

The Epidemiology of Innovation

Tim Stock^{1,2(✉)}

¹ scenarioDNA, New York, USA

timstock@scenariodna.com

² Parsons School of Design, New York, USA

stockt@newschool.edu

Abstract. To better match the complex challenges innovation presents, it is critical to consider an approach and methodology more akin to epidemiology – a method that accounts for the full picture of how trends in culture are evolving. A process rich with layers. One that recognizes often overlooked triggers to new behaviors. One that is exploratory, yet grounded by real data and structured by cultural parameters. An approach that unites consumer anthropology with data science.

Keywords: Anthropology and ethnography · Branding · Design thinking, Design philosophy, and Design patterns · Marketing · Semiotics: sign/symbol/icon design · Data science

1 That's Funny...

Scan the headlines of business journals and you might believe everyone is deeply invested in a transformative and dynamic long view of the markets they serve. The measure of a great company today is how innovative it is. Over \$650 billion is spent on innovation efforts globally. But what do we really mean when we use this term? The efforts do not reflect the outcome. Scratch the surface of research and a dismal picture emerges. A recent McKinsey poll revealed that 94 % of managers are dissatisfied with their company's innovation performance [1]. One of the key factors appears to be a persistent corporate mindset that rewards conclusions over evolving intelligence.

Technology has fundamentally transformed how trends and product adoption work. In order to be innovative, innovation requires the cultivation of inductive practices over deductive practices. Practices that encourage risk and experimentation in a framework of ongoing nuanced insight into how the complex markets are processing the world around them. As Isaac Asimov put it: “*The most exciting phrase to hear in science, the one that heralds new discoveries, is not ‘Eureka!’ but ‘That’s funny...’*” [2]. This is the framework we need to embrace if we are to tackle the complex challenges of 21st century markets. Our pursuit of innovation needs to embrace the *process of uncovering knowledge* more than *confirming what we think we might know*. There is a unique complexity and speed to how markets function today. The people are way ahead of our traditional research practices.

2 An Epidemiological Approach

To better match the complex challenges that innovation presents, it is critical to consider an approach and methodology more akin to epidemiology – a method that accounts for the full picture of how trends in culture are evolving. A process rich with layers that unfold over time. One that recognizes often overlooked triggers to new behaviors. Processes can be exploratory, yet simultaneously be grounded by real data and structured by cultural parameters. The ideal approach unites consumer anthropology with data science. Why? Because we need the human in the picture, and our own biases out of the frame. Innovation stagnates when our understanding of how the world works gets stuck in ineffective models of insight.

Without the guidance of culture, it is easy to get lost in the influx of information. And without a meaningful measurement of this flow of important cultural data, we will miss the next transformative idea. W. Lee Howell of World Economic Forum writes “*Over the past three decades, value creation has shifted from the efficient production of goods and services globally to generating greater shareholder returns financially – both approaches are proving to be outdated and unsustainable. Today long-term success rests on two pillars: Creativity and Society*” [3]. Today, people shape our products more than our products shape our people. It is the serendipity found in the human shaping that needs to be captured.

3 The Challenges of Hidden Biases

A great quote from Michael Lewis’s book *The Big Short* is “Truth is like poetry. And most people fucking hate poetry” [4]. The true value of insight is only as strong as the actionable truth it empowers. The reality is that truth becomes dangerous when organizations do not have the materials and techniques to execute on that truth. This is typically where bias slips in. We begin to see the insight as consisting of stuff we currently understand and know how to implement. It simplifies our task and makes our goals concrete. Unfortunately, our insight then becomes a reflection of our current state of literacy rather than a way to challenge and expand that literacy. Equally worse is when we invest heavily in a new idea without any ongoing validation. Bubbles are a product of bias. Our approach to research must encourage an *always on* and *always connected* mode of engagement. Lest we throw the proverbial baby out with the bathwater.

