

**How Messages and Ideas Spread:
A Personal, Cross-Disciplinary Approach**

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Abstract

Through interviews with artists, professionals, entrepreneurs, and academics, this project combines personal stories and independent research to reach a nuanced understanding of the ways ideas and messages spread across space, time, and culture. This project refutes the popular belief that messages and ideas spread from person-to-person, like a virus. Finally, I propose a new framework, the ecosystem model of diffusion, and show how it offers a more comprehensive and nuanced understanding of the spread of messages and ideas in a culture.

Introduction

This project seeks to answer a seemingly simple question: how do messages and ideas spread? Does the viral diffusion model, embraced by the media and marketing industries, provide an adequate and sufficiently useful explanation? What are its limitations? Through a series of interviews with professional designers, medical practitioners, business leaders, and scholars—I uncover the strengths and weaknesses of the viral diffusion model, and propose a new framework.

The initial spark for this project came from a paper I completed for an MLA Proseminar, the Philosophy of Science. During the process of researching that paper, I came across the work of programmer, researcher, and technological provocateur Bret Victor and an interactive essay he published on his website entitled, “What Can a Technologist Do About Climate Change: A Personal View” (2015). The impetus for that essay, Bret shared, started with a message he posted on social media:

Frustrated by a sense of global mis-priorities, I blurted out some snarky and mildly regrettable tweets on the lack of attention to climate change in the tech industry (Twitter being a sublime medium for the snarky and regrettable). Climate change is the problem of our time, it’s everyone’s problem, and most of our problem-solvers are assuming that someone else will solve it. (Victor, 2015).

What followed were six broad technology-based initiatives that Victor argued would help raise public awareness of the dangers of climate change. Those initiatives included the production, moving, and consumption of energy; tools for scientists and engineers; and the

development of new types of media for understanding complex scenarios such as legislative approaches to combatting climate change. In that portion of his essay, Victor implores journalists and the website developers that serve them to explore interactive methods of storytelling that provide better context and capture the reader's imagination and exploit their curiosity in ways that traditional linear storytelling techniques cannot. The essay itself served as a demonstration of the format for which he was advocating. In addition to a number of illustrative images and charts, his essay makes use of simulations and models, so readers can explore issues of climate change using interactive interfaces.

In one section of the website, readers can explore the nuances and implications of a real-world policy debate: the Obama administration's 2009 Car Allowance Rebate System (CARS; also known as Cash for Clunkers). CARS was designed to reduce the environmental impact of passenger vehicles. The program set aside \$3 billion in federal funds to encourage consumers to trade in their gas-guzzling cars (those that got 18 m.p.g. or less) for a more efficient model (one rated for at least 4 m.p.g. greater than the owner's original vehicle or at least 22 m.p.g.; How does "Cash for Clunkers Work", 2016). The law provided a rebate worth as much as \$4,500 for each trade-in vehicle that met program requirements.

After reading the summary of the proposed law above, a reader might be left with more questions than answers. Will the legislation achieve its goal: a reduction of CO₂ emitted by passenger automobiles? How much will it cost the government? What assumptions did legislators make when crafting the bill? These questions—and the difficulty in answering them in a compelling, readable manner with just static text—demonstrates the potential for interactive storytelling methods.

To capture the reader's interest in the details of the legislation outlined above, Victor's version of this story features interactive text and simulations to help readers more fully understand the possibilities of the CARS program. Readers can change the amount of federal funding earmarked for the program (up from \$3 billion to \$6 billion, for example), and watch as the numbers explaining the effects of the legislation instantly change to reflect the new assumptions. More funding means more people will be able to take advantage of the program, thereby further reducing CO₂ output. Readers can then adjust other features of the law, such as the average m.p.g. of the new vehicle and that of the trade-in. Thus, one can know in real-time how much more CO₂ will be saved from entering the atmosphere if we require participants to purchase a car that gets 52 m.p.g. instead of the law's actual parameters (22 m.p.g. or a 4 m.p.g. improvement).

