures throughout her work. According to Easterling, “infrastructure is the space of doing something,” which echoes Bruno Latour’s “analytical framework called actor network theory:”¹ (Easterling, 2014: E-reader location 1340) a concept in which Latour explains that “everything (human actors and non-human actants) exists in a constantly shifting and evolving network of relationships where relations are everything and nothing exists outside of these relations.” (Latour, 2007² ‘as cited in’ Easterling, 2014: E-reader location 1340) In other words, all things, human and non-human, are socially connected in a series of traceable, yet often invisible, associations (Easterling, 2014: E-reader location 1370) designed in a linear fashion or a cluster, with many dimensions acting upon others in a certain ebb and flow of power and information.

Easterling, relying heavily on Latour’s work, *Reassembling the Social*, quotes him as such: “Latour writes, form is “simply something which allows something else to be transported from one site to another...to provide a piece of information is the action of putting something into a form (Easterling, 2014: E-reader location 1370).”³ In this way, the wine object is a form that conveys a message of terroir: a sense of place and of identity, steeped in tradition, heritage, and economics, by using a highly codified wine cipher as its medium of information.

In her recent article entitled, *Actor-Network Theory: Sensitive Terms and Enduring Tensions*, Annemarie Mol, Professor of Anthropology at the University of Amsterdam, simplifies Bruno Latour’s actor-network theory as a “theoretical and methodological approach”...that functions

¹ ANT: Actor Network Theory, an analytical, sociological theory developed by Bruno Latour, Michel Callon, and John Law, includes various, human actors and non-human actants behaving in concert as a network.

² Latour, Bruno (2007), *Reassembling the Social: An Introduction to Actor-Network-Theory*, Oxford University Press: Clarendon Lectures in Management Studies

³ Easterling, K., 2014 (Latour, *Reassembling the Social*, 39, 223)

more like a strategic “mapping of relations between material things and semiotic concepts” useful for foundational analysis of various relationships.⁴ It is on this basis and definition that I will conduct this experiment in wine culture infrastructure by attempting to construct logical mapping points and conduits between the material wine object and the semiotic concepts of terroir, cipher, aesthetics, and heritage.

Easterling further defines her notion of extrastatecraft as a ‘contemporary infrastructure space (that) is the secret weapon of the most powerful people in the world precisely because it orchestrates activities that can remain unstated but are nevertheless consequential.’ (Easterling, 2014, E-reader location 120, 130) It is this rendering that lead to my thinking about the current infrastructure of wine and how it is limiting diversity and destroying heritage. Easterling specifically discusses the extrastatecraft of “incentivized urbanism” where sovereignty, politics, economics, urbanity, are intertwined with the forces of taxation, cheap labor, deregulation of businesses, customs, and environmental protections, (Easterling, 2014: E-reader location 130) in the construction of urban spaces, but these notions can easily be applied to any junction of commerce and humanity. Easterling’s view implies that the world is a business and each transaction is a part of her overlying network and infrastructure in which “the bureaucracy of the state” and its “declared intent” often diverge in such a way that the reach of the growing infrastructure becomes unmanageable in its unexpected turns. (Easterling, 2014: E-reader location 156) If this is the case, than the disposition⁵ of the wine business is an easy illustration of Easterling’s infrastructure concepts as it is laden with bureaucracy attempting to control tangible and intangible space intended to protect a thing, the wine object, but eventually leading to its demise. Thus, the disposition of the wine organization is “...the character or propensity of an organization that results from all of its activity...is the medium, not the message, not the object form, but the active form (Easterling, 2014: E-reader location 210).”

“The extrastatecraft of infrastructure space is artistically and intellectually attracted to the idea of designing action and interplay as well as designing objects” ((Easterling: 2014: E-reader location 1306) “Power lies in the prospect of shaping a series of activities and relationships over time...active form can be organizational like a multiplier, a remote, a switch, or a governor, but since the social and technical interact with each other, an active

⁴ Mol, A., 2010.

⁵ “In some of his formulations of ANT, Latour even makes a passing reference to the sociologist Erving Goffman...Goffman uses the word “disposition” to refer to all of the gestures, postures, facial expressions, and myriad of subtexts deployed in an individual’s most theatrical presentation of self. (Easterling: 2014 E-reader location 1397).”⁵

form can also be a social story...not a vessel in which to fix a meaning but a carrier to channel a flow of meanings...”

The activities of each of the actants on my wine culture map featured in Appendix A, Figures 1-3, influence this disposition, some conflicting and many converging to accomplish a further refinement and modernization of the wine object. Wine infrastructure acts as a constant self-selecting and limiting arrangement of rules and laws governing wine so tightly that it may lead to the eventual destruction of the cultural wine object itself.

Outline of Actors, Actants, Concepts, Tokens, & Quasi Objects:

Wine Culture / Macro Concept

Wine culture is a reaching network of globally linked urban spaces and wine regions with specific identities that developed over generations and centuries which directly influence their respective wine objects. These regional identities, built on language dialect, tradition, necessity, socio-economic and political forces, exert insidious influence onto the agricultural subcultures of these regions. The infrastructure of wine is a three dimensional cluster, somewhat like a solar system, with the wine object at its center and dozens of planets, satellites, moons, and asteroids, representing various structures of influence, swirling about it, interlacing and influencing not just the wine object but all of its other actants. At the base of this infrastructure is a historical tradition of viticulture and vinification based on a concept known as terroir. Terroir is a force that permeates every aspect of wine culture from its distant and not so distant history to its geography, cipher, aesthetic, literature, commodification, and consumption. The exploration and development of signified terroir first began in antiquity.