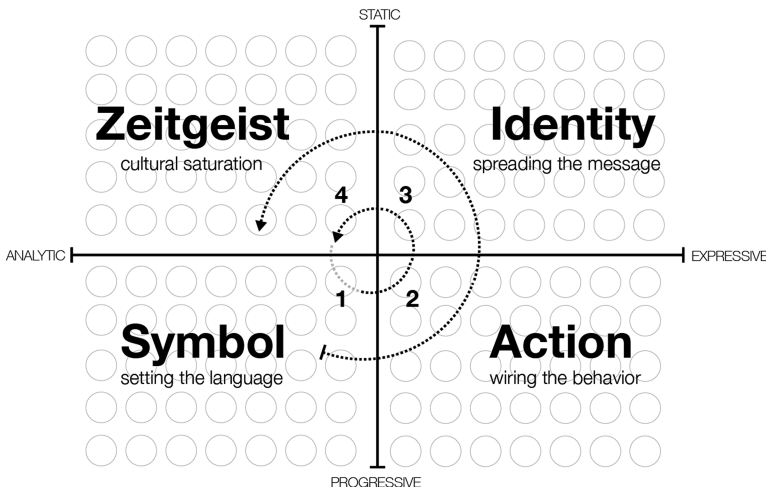
These biases are a cognitive deficit. We assume we know. Or if we see something we don’t know we block it out. The greatest obstacle of innovation is how these biases keep our cycle of ideas in a loop of existing preconceptions. That cascade of assumptions infects the ideation process and stagnates transformative ideas. Confirmation bias and the bandwagon effect can pollute the process of innovation in different ways. Both in curbing the application of new ideas as well as blindly supporting ideas that we become convinced in groupthink are innovative. The true test of innovation must always be made in relationship with the social and cultural context. Our methods should help us see what is actually working in culture. It should train the process in an inductive visual literacy that curbs quick conclusions and keeps the ideation in sync with nuances and fluctuations as they evolve.

The potential for bias increases as the size of the data increases, like a large pool of nothingness that we are burdened to make sense of. A key feature of epidemiology is measurement in relation to a population at risk. Not the entire population. And so this follows suit with tracking trends that drive innovation. In order to see where human desire might take us next, a smaller tighter universe must be decided upon. Innovation can thrive if we are better tuned to these small early signals and are able to track how they migrate and adapt over time. If the universe is too broad, the trends that seemingly appear are vague and meaningless. In such cases, what presents itself as trend is the lowest common denominator of ideas. Those kind of ideas thrive only within the confines of our existing vocabulary. This does not lead to innovation. It leads to more stuff, but never propels forward thinking.

Studying smaller groups of people and being able to extract important insights is the foundation of effective epidemiology. We don't cure disease by sampling the entire population. We find cures by being able to see the parts of the population that are behaving in unique ways. We can then use methods to extrapolate that insight into what it means in relation to the whole population. It is a systems thinking approach to how things play out in the world. Similarly to understand an emerging trend you must be able to tune your research to find the signals that are only visible in a smaller part of the population but will be impacting the overall population in time.

4 A System and Method of Culture Mapping

We developed a semiotic methodology called Culture Mapping to make the nuanced and evolving dynamics of culture easier to track and pattern. We first used this method as part of our ethnographies to structure linguistic patterns in the data gathered in field work. We wondered what if we added new technologies such as natural language processing and machine learning to transform the consulting method into a scalable software tool. This has resulted in a patented method of cultural analysis that feeds



software that allows us to track emerging signals and patterns over time [5]. It has become a tool that works alongside the creative process to keep ideas grounded in how culture might respond. Much like how human populations respond to new vaccines.

5 Visualizing and Patterning Cultural Data

We developed Culture Mapping into a patented semiotic algorithm for analyzing the patterns and migration of culture and trends. The result is a functioning API that collects and structures semiotic data from both open and closed data sources. This semiotic data consists of the signs and symbols put out into the world (online and offline), knowingly or not, by human beings. These signs are both words and images. And they come from diverse sources of both closed and open data. A closed data set could be books, magazines, songs and fanzines. Open data would be social media and other linguistic corpora. They all can be processed for key cultural signifiers using systems of natural language processing informed by analysts with expertise in unique subject matter areas.

It's a balance from human to machine and back again. Our algorithms, based on our matrix structure, are intended to learn from the data collected, and query back to us. The process is akin to gardening. Cultivating and propagating to understand the relationship between unique strains. The process is repeatable and scalable. Is it an empirical technique? Is it quant? It's a new gray area. We are quantifying language by plotting cultural language at data points. The task is not categorically sorting, but truly mapping the coordinates of cultural signs and symbols. Once we map and visualize the data, we can step back from it and begin to analyze and consider connections. This mapping keeps the creative process engaged in signals as they emerge and migrate over time. We become invested in a living system that we are designing to. This method affords us a way to shape our empathy to consider a variety of potential scenarios that may arise from the products and services we design. We can confidently consider a segmentation that is grounded in the reality and patterns of culture.