Interactive storytelling encourages readers to explore and critique the legislation's underlying models. "Model-driven material can be used as grounds for an informed debate about assumptions and tradeoffs," Victor writes (2015). It might even help reduce partisan gridlock, Victor asserts:

Instead of seeing an individual proposal as "right or wrong," "bad or good," people can see it as one point in a large space of possibilities. By exploring the model, they come to understand the landscape of that space, and are in a position to invent better ideas for all the proposals to come. Model-driven material can serve as a kind of enhanced imagination.

Interactive narratives help citizens understand that the crafting of legislation is negotiable, Victor argues. In a democracy, when a member of congress proposes a solution with a

certain set of assumptions, that's not the end of the story. The representatives and the legislation they propose can be challenged and improved upon.

My project takes Victor's ideas and proposals and applies them to the realm of communication. The project use simulations, models, and other interactive storytelling techniques to explore the ways in which messages and ideas spread in a culture. This topic has been an interest of mine since business consultant and author Seth Godin published *Unleashing the Ideavirus* (2000). It was an exciting concept for a then-aspiring writer—particularly in those relatively early days of the web, before Facebook, Twitter, or YouTube helped the word *viral* gain mainstream acceptance: that one's ideas could spread far and wide, without the help of a massive advertising budget. This topic also neatly encapsulates the diverse range of coursework I've completed while pursuing my Master or Liberal Arts degree, including statistics; behavioral economics; communication classes on the topics of attitude and behavior change, social revolutions, and the history of media; an English class on the topic of interviewing; and an anthropology class about digital media.

Methodology

Overview

This project explores the diffusion of messages and ideas with the help of personal interviews with professional designers, medical practitioners, business leaders, and scholars. The primary objective of this project is to provide readers with a more nuanced explanation of the ways in which messages and ideas spread, conveyed in an immersive storytelling environment that encourages exploration and learning.

The Interviews

I conducted ten interviews with academics and professional practitioners. I chose my interviewees based on a combination of personal connections, recommendations, and a search of faculty biographies on the University of Pennsylvania website. It was important for me to include a mix of academics and professional practitioners, to maintain a balance of theoretical and practical perspectives. I interviewed scholars and practitioners from the fields of design, fashion, linguistics, political science, marketing, entrepreneurship, and medicine. My interviewees represent a cross-section of individuals interested in persuasion, evolution, issues of collective behavior, and more.

Personal interviews were an important part of this project, since I was researching a topic about which little published work was available. This approach also allowed me to pair my research with personal narratives, which have been found to be easier for people to understand and remember (Klein, 1998, p. 182).

Here's the complete list of individuals I interviewed:

- Dr. Ian Lustick, political scientist, University of Pennsylvania;
- Dr. Robin Clark, linguist, University of Pennsylvania;
- Dr. Peter Dechenery, film historian, University of Pennsylvania;
- Mr. Allan Espiritu, graphic designer, Rutgers University;
- Ms. Bernadette Paolucci, fashion designer, RuffHewn;
- Dr. Guy Grossman, political scientist, University of Pennsylvania;
- Dr. Michael Baime, director and professor of medicine, University of Pennsylvania Center for Mindfulness;
- Ms. Pamela Groves, entrepreneur, Baby Word Play;
- Mr. Christopher Wink, co-founder, Technically Media;
- Dr. Jonah Berger, author and professor of marketing, The Wharton School.

The Project

Since a project about the spread of messages and ideas isn't very useful unless it can be shared with others, for the final phase of this project I created an interactive website (accessible via <http://capstone.marchummel.com>). First, I transcribed each interview (totaling more than 17,000 words) and produced four long-form stories supported by my independent research. Next, I transformed each story into a website with interactive components, including agent-based models (ABMs), a form of computer simulation that uses the interactions of autonomous agents to predict and understand complex social systems (Axelrod, 1997, p. 3). ABMs have been applied to the study of politics, linguistics, sociology, economics, crowd behavior, anthropology, and more (Funk & Jansen, 2013, p. 2). ABMs allow researchers to explore complex social interactions and simulate hypothetical scenarios that would be impossible to conduct with the experimental methods available in the real world.