Terroir / Token or Quasi Object:

To elaborate, terroir is a French agricultural term that signifies a culmination of climate, geography, geology, tradition, and heritage. This concept of terroir, connoting a unique product from a unique region,⁶ is the basis of agricultural and economic regulations governing commodity products such as wine, honey, lavender, butter, chocolate, coffee, paprika, saffron, Vidalia onions, heritage tomatoes, tulips, cognac, cheese, agave, tobacco, apples, wheat, cannabis, spirits, and various livestock animals such as Iberian black hogs, Bresse chickens,

⁶ Robinson, Jancis., and Harding, Julia., (2015) *The Oxford Companion to Wine* (Oxford Companions), Oxford: Oxford University Press. Kindle E-reader edition.

various fish, and certain caviar.⁷ Terroir serves as a basis for the French Appellation d'Origine Contrôlée system of insuring provenance of many of these and other agricultural commodity products. The French system, which will be discussed later in this paper, has been modeled, and employed by many other countries across the globe including most wine producing countries in Europe, North & South America, Africa, Australia, New Zealand, and Asia.

Essentially, terroir is comprised of the following factors:

Climate: Warm or cool climates drastically influence the wine object. Climates are determined over a long span of time and on a macro scale such as region, to a sub-region such as a vineyard, to a microclimate like a row or a few vines. Climate considers weather patterns, atmosphere, water availability, and other statistical factors. Specific varieties require specific climates to thrive.

Geography: Ecoregions: vineyard location, aspect, slope, terrain, flora, and fauna, all influence the wine object.

Geology: Soil type: chalk, limestone, granite, marl, loam, loess, flint, slate, Llicorella, etc. are all said to impart different qualities, flavors, and structure to various wines. Certain soils naturally occur in certain regions and specific varieties thrive in certain soils.

Tradition: Each designated AOC (DOC, DOCG, AVA) has legislation which details permitted varieties, yields, sugar levels, use of chemicals, use of water and irrigation, styles produced, vinification techniques, additives, fining, and filtration, bottling, aging, labeling, and even promotion techniques (among other factors). Producing wines outside of these specifications does happen, in rare cases, resulting in experimental, deregulated, and unclassified wines that rarely gain market appeal or value. (Spinner, 2017: lecture notes).

As a result of hundreds if not thousands of years of terroir experimentation and tradition, early European viticultural and vinification systems are largely unchanged today. This aspect of wine infrastructure informs the wine culture and identity of each sub region and region, further influencing the wine culture and industry of each country. Until the 1960's very little deviation of traditional viticulture and vinification took place on the European continent. With the meteoric rise of Californian wines, both in quality and in market share, the European wine industry realized that its ancient infrastructure may be hindering economic growth. Since the late 1970's many wine producing regions in France, Germany, and Italy began to rapidly modernize their viticultural and vinification processes. By the 1990's, Spanish, Austrian, Hungarian, and British regions undertook modernization plans, with the Portuguese, Greek, and Croatian regions modernizing just in the last decade. While this widespread modernization focused on hygienic, sustainable, and technological advances, the basis of terroir was largely untouched.

Wine Laws / Mediator or Multiplier

History of Wine Laws

⁷ Spinner, (2012-2017), lecture notes.

Wine authentication and production laws were first used in ancient Rome and Greece as a means of fraud prevention. Producers would indicate their proprietary wines by scrawling their logo marks on their clay amphorae production tanks and delivery vessels. As early as 300 B.C., Roman wine producers traded wine as a means of commerce throughout North Africa, the Middle East, and Europe. Centuries later, Roman wines traveled as far north as the United Kingdom. During the expansion of the Roman Empire, Roman soldiers were tasked with planting vine cuttings in many new settlements and encampments throughout much of England, France, Germany, Belgium, Austria, Hungary, Switzerland, Spain, Portugal, Algeria, Corsica, Sicily, and Morocco. While the lands were not governed by wine laws as they are today, it is known that as early as 121 B.C., by law, specific grape varieties⁸ were matched to precise plots of land and the grapes from these lands were used to produce precise styles of wine.

The Mediaeval era brought a new focus on wine and a new structure of viticulture and vinification practices. French and Italian Benedictine and Cistercian monks in the Kingdom of Burgundy and the regions around the French Rhone River valley acquired vast land holdings during the Crusades. Landowners, in preparation for war, would generally entrust their holdings to the Church for protection from vulnerability during their absences. As these land owners often failed to return home from the waves of wars, the Church kept their lands rather than returning them to the rightful heirs. These expansive land holdings, mostly agricultural, allowed for scientific experimentations in botany and geology. Catholic monks were the academics and scientists of the day and also the only people legally allowed to produce wine during much of the

⁸ 2,700 years ago, on the slopes of Mount Falerna near Campania and Latium in Southern Italy, Aglianico grapes grew in three very special vineyards. The first vineyard was known as the Caucasian Falerian and was located on the highest slopes, the second vineyard was the Falerian found on the lowest slopes; and between the two vineyards rested the third the prized Faustian Falerian vineyard. The vineyards were owned by Roman aristocracy for two millennia and are still under vine today. The Phoenicians cultivated the grape in Greece. During the 7th or 8th BCE the Greeks brought the Aglianico grapes to Italy. The Falerian wines made specifically from these ancient Aglianico grapes, in the Faustus vineyard, were the world's first designated Premier Cru, and were reserved for the extremely wealthy and important members of Roman society. Faustus Falerian was a wine of legend and heritage, written about by famous poets, philosophers, scholars, and historians. The nearly black grapes were harvested late in the season and had tremendous levels of sugar resulting in a sweet, golden wine with very high alcohol content. The wine was left to oxidize for up to twenty years in clay amphorae vessels. The potent sugar and alcohol content of the wine made it age worthy and suitable for travel. The Roman legions carried Falerian throughout Europe and as far north as Britain. Pliny the Elder commented, "It is the only wine that takes light when a flame is applied to it." He also described a particular banquet honoring Julius Caesar in 60 BCE where the famed "Opimian vintage of 121 BCE" was served. That vintage was an exclusive Faustus Falerian and is considered one of the finest wines ever created. Wine legend claims this is the wine offered to Jesus before his crucifixion and the same wine that Mary Magdalene dabbed to his lips as he was dying. We will never know. What we do know is that the Aglianico grape is still growing in these same vineyards in the southern most regions of Italy. (Simone FM Spinner, (2012-2017), *Aglianico*, lecture notes, UC Denver).