Current methods of data analysis are flawed because they allow bias to enter unexpectedly. It happens because we are too quick to look for finality in the data. When we look at information in pie-charts and table graphs these visualizations impose an implied conclusion to the analysis. We think if it looks right, it must be right. It is only human to seek a single clear action from the information. But we need to build confidence in thinking deeper. The data masks the physics that shape these recorded outcomes. Methods such as sentiment analysis over-simplify the results to a binary of positive or negative and is recorded only if the signal becomes loud enough. These loud signals are muddled with cultural noise that is not taken enough into account. If we are not considering the triggers of the response, we are not considering the empirical truth of the data at all. Our methods must help us stay engaged with the data in creative ways. Our methods must help us be brave in our quest for innovation.

When visualizations gloss over important nuances that might lead to critical behavioral shifts, we all lose. It leads to findings that are impossible to integrate into the creative side of the innovation process. It leaves no room for inspiration. It dictates.

Potential viability of product is interwoven with potential desirability of product. The only way of seeing that vision is to use a cognitive framework. We need our insight into culture to be fused with our way of imagining and making new things. As we create, we must be able to connect ideas to a living and evolving system that contours future potential.

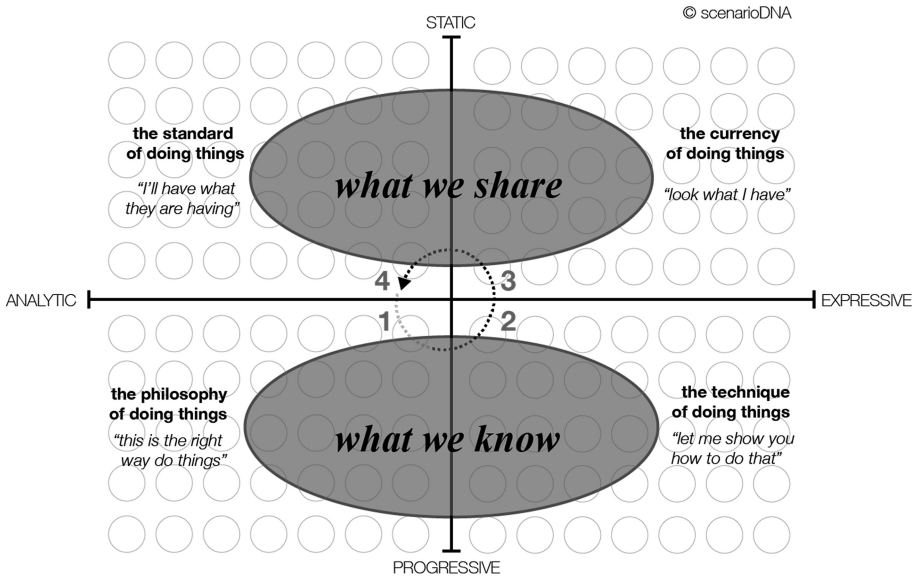
Visualizing expressive linguistic data offers an inductive process of mapping cultural patterns, migrations and evolution across genres. This inductive process is what separates semiotic thinking from design thinking, which follows a more deductive approach. Whereas design thinking lands on a new concept, semiotic thinking allows clients to see the cultural system unfold over time. Our empathy drives great ideas, but it cannot live in isolation. Ideas must stay connected to the way culture continuously works through its cognitive frameworks. The reality is that the successful products we design are made in the minds of the culture that consumes them. That consumption constantly adapts and integrates what is made, the way a human being sees as appropriate. That is the necessary living state of innovation, and our technology has to synchronize with that reality. Our ability to pattern the linguistic parts of the whole will better assure that products and ideas have long term health in the culture they seek to impact.

6 Connecting with the Human Genome

Seeing synergy, tension, diversity and void gives us places to start asking questions, probe and think: “What don’t we know?” “What might happen next?” and “Why?” We need to get to the point where we know all that we could. The goal of a visualization should be to flush out and conjure up all the things in our power to know. The ability to see how meaning is being created, cultivated and shared over time. We must cultivate an approach that allows to see the system of culture. We have to get the nuances of the humane genome onto our radar as they evolve, adapt and mutate over time and under changing conditions.