ABMs are particularly well-suited to inquiries that involve many independent actors interacting in an environment, such my present interest in the diffusion of messages and ideas.

It's my hope that my use of interactive storytelling techniques, including ABMs, will help engage readers and empower them to explore the implications of these diffusion processes. My hope is that readers will discover new opportunities and connections that I'm not even able to anticipate. Next, I'll review the literature regarding the viral diffusion model, address its limitations, and introduce my proposal: the ecosystem diffusion model.

Literature Review

Scholars have been comparing the spread of messages and ideas to the propagation of viruses for more than sixty years. H.G. Landau (sociologist, psychologist, and statistician) and Anatol Raport (a Russian-born American mathematical psychologist) were the first to explicitly compare the diffusion of information to that of diseases. In the fifteenth edition of the *Bulletin of Mathematical Biophysics* (1953), they asserted that the spread of information could be expressed with formulas similar to those used to predict the spread of disease epidemics (p. 173). Landau and Raport focussed solely on the abstract mathematical possibilities of the viral diffusion model; they don't mention any potential limitations or suggest that the analogy might be expanded beyond the realm of mathematical formulas.

Nearly a decade after Landau and Raport published their formulas, scientist William Goffman and public health scholar Vaun Newill published a paper that applied the viral diffusion model to the spread of messages and information in an article entitled "Communication and Epidemic Processes" (1967). Goffman and Newill were the earliest authors to enthusiastically embrace the analogy between the spread of a disease and the spread of information. They take the analogy to new heights, asserting that some ideas are more *contagious* than others, similar to

the ways in which certain *diseases* are more contagious than others. Here they lay out the crux of their argument:

Clearly an epidemic process need not be restricted to describing the transmission of an infectious disease, but is a general abstract process which can describe a certain aspect of the behavior of any communication process. All that is needed is the appropriate interpretation of the process elements [...] for example, an individual may be susceptible to certain ideas and resistant to others. Once he is infected with an idea he may in turn transmit it to other individuals. Furthermore, certain ideas may be very contagious within a certain community while others remain dormant. (1967, p. 317).

In 1994, media theorist and author Douglas Rushkoff released *The Media Virus*. He uses the term “media event” to refer to publicity stunts, controversial public relationships, public health campaigns, and even new technologies like virtual reality. In the book Rushkoff insists that the term “virus” is *not* a mere metaphor:

Media events are not like viruses. They *are* viruses. They spread rapidly if they provoke our interest, and their success is dependent on the particular strengths and weaknesses of the host organism, popular culture. The virus code mixes and competes for control with the cell’s own genes, and, if victorious, it permanently alters the way the cell functions and reproduces. (p. 9; emphasis original).

Thus, we can confidently count Rushkoff among the more enthusiastic and literal adherents to the viral diffusion model, although he does confine his definition to *media* events, as opposed to subsequent theorists who broadened the model to encompass any kind of idea or product.

In 2000, Seth Godin released *Unleashing the Ideavirus*, which expands upon the viral diffusion model even further. Godin says that *sneezers* “infect the masses” with contagious ideas that spread far and wide, passing from person-to-person:

The notion that an idea can become contagious, in precisely the same way that a virus does, is at once common-sensical and deeply counter-intuitive. It is common-sensical because all of us have seen it happen: all of us have had a hit song lodged in our heads, or run out to buy a book, or become infected with a particular idea without really knowing why. It is counter-intuitive, though, because it doesn't fit with the marketer's traditional vision of the world. (p. 19).

The “traditional view of the world” to which Godin refers is the pre-internet world, when marketers were able to control public perception of brands and products with advertising, since consumers had few other avenues through which to discover information that might invalidate the marketer's claims. Social media, blogging, and other internet-enabled innovations has erased this information asymmetry in most cases (Saxton & Anker, 2013). Now that consumers have this power, Godin argues, marketers must re-invent their approach to encourage word-of-mouth advertising above all else. Godin is an enthusiastic proponent of the viral diffusion model.