Mediaeval era. This led the monks, over time, to develop best practices systems based on which varieties flourished appropriately on which plots of land. In turn, experiments in modernizing vinification techniques further informed the decisions and determinations of terroir. (For more information about the historical evolution of various European kingdoms, borders, and regions from 900 A.D. to 1900 A.D., please see Appendix D, Figures 14-19).

Identity / Token or Quasi Object:

After the fall of the Holy Roman Empire, much of Europe began re-dividing into small kingdom nations and city states; most of which were wine producing regions. Over time, regional wine identity began to form based on local grape varietal availability, suitability, and best viticultural practices for local climates and microclimates. Therefore, the identity of each unique wine region is built upon the terroir and historical tradition of the region. Local customs, culture, including cuisine, are all fundamental building blocks in the structuring of this regional identity. How the Piedmontese approach wine is different from the Burgundians, Bordelaise, Basques, or British.

During the late Renaissance period, many wine producers and vendors began a system of region and sub-region demarcation based on the aforementioned terroir but also economics, trade, and product popularity. Champenoise and Burgundian wines were long favored by French, German, Russian and Italian nobility whereas the claret wines from Bordeaux, due in part to the on again off again acquisition of the Duchy of Aquitaine, first through marriage and then through war, were and still are the favored wines of the British Isles. (For more information about the evolution of various historical European kingdoms, borders, and regions from 900 A.D. to 1900 A.D., please see Appendix D, Figures 14-19).

Economics / Mediator or Multiplier

Napoleon III intended to capitalize on the concept of terroir and British interest in French Bordelaise wines when he hosted the World's Fair in 1855 A.D. It was for this elaborate Exposition Universelle de Paris et du Monde that Napoleon III ordered the official Classification of April 18, 1855: a structured marketing ploy and infrastructure still in existence today. He wished for the best of the best of Bordelaise wines to be prominently displayed and available to all who attended the grand world exposition. Wine merchants, tasked with formulating the schema, analyzed wine sales from various Bordeaux chateau properties, particularly those in the Médoc region which was known for its enduring claret to devise the following structure:

The Médoc Classification of 1855

The Red Wines of the Gironde

First Growths (Premiers Crus)

Château Lafite, now Château Lafite Rothschild, Pauillac

Château Latour, Pauillac

Château Margaux, Margaux

Haut-Brion, now Château Haut-Brion, Pessac, Graves

Mouton, now Château Mouton Rothschild, Pauillac

Second Growths (Deuxièmes Crus)

Third Growths (Troisièmes Crus)

Fourth Growths (Quatrièmes Crus)

Fifth Growths (Cinquièmes Crus)

The White Wines of the Gironde

Superior First Growth (Premier Cru Supérieur)

Yquem, now Château d'Yquem, Sauternes

First Growths (Premier Crus)

Second Growths (Deuxième Crus)

This economic and quality infrastructure for assessing and vending Bordelaise wines influenced wine legislation in other regions of France and in turn, other wine producing countries. While the Classification of 1855 is based less on terroir and more on economics, the subsequent, stringent laws governing Bordeaux have not been modified save for a few, hard-won exceptions and updates. The chateaux (Bordelaise wine producing properties) under the Classification of 1855 infrastructural system of governance must fiercely adhere to standards of production and vending in order to preserve their extreme elite status on the modern wine market.

Wine Laws & Schemes / Mediator or Multiplier

Wine regulation laws and schemes are a messaging conduit between growers, producers, marketers, distributor, wine writers, and general consumers. These detailed laws and schemes can be alienating to outsiders who often disregard the detailed label information discerning what law is being represented by the bottle.

French wine producers and vendors have been regionally classifying their wines since the 1600's. The French, seeking to mitigate rampant fraud during the late nineteenth and early twentieth centuries in the Champagne and Chateauf-neuf-du-Pape regions, formed a collective of wine growers and producers seeking to establish and adhere to litigated, standardized vinification and viticultural practices specific to their respective regions. The first modern attempt to organize began in 1905 A.D. but it wasn't until 1935 A.D. in Chateauf-neuf-du-Pape, that the French government intervened and established a consortium that became known as the INAO: *Institut National des Appellations d'Origine*, now called the *Institut National de l'Origine et de*

la Qualité. The INAO agency governs and legislates the specific provenance, terroir, and typicity of various agricultural, craft, and artisanal goods produced in France. The preliminary French Appellation d'Origine Contrôlée wine law system is particularly invasive, with each wine producing country modeling not just their wine laws and traditions on the French model, but increasingly their varietals and wine styles. Appellation d'Origine Contrôlée schemes control every aspect of wine production and each classification must be printed, in great detail, on the producer's wine bottle label, including, in some cases, the exact vineyard, producer, négociant, alcohol content, sugar levels, grape varietals, and any other pertinent consumer details. The wine label uses specific wine cipher to denote everything one may wish to know about the wine object but unless one understands wine cipher, wine labels may remain a mystery to the general consumer. Appellation d'Origine Contrôlée loosely translates to controlled designation of origin. It is a four tiered system, represented here, controlling typicity and uniqueness more than quality, by ensuring viticultural and vinification standards are met, per category:

Vin de Table

A Vin de Table will not list the area that its grapes have been grown, the varietals, and is not subjected to rigorous production standards. Generally these wines are inexpensive.