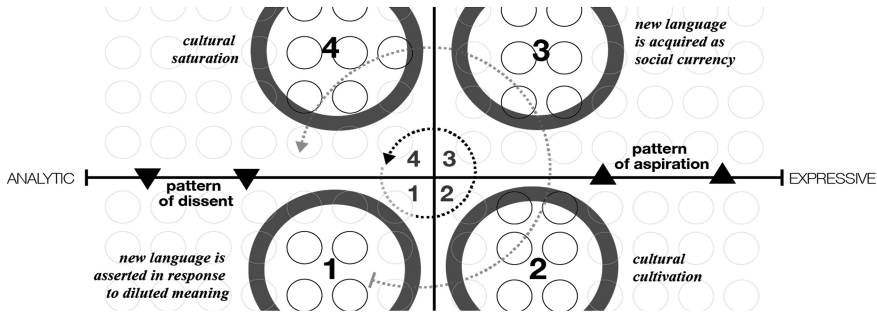
Our implementation of effective and sustainable innovation requires that we deepen our understanding of these cultural signals to empathize opportunities and anticipate evolving conditions. The context of human events determines how stories develop. Culture emerges as reinforcement of ideology. Our cultural traits, values, and beliefs are different and diverse. That is the power of human beings. Our constant expressive ability in making our world is powerful and not to be underestimated. We shape the culture of our world. That is incredible.

Everything we consume is rooted in a system of meaning creation. The choices we make are connected to a network of language that we tap into cognitively to make decisions for ourselves and other people we are responsible for. That first time we purchase a product is predetermined by information we have been subconsciously collecting that makes it permissible. We tap into meaning already cultivated by social networks engaged more intimately in the symbolic value of these attributes. The same brand attribute has unique meaning depending on the context shaping that meaning. We can see that unique expression of meaning in context and understand more clearly how motivation and behavior are linked. The same signifier may imply personal knowledge to some while to others it implies its value as social currency.



By structuring the language of the products we consume we can see two key patterns that shape the evolution of meaning. First, the networks that shape *what we know*. These networks determine *the philosophy of doing things* as well as *the techniques of doing things*. It is the symbolic starting point of all product attributes. The right way of doing things is a cultural response in opposition to currently accepted methods of production that have become diluted of their original meaning. A pattern of dissent that emerges to resolve the weakness of the meaning as it is more broadly adopted. This process of dissent and creation of new symbolic value moves through culture and eventually reaches a tipping point of adoption where the symbolic becomes the new badge of social currency. The hipster moment for all things is the moment of broader adoption. And it is important to note the cycle moves faster and faster the more connected the consumers are. The moment of *being cool* is fleeting. It's the time for companies to start prepping for decline and oversaturation, not latch on to more of the same.

Consider, luxury. Concepts such as luxury require a cultural context of what we value as indulgent. However, for its symbolic meaning to be further cultivated and integrated into the cultural genome it must be wired to the cultivation of technique. The symbolic needs to be made physical. Indulgence needs to demonstrate its physical state of being. An expressive extension of that philosophical starting point. Then it can manifest as a physical and emotional experience, encompassing everything from sources of materials to techniques of making. The expressed language of these cultural narratives serves to wire the value of the new language as repeated and ritualized behavior. We can't frame something like luxury unless there is a symbolic root of cultural meaning. That root begins long before the market consumes and shares more broadly the product attributes. And the knowledge must be first understood culturally through smaller tighter networks before social sharing can work effectively.



The patterns that emerge are critical to understanding how social groups directly shape the product's meaning. These patterns are the living experience of the design attributes of the products we develop. Recognizing that phenomenon can help feed incremental investment in layers of innovation. Some with short-term benefit and other that must be cultivated over a longer term. How we invest must be less reactive and more responsive. If we can synchronize to the patterns of culture we can better encourage an ongoing state of innovation at different levels. The organization should be picking up on the smallest signals and knowing how to respond to those patterns.

7 Diversity Is Critical

A lack of diversity is the enemy of innovation. If you want to increase the creative potential of your innovation efforts it is important to understand how diversity works as a critical ingredient. That diversity includes not only how we gain the knowledge and insight for product innovation, but also the mindfulness of keeping a healthy diversity in the markets we serve. In the natural world, genetic diversity holds the key to the ability of populations and species to persist over evolutionary time through changing environments. Homogeneity weakens us. It's foolhardy to be homogenous. The simple process of interacting with people who are different forces us to prepare and adapt better for what comes next.

Markets share these same conditions. Markets become weak from lack of diversity. We recognize the signals of this commoditization too late as existing methods of tracking dilution often register only once the information cascade has caught critical mass. A better method of tracking is to be able to visualize the signifiers that emerge in response to the over saturation. There is a built-in cultural mechanism that resists this dilution. Seeing this as a living system of language can have a powerful impact on how ideas emerge and are propagated within the company.