In his 2007 book *The Tipping Point*, best-selling author Malcolm Gladwell asserts that the viral diffusion process can explain nearly every social phenomena, good and bad:

The best way to understand the emergence of fashion trends, the ebb and flow of crime waves, or the rise of teenage smoking, or any number of the other mysterious changes that mark everyday life is to think of them as epidemics. Ideas and products and messages and behaviors spread just like viruses do. (p. 8).

Clearly, Gladwell joins the ranks of the enthusiastic proponents of the viral diffusion model, and offers little skepticism regarding its usefulness.

Although the authors mentioned above don't limit their analysis to any particular medium, the internet figures prominently into the background of their discussion. It's a mode of communication particularly well-suited to the viral diffusion model. The design of medium itself emphasizes the importance of person-to-person sharing, since one can easily observe how many "likes" a piece of content receives on Facebook, or "re-tweets" an item on Twitter receives. The internet also appeals to our democratic ideals, since it's relatively common for unknown individuals to gain a fleeting moment of fame (or notoriety) from a piece of content, such as a home video of a pet, that was widely shared from person-to-person.

So why did the analogy between viruses and idea diffusion catch on? Might other natural processes, such as the growth of bacteria or the relationship between a parasite and its host be just as informative, if less euphonically pleasing? Next, I'll detail the most prominent limitations of the viral diffusion model.

Limitations of the Viral Diffusion Model

In a personal interview, author of the best-selling book on viral marketing, *Contagious* (2013), Jonah Berger defended criticism of the viral diffusion model, saying that he doesn't take the analogy too seriously. For him, the utility of the analogy trumps its limitations (personal communication, November 16, 2016):

Early on [...] there was all this discussion of what is a meme, is the gene analogy good or is it not. I think those debates are a little academic and not super practical. I think we

can study this stuff without perfectly answering those questions. I'm a real practical, pragmatic sort of guy. If it doesn't affect what I'm studying, I don't spend as much time thinking about it. I think we can study this stuff without perfectly answering those questions.

The assertion that ideas spread from person-to-person is at once common-sense, easily observable, incomplete, and misleading. While it may be true that some messages or ideas start with one person then diffuse from person-to-person until a critical mass of people become aware of the message or idea, most scenarios rely on a complex mix of processes that unfold simultaneously. I appreciate the practical usefulness of the viral diffusion model, but there are several important deficiencies that limit the extent to which we should rely on it to reliably explain the spread of messages and ideas.

When proponents of the viral diffusion model posit that ideas spread like viruses, they're using what has the markings of an empirical scientific theory to validate their belief that word-of-mouth diffusion is the future of marketing. But in reality, their work borrows the prestige of a biological process to give credibility and a cohesive narrative to a limited selection of handpicked anecdotes and case studies that happen to validate their proposition. The viral diffusion model fails to account for the unique circumstances and environmental contexts of a given individual; isolates the spread of a single idea when those ideas are actually in competition with others in the minds of those who process them; and assumes ideas spread from person-to-person instantly, with little-to-no intervention on behalf of the individual. Next, I'll dig into these limitations in more detail.

The Obfuscated Meaning of Virality

First, I'll discuss a limitation embedded in the word itself: its dual meanings. The word *viral* has come to connote both the spread of content from person-to-person *and* popularity (i.e. that it was seen by many people). As marketing researchers Goel, Anderson, Hofman, and Watts (2016) explain:

When a piece of online media content—say, a video, an image, or a news article—is said to have “gone viral,” it is generally understood not only to have rapidly become popular, but also to have attained its popularity through some process of person-to-person contagion, analogous to the spread of a biological virus [...] Both intuitively and also in formal theoretical models, therefore, the notion of viral spreading implies a rapid, large-scale increase in adoption that is driven largely, if not exclusively, by peer-to-peer spreading (p. 180).