Vin de Pays

Vin de Pays is required to designate the region where it was produced which reveals indicates the specific varietals mandated. This category of wines are analyzed by INAO before receiving the Vin de Pays designation to confirm typicity and standards for the designated region.

Vin Délimité de Qualité Supérieure (VDQS)

VDQS wines make up just 2% of the French market. This category is an intermediary step as wines await AOC designation. These wines are analyzed by INAO and are required to meet all standards required for AOC status.

Appellation d'Origine Contrôlée (AOC)

AOC wines must meet the highest standards of vinification, viticulture, and finishing. They are analyzed by INAO and bestowed status annually. Due to climate based vintage discrepancy, wines may lose their AOC status. AOC wines are the most expensive because of rigorous standards and costly testing procedures.

(Spinner, 2017: lecture notes).

A series of current national and continental wine laws and schemes follow the AOC model:

Spain 1925 A.D., Italy 1963 A.D., Germany 1644 A.D. and 1971 A.D., USA 1980 A.D., EU 1986 A.D. / 1992 A.D. / 2012 A.D., Portugal 1986 A.D., Great Britain (EU), Austria 1986 A.D., Hungary 1730 A.D. and 1986 A.D., along with Australia, South Africa, Argentina, Chile, New Zealand, China, Tasmania, Greece⁹

⁹ Jancis Robinson, MW, is a preeminent expert on wine law and terroir. <https://www.jancisrobinson.com/winelaws/>

(Please see Appendix C, Figures 7-13 regarding Appellation d’Origine Contrôlée schemes)

The wine object is, therefore, a representation of Appellation d’Origine Contrôlée schemes and laws based on terroir and identity which leads directly to heritage or tradition. As discussed earlier in this paper, infrastructure is a living and changing organization, a medium for doing or for saying something. It is a living process with the ability to add and delete actors, actants, multipliers and conduits. The establishment of the European Union political and economic region instigated a Common Agriculture Policy complete with new agricultural laws and procedures. (Appendix C, Figure 13) As such, the European Union influenced wine infrastructure with the addition of its “PDO” Protected Designation of Origin and “PGI” Protected Geographical Indication wine laws and schemes which layer atop of established country AOC laws and in some cases have modified the previous national schemes. These European Union regulations have been subjected to much criticism and various reforms since first being enforced in and around 2009 A.D., largely because they are considered to be too broad to account for various and unique terroir of specific European wine regions, particularly those in France and Italy. In some cases, gaining a PDO status means losing an AOC status as criteria can be conflicting. Many producers wish to adhere to established Appellation d’Origine Contrôlée schemes rather than submit to new regulations. In addition, retraining the consuming public on a dual system has proven difficult and many producers seek to simplify labeling laws.

Wine Cipher / A Conduit of Information

The cipher or language of wine began to emerge during the Medieval era when Catholic monks were experimenting with viticulture, vinification, varieties, and terroir. This early language included agricultural, geological, and geographical terminology in addition to early, often metaphorical, references to tasting and aroma notes, textural assessments, and stylistic components of various wine objects. As the wine industry grew over the centuries across the European continent, producers and vendors began developing a specific cipher to discuss ideas, concepts, and other information about wine.¹⁰ When discussing the aesthetics of the wine object in particular, a coded language, based on metaphorical references, is employed to convey style, profile, quality, and terroir.

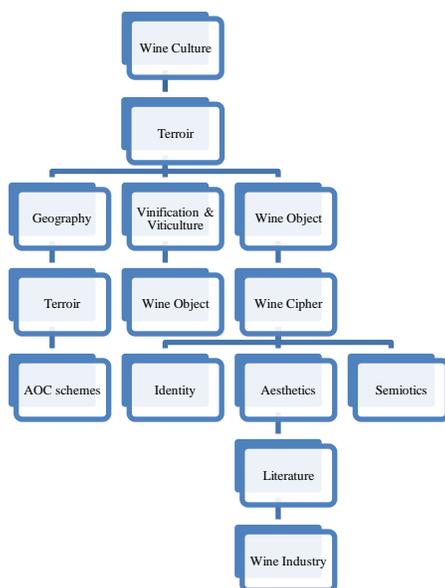
¹⁰ I discuss the history and evolution of wine cipher in great detail in my 5 June, 2018, Lisbon Consortium 2018 Summer School paper entitled : *Wine Cipher & Cyber: Decoding the Language of Wine*, used as a source here.

Wine cipher is an insider's wine-industry language based on metaphorical references to fruits, vegetables, flowers, and other organic and inorganic materials perceived in the aroma and taste of a given wine. This language, actually dates back centuries to French and Italian Catholic monasteries, and is derived from "in the glass" experiments in nosing and tasting wine to determine not just quality and viability, but also typical, varietally correct tasting (smell/taste) notes for a given grape varietal or blend of grape varieties. (Spinner: 2018).¹¹

Each designated wine region, whether be it in France, Germany, Argentina, the United States, or any other prominent region, uses the same cipher to discuss and detail their wines. In addition, each region, bases its regional signature on the concept of terroir and wines designated as such are expected to behave and perform according to typicality and standards pre-established for the region. In this sense, the wine object, using specific cipher, represents the terroir of its region. French Champagne is a perfect example of the fusion of the concepts called terroir and cipher. Champagne is legally required to exemplify certain characteristics, based on the Appellation d'Origine Contrôlée schemes, laws, traditions, and standards in place. Specifically, the sparkling wine called Champagne must come from the geographic Champagne region of France. Using established wine cipher, one learns details about the Champagne wine object, such as: it may contain seven legislated varieties but only three grape varieties are generally used to produce both the blanc de noirs (pinot noir and pinot meunier), and blanc de blancs (chardonnay) styles. The viticultural aspects and vinification process called *Méthode Champenoise* are strictly regulated, not allowing for modification or adaptation, with every step of Champagne production controlled, from the soils in the vineyard, irrigation protocols, harvesting methods, sugar level in ripe grapes at harvest, to the acidity and sweetness of the base wine, the vinification procedures, aging techniques, finishing and bottling, to labeling requirements. For the wine culture insider, the term *Méthode Champenoise* signifies these unique attributes and techniques leaving little room for confusion as to the wine object's regional identity, quality, aroma and taste profiles, and style. Champagne, the object, is easily recognizable even in a field of other sparkling wines