Critical themes emerge when we begin to track the narrative of products. It makes the importance of sustainability more obvious. We can see the ways short-term techniques can actually erode the system of meaning currently working in culture and work against long-term goals of the company and society. Our idea that once we find something working well in a market, we invest our attention to moving everyone to that way of seeing things. The imperialist point of view. The reality is that there is a built in trigger to

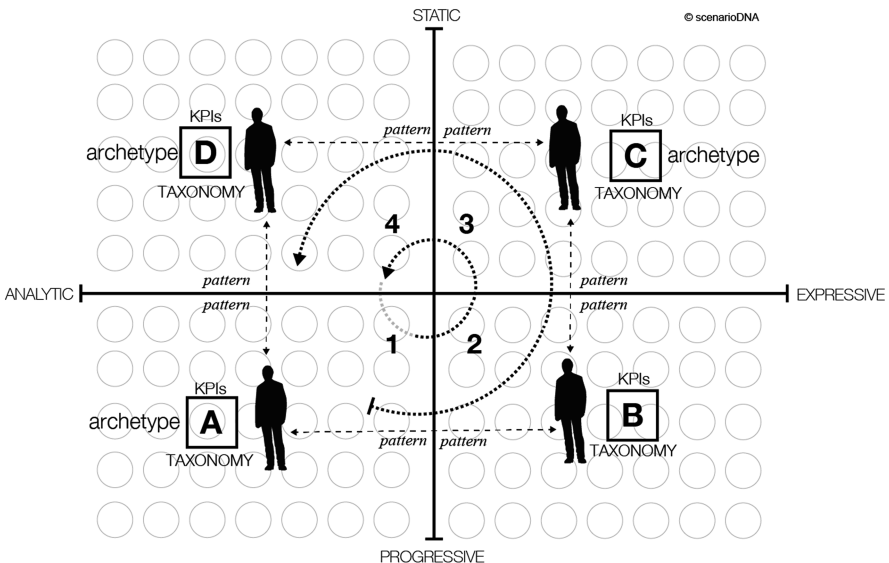
dilution of meaning. Once certain product attributes are overtly marketed, they immediately begin to lose their original value. Like a cultural immune system to uniformity.

Patterns of aspiration and dissent are in constant motion. We can see as language migrates that meaning changes and that change becomes a good indicator of future sustainability. The fact is that sustainability is dependent on seeing this pattern of meaning adoption so as to understand how erosion of meaning will manifest and what language emerges to inoculate the cultural system in response to the dilution. Companies are faced with upsetting the continuity when confronted with mandates for innovation. Seeing the pattern of dilution early can help us invest in innovation platforms that integrate gradually and help evolve the DNA of existing methods and techniques.

8 A Living Research Framework for Innovation

Our goal should be to create a living prototype of innovation platforms. The process of ideation should continue as products and services are introduced into the marketplace. The way we develop new platforms must leave room for ongoing adaptation. It should not end from project to project, quarter to quarter. Different clusters will hone unique attributes of the product through their own social mechanism of kinship. Archetypes emerge as models of perception and behavior can be structured according to the language. These archetypes establish the parameters for the future state of our product. Visualizing that process helps translate the specific action the organization can take in the form of innovation platforms.

When we conduct ethnography, we seek a picture of what is going on. The problem is that the structure of that research is often only a snapshot. Living archetypes, on the other hand, serve as physical manifestations of taxonomies. We can dynamically riff off of them. We can conduct field research and match the signifiers in research to ongoing

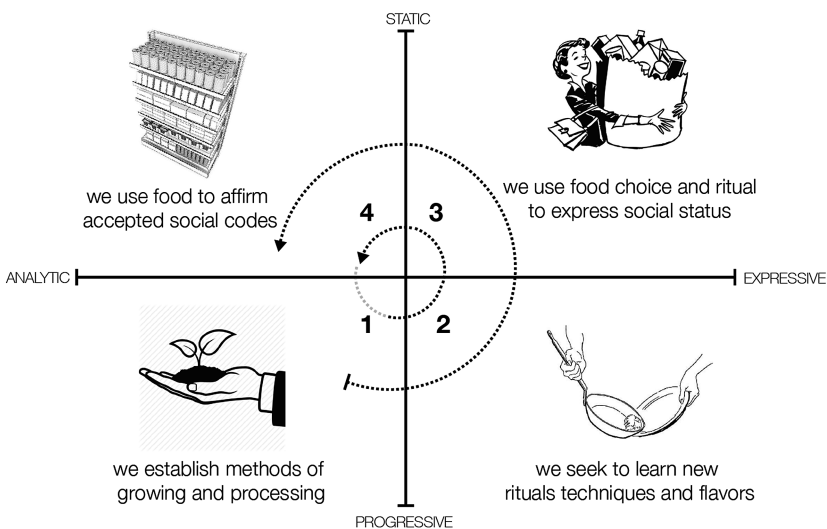


tracking of how these archetypes continue to evolve past the point of the fieldwork. We can correlate fieldwork to open data sources and other cultural corpora. This elevates fieldwork to a new plateau to see more nuance in how ritual and behavior is working and probe on elements that we can see from other data we are collecting simultaneously.