The distinction between popularity and person-to-person diffusion is practically useless, since no one would care how a message or idea were diffused if it hadn't achieved some success. But it's important to be precise. When one says a message or idea “went viral,” it's implied that the given message or idea isn't just merely *popular*. It also connotes person-to-person sharing via the independent whim of a mass of individuals sharing the item with their peers, it also earns an implicit endorsement of the highest degree: that of authenticity. The content wasn't part of a paid promotion, therefore it's inherently more valuable. But when one says that *video went viral*, it's far more likely they're referring to the number of views the video received, not the way in which it was shared, since the former is a public-facing metric; the latter is only available to the host of the video.

To make matters worse for the proponents of the viral diffusion model, empirical research confirms the limited extent to which online content is actually diffused via person-to-person. In a robust study, Goel, Anderson, Hofman, and Watts (2016) tracked the trajectory of 1.2 billion Twitter posts (including news stories, videos, and petitions). They found that the average amount of times an individual piece content of content is relatively low: “for every 10 introductions of content, there are on average three additional downstream adoptions [... and] the vast majority of cascades terminate within a single generation; specifically, about 99% of adoptions are accounted for either by the root nodes themselves or by the immediate followers of root nodes” (p. 184). Although the authors acknowledge that true viral events undeniably exist, they are likely exceedingly rare (and were not observed at all in their relatively large sample of Twitter posts).

Ideas Are Not Diseases

This is perhaps the most obvious and uncontroversial limitation: viruses and the illnesses they cause are processed by the human body in a much different way than messages and ideas. Unlike the process through which the body eliminates toxins via the immune system, we have no mechanism through which we might effectively *clear* an idea from our bodies. While we can intellectually reject certain ideas and refrain from incorporating them into our worldview, even those incongruous ideas tend to stick with us, whether we like it or not. And unlike the transmitter of a disease, the propagators of ideas *intentionally* spread their message, hoping that it will inspire them to take some sort of action, change an attitude or behavior, etc. (Bettencourt et. al, 2005, p. 514). Ideas tend to inspire us to explore new experiences or try new strategies,

while diseases promote avoidance. Thus, it's in our interest to pursue new ideas. The same cannot be said of infectious diseases (Bettencourt et al., 2005, p. 514).

The Isolation Problem

How can we isolate one part of a complex, multi-part process, and ascertain whether or not a given part was the most influential element of the diffusion process? For instance, a consumer may come across a message or idea (say, a new brand of hair conditioner) from a broadcast television advertisement or a review published in a widely disseminated newspaper. From there, if the consumer is satisfied with the product they purchased, they may tell a friend about their experience. This scenario involves both broadcast and person-to-person diffusion processes. To which process do we attribute the successful transmission of the message (i.e. this conditioner is good)? Proponents of the viral diffusion model tend to exaggerate the extent to which one can attribute the successful transmission of a message or idea to person-to-person processes.

Susceptibility of the Receiver

Abstract epidemiological diffusion models treat a given virus as equally harmful to every individual. But in reality, some people are more susceptible to disease than others, for reasons of genetics, behavior, existing health issues, etc. In the realm of messages and ideas, individuals may be more innately receptive to favor a certain idea (i.e. religion) over another, and that affects the way a given idea is spread throughout a population. The person delivering the message or idea also affects the willingness of the receiver to accept it. As Thomas Valente, professor of

preventive medicine at the University of Southern California, says: “The effectiveness of one person in persuading another individual to change depends on the persuader’s perceived characteristics, such as credibility, expertise, [and] trustworthiness” (1995, p. 19).

Another consideration that might affect one’s susceptibility to a new idea is their existing beliefs and attitudes. Writing in *The Black Swan* (2010), essayist and statistician Nassim Nicholas Taleb elaborates:

Ideas spread because [...] they have for carriers self-serving agents who are interested in them, and interested in distorting them in the replication process. You do not make a cake for the sake of merely replicating a recipe—you try to make *your* cake, using ideas from others to improve it. We humans are not photocopiers. So contagious mental categories must be those in which we are prepared to believe, perhaps even programmed to believe. To be contagious, a mental category must agree with our nature. (p. 220; emphasis original).

The issue of receiver susceptibility is a significant limitation of the viral diffusion model, since it assumes that members of a population will obtain a given virus through mere exposure, regardless of the state of the receiver.