¹¹ "It is a common misconception that wine cipher is mysterious, subjective, and vague, when in fact; it is highly codified. The modern wine language discussed here was set forth, as mentioned, by the Wine & Spirits Education Trust and the Court of Master Sommeliers in the 1950-1960's in England. These organizations developed metaphorical language and lexical patterns along with standards and methodology centered on the use of rigorous and frequent tasting analysis based on a model of varietal typicality. Since few people outside of the wine industry have the inclination, time, resources, or reason to devote themselves to professional wine education as personal development, the divide between consumer and professional continues to grow. Wine cipher becomes more complex and mysterious as the hype around the celebrity sommelier phenomenon continues to grow. It is now trendy to portray wine as an even more obscure, unattainable, and coveted luxury good, understood only by a select few with an insiders-guide to decoding the cipher. (Spinner: 2018)"

from other regions across the globe. Each category of Champagne produced has a distinctive aroma, taste, texture, style, and vocabulary profile: Extra Brut, Brut, Extra Dry, Demi-Sec, Sec, Doux, Rosé, Blanc de Noirs, Blanc de Blancs, Grower Champagne, House Style, Dosage, Zero-Dosage, NM: *Négociant manipulant*, CM: *Coopérative de manipulation*, RM: *Récoltant manipulant*, SR: *Société de récoltants*, RC: *Récoltant coopérateur*, MA: *Marque auxiliaire* or *Marque d'acheteur*, ND: *Négociant distributeur*. All of these wine cipher vocabulary words carry particular meanings for those people inside of the wine culture infrastructure with access to wine cipher¹² Wine cipher is the infrastructural conduit for trading the comprehensive information about each unique wine. Wine producers, vendors, educators, and writers use this cohesive wine cipher to communicate with one another and the consuming



public. (Please see Appendix B, Figures 4-6 for more information on wine language: tasting and aroma notes). As detailed in the introduction for this paper, in her attempt to define infrastructure, Keller Easterling connotes that “infrastructure space has become a medium of information. The information resides in invisible, powerful activities that determine how objects and content are organized and circulated.” (Easterling, 2014: E-reader location 99, 110)

Wine cipher, derived from the concept of terroir, yet working in conjunction with it as a conduit and a multiplier, is a premier infrastructure of modern wine culture. Wine cipher and terroir inform every other aspect of wine infrastructure from literature and critique to production techniques. (Shown here in this map image: the basis for the infrastructure begins with the concept known as terroir).

How the Wine Infrastructure Map Works

This specific image of wine culture mapping represents a condensed and modified excerpt from my larger map featured in Appendix A for the purposes of this experiment in mapping. (Please see Appendix A, Figures 1-3 for more information and a complete structure of the topology of

¹² Spinner, 2012-2017, *Champagne*, lecture notes, UC Denver.

wine culture infrastructure). From this mapping image, it is easy to see how the various actors, actants, multipliers, and conduits exist within an infrastructure of flowing information as it relates to wine and the wine industry. If one looks at the map, less as a hierarchy of terms and concepts and more as a series of clustered intersections and pathways for trading information and messaging about wine, one can see that the over-arching concept called wine culture has a broad reach through many disciplines and sub-disciplines. For the purpose of this experiment in wine infrastructure mapping, I am exploring a few concepts most integral to the foundational infrastructure of wine culture. Terroir is a geographical and agricultural concept that links wine culture to the Appellation d'Origine Contrôlée schemes, laws, traditions, and standards via the actual, material wine object. Running along parallel conduit lines is the concept of wine cipher which is employed to analyze and discuss not only the wine object, but identity, aesthetics, semiotics, wine literature, and wine culture in a broader sense. Wine cipher is steeped in metaphorical representational language that reflects on the aesthetic of the wine object, terroir, culture, history, and heritage of the wine object but also the umbrella term that is wine culture. It is through the fusion of the concepts of wine cipher and terroir that wine object and wine region identity are born. Wine region identity informs the general sense of regional culture and heritage. The clustered infrastructure of wine is not a closed loop circuit but rather it performs, as illustrated in the introduction, more like and expanding solar system of planets, satellites, asteroids, moons, and even a few stars interdependent on one another for stasis.

Conclusion

Circling back to Easterling's definition of extrastatecraft as a 'contemporary infrastructure space (that) is the secret weapon of the most powerful people in the world precisely because it orchestrates activities that can remain unstated but are nevertheless consequential.' (Easterling, 2014, E-reader location 120, 130) Again, I will state that this definition of infrastructure provoked my thinking about the current infrastructure of wine, wine culture, and wine industry, and how it is actually severely limiting diversity and destroying heritage. If extrastatecraft of "incentivized urbanism" is a situation where sovereignty, politics, economics, urbanity, are intertwined with the forces of taxation, cheap labor, deregulation of businesses, customs, and environmental protections, (Easterling, 2014: E-reader location 130) in the construction of (urban) spaces, then extrastatecraft is an overlying network in which bureaucracy and declared intent are capable of creating ripple effects throughout the system that may become destructive.