9 Developing a Practice of Synchronized Innovation

In the case of a global food and beverage company, culture mapping helped visualize how consumer knowledge of certain product attributes was evolving. The critical benefit is to understand how each attribute works at different levels of resonance. Some are more pronounced and obvious in the cultural chatter, others are still taking shape in the context of evolving social phenomenon. Shaping a sustainable food portfolio requires working on a number of different levels the same time. Solidifying existing authenticity while also investing early in new ways of doing things so these new methods integrate and continue to evolve believably as an expression of the organization. An example of this would be to begin using language such as organic without investing in what that means as a ongoing cultural discourse tested by parts of the social organism.

The standard trendspotting approach is to scan for new signals and work to integrate those that are working into the product, to cosmetically badge a new language on top of the existing product rather than grow new authentic value. This does little for the sustainable meaning of the portfolio. It also accelerates the dilution by commoditizing its meaning. The system of culture immediately begins to work to inoculate against such manufactured authenticity. Every piece of language from packaging to product to messaging and narrative should reflect an authentic representation of how things are



made and done by the brand. Consumer shift to local producers is a signal of the expectation for that transparency. Localism is a cultural system response to the mistrust of commoditization. Innovation platforms have the opportunity to engage culturally with consumers at every point in the value chain. Understanding how that cultural exchange works will make the connection both authentic as well as an ongoing learning opportunity for the brand. The cultural response can help us tune platforms as they evolve in their integration with the company.

Visualizing the way product attributes are being cognitively processed in the context of culture helps the company invest in smaller details that have much greater impact. When we can see these emerging signals in the context of a broader system, it helps bolster investment in nascent areas for the category. Being first is good. Being first with a vision for how that can evolve and change over time is real innovation. We should assume there are different levels of engagement going on in the culture that consumes our product. What we want is symbiotic relationship with investment that makes for healthier and sustainable brands.

If you look at the evolution of organic over the last ten years, we can see that organic had been a food subculture for decades as industrial methods were subsidized by government programs. Our supermarket shelves were reflections of an affirmation of this cultural zeitgeist. To a consumer, organic before the 1980s would be subversive. But as organic methods are wired into recipes, cookbooks, food co-ops and restaurants, organic becomes the cultural elixir for currently imposed concepts of what food means. As yuppies seek new consumption to demonstrate social currency, these subculture rituals get picked up and recast as badge. We see organic taking over more than 80 % of supermarket shelves today. This story evolved over time. And with the wide acceptance of organic as cultural zeitgeist today, there is new language being formed in dissent of that dilution. Organic becomes meaningless to the subcultures that formed its original value. They now move further to deepen the symbolic value in response to the co-option and dilution. It is a genetic process of counteracting cultural homogeneity. We see new language like “raw” and “biodynamic” emerge as a response to the broader adoption of organic throughout the population.

10 Global Diversity as Engine for Sustainable Health

Another example of culture mapping’s practical value is looking at how brand value evolves from region to region. The assumption is that if a product is doing well in one country that we simply need to build awareness to make it work similarly in a new market. This does not hold true. Innovation is served by reframing our approach to be more in tune with the unique dynamics of the new market and pattern those attributes to how perception is uniquely evolving there. If we force the new product, it may appear stable, but under the surface it is eroding the sustainability of its value. We don’t see this erosion unless we are tuned to these patterns. These new markets can also have immense value beyond their own borders in developing new narrative strains. Our approach should recognize each market’s unique value in helping more mature markets regain health. Again, the goal should be a diverse system of healthy sustainability.

11 Conclusion

Change is inevitable. The question is what we do about it along the way. Our participation in the world must evolve to sustain and cultivate the kinds of change that will help us. Conversely, we must also catch the kinds of change that will undermine our long-term health. The hardest part of this evolution is to recognize innovative as learning more than knowing. If we can open ourselves to this new literacy, we can help shape a truly dynamic and participatory relationship to innovation.

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