Timescale

The viral diffusion model assumes that once infected, the individual will be immediately infected with the message or idea. But what about messages and ideas that take a long time to take hold? Some ideas require practice and the active pursuit of an ability before they can be shared with another person (Bettencourt et. al, 2005, p. 514). Take the practice of mindfulness,

for example. Dr. Michael Baime is a clinical associate professor of medicine and director of the University of Pennsylvania's Center for Mindfulness, which has helped over 17,000 people harness the power of meditation through an intensive eight-week training program. Baime believes that the practice of mindfulness *does* spread primarily from person-to-person, but with a caveat (personal communication, October 20 2016):

[Meditation] is a virus that takes a long time to have an effect on somebody. When people do feel the impact of [mindfulness], it changes their lives. So they become proselytizers. They become really intensely committed to its dissemination. [From there], it does go from person-to-person, family member-to-family member, friend-to-friend, but it's not as contagious [as something that is rapidly diffused via social media, for instance]. One can't simply obtain the "meditation virus" and spread it to another person. Meditation has to be experienced before it can be shared.

Under the viral diffusion model, ideas are either accepted or rejected immediately after contact. But this isn't how ideas function in the real-world. As we learned above, some ideas need to be experienced before they can be spread to another individual.

Statistical Models

Any examination of the person-to-person diffusion process tacitly relies on simple statistical models used to predict the spread of a virus in a population. These models help epidemiologists predict the impact of a certain virus were it released in the real-world. These simulations assign a probability of infection to each member of a population, say 0.5, and determine the initial infection rate, say 10%. So if an uninfected member of the population

comes in contact with one of the 10% of those infected, they have a 50% chance of becoming infected. Once infected, that person also has a 50% chance of infecting those they come in contact with. Thus, one can calculate to how many individuals a given virus might spread. But by relying on such simple scenarios, these models fail to account for the real-world variables with which an actual virus would contend.

Generic models start with the assumption that a population contains homogenous agents, unlike the varied landscape of individuals a virus will actually spread within. They also assume the agents are distributed randomly, which is rarely the case in the real-world. Dr. Ian Lustick, professor of political science at the University of Pennsylvania, uses similar models to answer similar, albeit more complex, questions in his research. He uses simulations to predict how conflicts are likely to be resolved (or made worse) in war-torn nations, such as the ongoing conflict between Israel and Palestine. In his work, he goes to great lengths to ensure his models encompass as much nuance and detail as possible. Anything less, and the real-world applicability of his predictions are severely limited.

In our interview, he spoke of viral diffusion models in particular and their inability to consider real-world complications, such as relationships and neighborhood density (personal communication, October 21 2016):

What if all of the people who have the virus are concentrated in one part of the population, and only a couple of them are elsewhere, instead of them being distributed equally? The world isn't random. In fact, it's socially constructed so that some parts of the community are going to have very tight, regular interactions with one another [and] some are going to have very loose interactions. So depending on where the infection is

concentrated, the outcome of the epidemic will be completely different. So if you just model it with a diffusion model that's randomized, you won't be able to learn anything about this particular situation. If you're able to make a model where the geography means something, or the network topology means something, then you can actually say, "in this particular case it's much more likely that the trajectory of the epidemic will be like this, than like that."

Here, Lustick underscores the fundamental flaw of the viral diffusion model, and the dangers in using it to extrapolate meaning from it, let alone a marketing strategy. When Godin, Rushkoff, Gladwell, and others speak of the viral diffusion of messages and ideas, they're not only relying on a simplified model of a real-world process (the spread of a virus in a population)—they're using the mere abstract *concept* of a viral diffusion model. Their provocations ignore real-world contexts (such as network topology, individual receptiveness to a given idea, etc.) and the factors that affect the adoption and spread of the messages and ideas in question.

Now that I've outlined the most important limitations of the analogy between the spread of ideas and messages and that of viruses, I'll address memetics, a theory that's also concerned with the spread of messages and ideas in a culture.