(Easterling, 2014: E-reader location 156) The infrastructure of wine culture and industry is so rigid and enmeshed in a tangle of bureaucracy attempting to control tangible and intangible spaces and objects that it is laying the seeds for its own destruction. The layers and layers of history, tradition, laws, protections, cipher, and standards are in place with the intent to protect a thing, the wine object, and the culture of wine production, but eventually, these strangling systems will lead to its demise and even annihilation. Without the ability to easily step outside of the infrastructure and view it objectively, the system could be vulnerable to rapid changes outside of its very force. The activities of each of the actors and actants on my wine culture map influence the disposition of wine, some conflicting and many converging to accomplish a further refinement of the wine object itself. Wine infrastructure, with its long reaching roots in economics, acts as a constant self-selecting and limiting arrangement of rules and laws governing the eventual devastation of the cultural wine object itself. By constantly striving for hyper-economic growth and perceived product perfection, wine infrastructure is forcing producers to step away from the very terroir and centuries old viticultural decisions and infrastructure that created the unique beauty of heritage wines, in efforts to maximize profitability and popularity. Politically, wine infrastructure is determining our wine object choices by filtering information in a certain way, which is limiting varietal diversity and consumer choice by privileging less than twenty out of 1130 known grape varietals. According to Dr. Liz Thach, M.W., in 2017, the global wine industry produced 275.7 million hectoliters and earned \$340 billion dollars with the top five (French) varietals (chardonnay, cabernet sauvignon, merlot, pinot gris, and pinot noir) accounting for more than eighty percent of global wine sales.¹³ These actions have over time, sought to limit diversity of wine product on the open market to the detriment of regional and sub-regional heritage and culture. Most European wine producing countries are known for their signature wines produced from their indigenous grapes such as Italian Barolo's made from the nebbiolo grape, Tuscan Chianti, made from sangiovese, Hungarian Tokaji, produced using furmit, zéta, and hárslevelü, or even Portuguese Port which is generally made from tinta barroca, tinta cão, tinta roriz, touriga francesca, and touriga nacional, just to list a few. Table wines produced from indigenous grapes and styles are still produced, but most are no longer widely traded, or bought and sold, on the open market, often being reserved for local or even familial

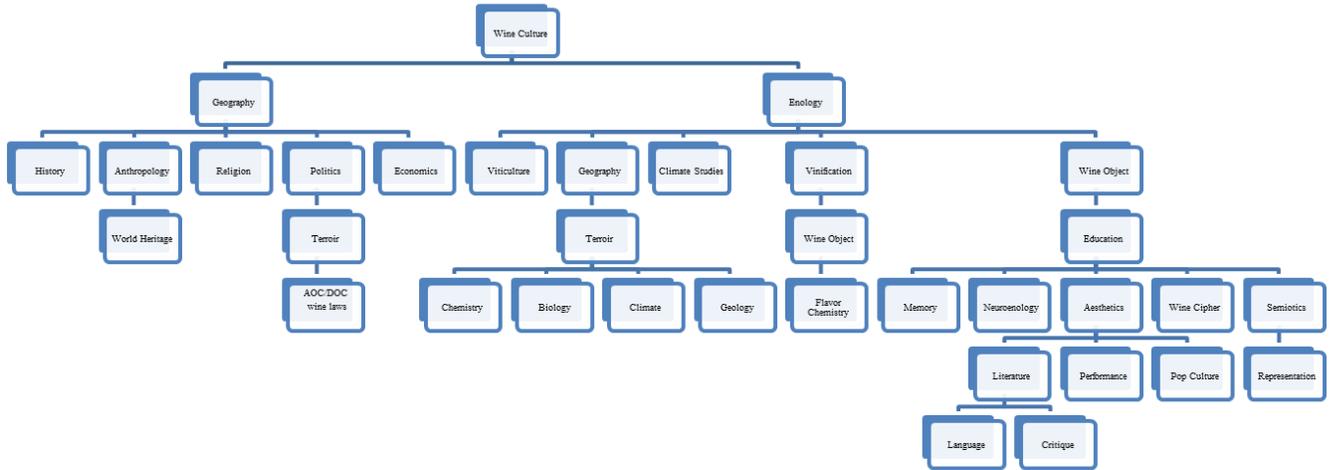
¹³ Thach MW, Liz. (24 Jan. 2015), "*The State of Wine Drinking in America Today.*" *The Week - All You Need to Know about Everything That Matters*, theweek.com/articles/532653/www.winebusiness.com. (Accessed 28 May, 2018).

use. It is in this increasingly popular trend towards wine Frenchification (favoring French grapes) and modernization that regional identity is being destroyed. Further inflaming the potential of loss of diversity and loss of regional identity are the current and future threats of climate change, which, according to many climate scientists, meteorologists, and economists, will destroy and displace the majority of historically significant wine regions and culture as we know it. In a recent study¹⁴ on European wine regions and climate change, prominent scientist Lee Hannah and his colleagues determined that by the year 2050 A.D., most traditional wine regions will have succumbed to the devastation caused by increasing global temperatures and subsequent water shortages. As such, most wine regions, particularly European wine regions, will no longer be hospitable to grape growing or wine production. (Appendix E, Figure 21). If thousands of years of progressive wine culture and infrastructure suddenly evaporates, under a buckling situation of destructive climate and economic change, what will humanity have lost, but a tremendously valuable and telling emblem of historical human culture: the life blood of humanity.

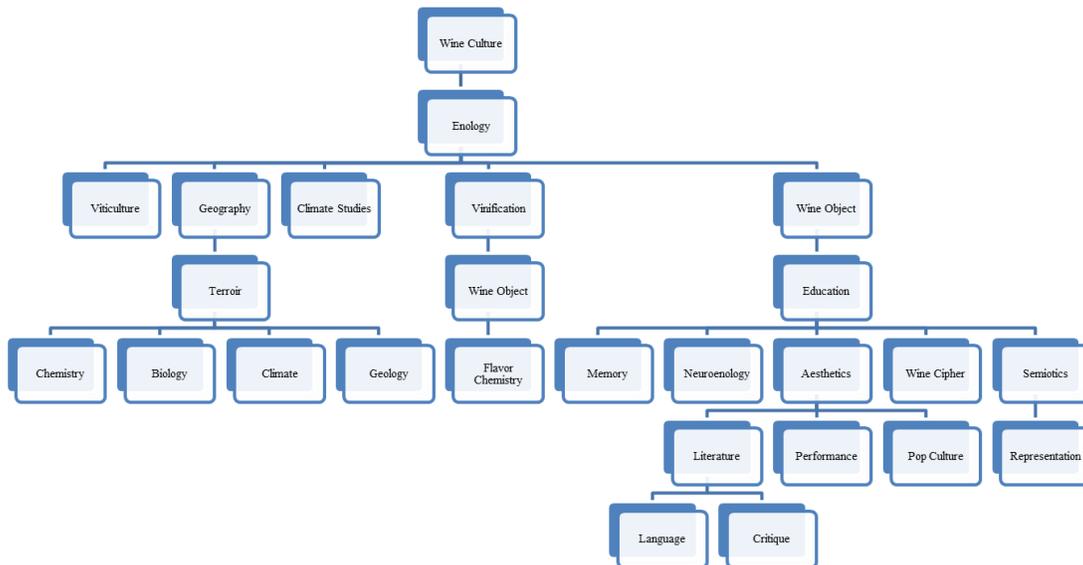
(Please see Appendix E, Figures 20-21 regarding climate change and wine region changes).

¹⁴ Hannah, Lee, et.al., (2013), “Climate change, wine, and conservation.” *Proceedings of the National Academy of Sciences*. National Academy of Sciences, n.d. Retrieved from www.pnas.org/content/110/17/6907?tab=author-info. (accessed March 17, 2017 and July 9, 2018).

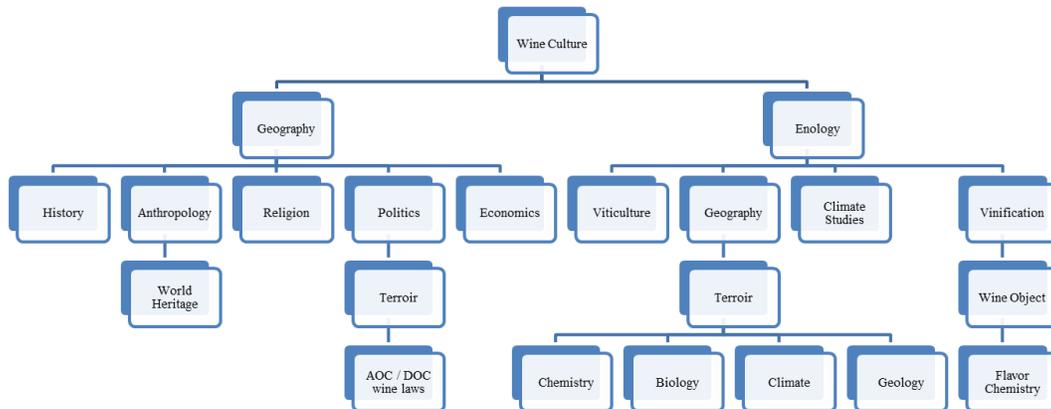
Appendix A
Wine Culture Mapping Experiment
Entire Wine Culture Map, Fig. 1



Wine Culture & Culture Studies Intersections Map, Fig. 2



Wine & Enology, Geography, Anthropology Map, Fig. 3



Appendix C

European: French & German Laws & Schemes Classification Charts, Figs. 7, 8, 9, Fig. 7

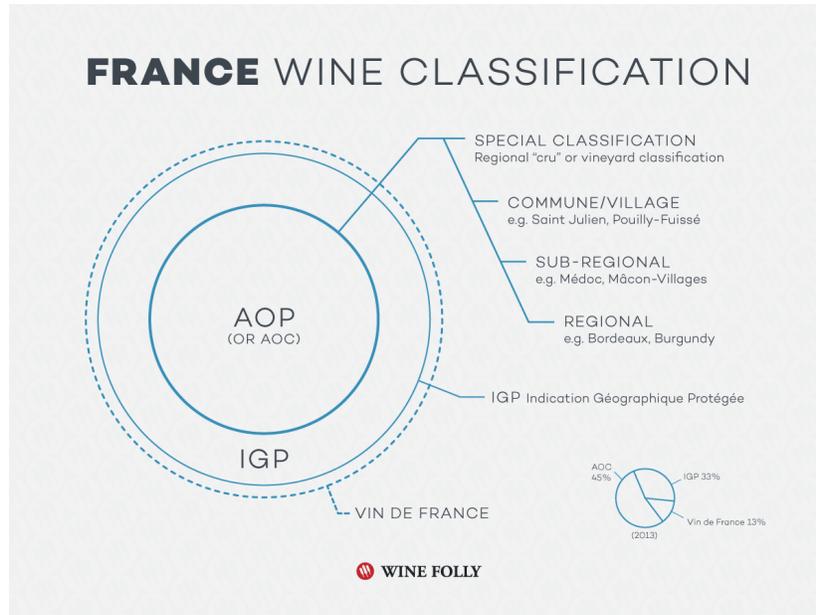
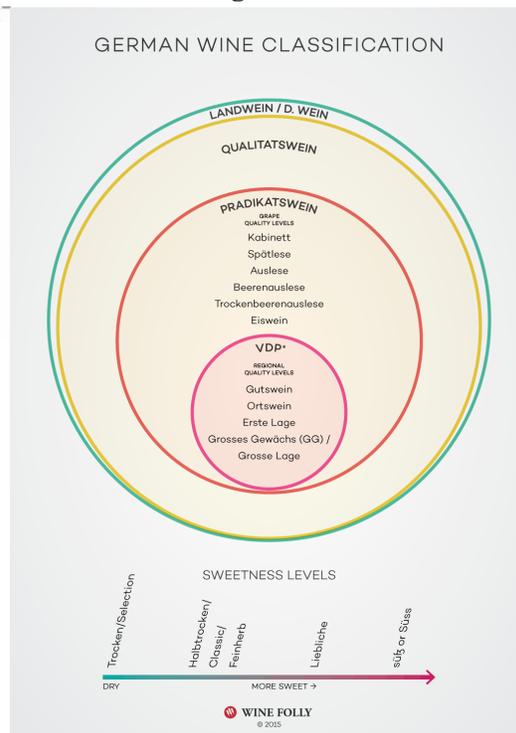


Fig. 8



Fig. 9



Italian, Portuguese, & American Law Classification Charts, EU Modifications: Figs. 10, 11, 12, 13

16

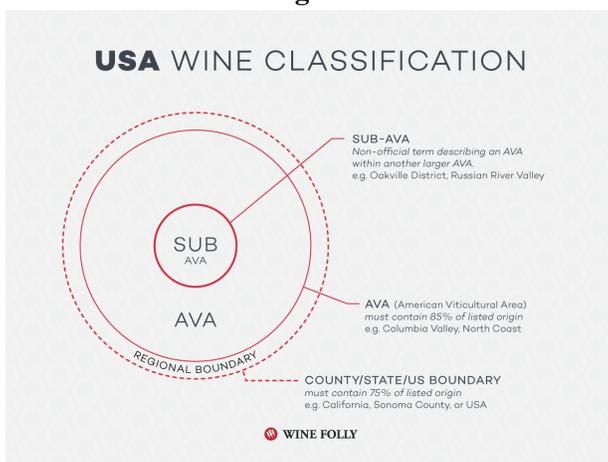
Fig. 10



Fig. 11



Fig. 12



European Union Wine Law modifications and additions Fig. 13



PDO

Protected Designation of Origin
Appellation d'Origine Protégée
Denominazione di Origine Protetta
Denominación de Origen Protegida



PGI

Protected Geographical Indication
Indication Géographique Protégée
Indicazione Geografica Protetta
Indicación Geográfica Protegida

wine-searcher.com

¹⁶ (www.winefolly.com & www.wine-searcher.com)

Appendix D
European Maps, 900 AD-1900 AD, Figs. 14-19¹⁷

Fig. 14 900 A.D.



Fig. 15 1200 A.D.

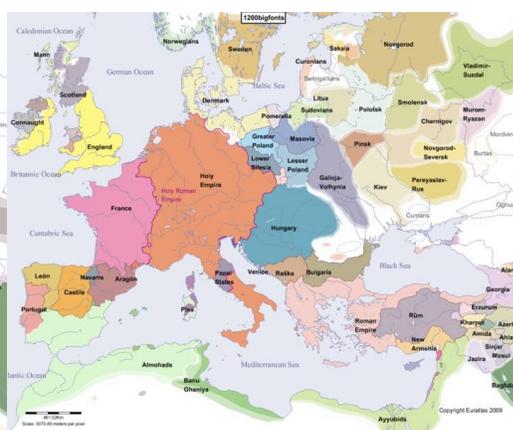


Fig. 16 1300 A.D.



Fig. 17 1400 A.D.



Fig. 18 1500 A.D.



Fig. 19 1900 A.D.



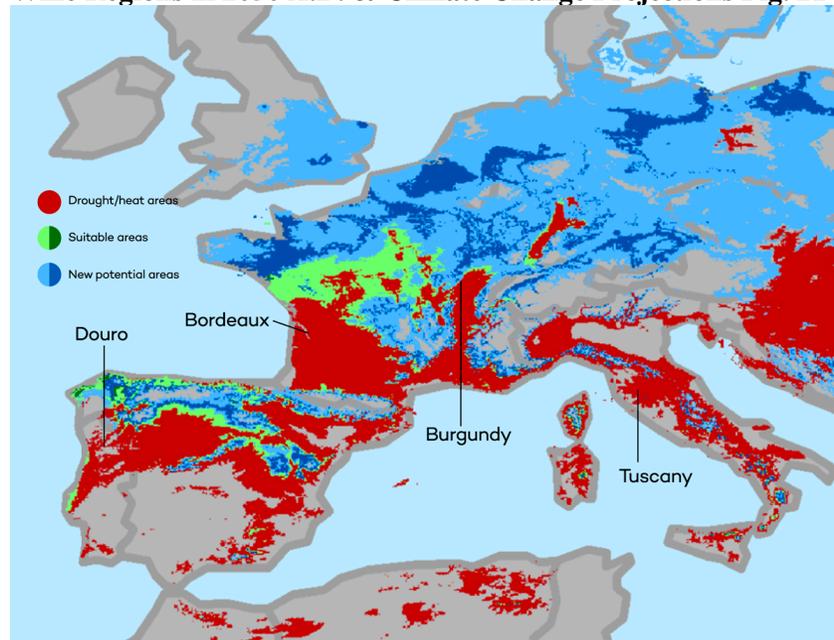
¹⁷ <https://www.euratlas.net/history/europe//index.html> (All maps)

Appendix E
European Wine Regions, Figs 20, 21

Stanford's Map of Modern Wine Regions Fig. 20¹⁸



Wine Regions in 2050 A.D. & Climate Change Projections Fig. 21¹⁹



¹⁸ http://www.stanford.co.uk/Europe-Wine-Wall-Map_9782843541636

¹⁹ Hannah, Lee, et al. "Climate Change, Wine, and Conservation." *PNAS*, vol. 110, no. 17, 8 Apr. 2013, pp. 6907–6912., www.pnas.org/content/110/17/6907?tab=author-info.

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