A Note on Memetics

Memetics, introduced by author and evolutionary biologist Richard Dawkins in *The Selfish Gene* (1976), is a concept often discussed alongside the viral spread of messages and ideas, since it attempts to answer similar questions and is also concerned with the person-to-person transmission of messages and ideas. Most theorists agree that the term "meme" can be

used to refer to cultural objects and artifacts; processes such as ideas, instructions, behaviors; and pieces of information (Blackmore, 1999, p. 5). Philosopher and cognitive scientist Daniel Dennett offers some concrete examples in the book *Darwin's Dangerous Idea*: “Memes are tunes, ideas, catch-phrases, clothes, fashions, ways of making pots, or of building arches” (1995, p. 345).

Memetics relies on two primary constructs: competition and imitation. Memes *compete* with one another in a “meme pool” (Blackmore, 1999, p. xiv), similar to the ways in which genes compete with one another in a gene pool. Further, according to most theorists, an individual meme doesn’t spread at the behest of its creator; it’s an autonomous agent, spreading for itself, similar to modern understanding of Darwinian evolution as the competition between genes for the sole sake of the individual gene’s survival.

According to Dennett, Dawkins favors a literal interpretation of this analogy:

Meme evolution is not just analogous to biological or genetic evolution, according to Dawkins. It is not just a process that can be metaphorically described in these evolutionary idioms, but a phenomenon that obeys the laws of natural selection quite exactly. (1995, p. 346).

While I find the theory of memetics to offer a more robust explanation of the spread of messages and ideas in a culture than the viral diffusion model, it does have limitations. The biggest limitation for my purposes is its emphasis on imitation—the only process of transmission for which memetics allows. Certainly a significant amount of human agency is responsible for the spread of ideas and messages in a culture, as my section on the *Susceptibility of the Receiver* section above explains.

Dennett himself expresses some uneasiness regarding Dawkins' total embrace of the meme metaphor:

I don't know about you, but I am not initially attracted by the idea of my brain as a sort of dungheap in which the larvae of other people's ideas renew themselves, before sending out copies of themselves in an informational diaspora. It does seem to rob my mind of its importance as both author and critic. (1995, p. 346).

It's clear that while the framework of memetics is bolstered by its emphasis on competition, it also shares many of the same limitations of the viral diffusion model I outlined above, including timescale, susceptibility of the receiver, and the isolation problem. Next, I'll introduce my proposal for a new way of examining the spread of messages and ideas in a culture using the insights, anecdotes, and research of the individuals I interviewed for this project. The individual profiles for three of these interviewees is appended to this paper, following the Conclusion. The profiles presented there are an expanded version of the profiles that appear on the website portion of this project, which are accessible via www.capstone.marchummel.com. The profiles combine insights and direct quotations gleaned from my interviewees, culled from their individual work and life experiences, and are synthesized with independent research and a discussion of the limitations of the viral diffusion model. They each present evidence to support my new proposal, the Ecosystem Diffusion Model, which I will introduce next.

The Ecosystem Diffusion Model

A more fitting and comprehensive model for the process by which messages and ideas are diffused through a population is that of an ecosystem. While I recognize that I might be replacing

a model based on an imperfect analogy with another model based on a less-than-perfect analogy, I think the risk is justified if a more robust and useful result is achieved. An ambitious explanation of a complex, multifaceted process requires a more ambitious model.

I'll begin with a broad formal definition, and then move to examine some of the specific elements of an ecosystem that are relevant to the discussion at hand. The term *ecosystem* was coined by English botanist Alexander Tansley in the journal *Ecology* in 1935. Our understanding of this complex natural process has come to include many different connotations since its introduction (Willis, 1997). The term *ecosystem* has two widely recognized meanings, one from the natural world: a “biological community of interacting organisms and their physical environment” (New Oxford American Dictionary, 2016); and one used to describe man-made entities that share traits with their natural counterparts, i.e. “a complex network or interconnected system: Silicon Valley’s entrepreneurial ecosystem” (New Oxford American Dictionary, 2016). The latter meaning is more appropriate for my purposes, although the former establishes a precedent for using the model of an ecosystem outside the realm of ecology.

The ecosystem diffusion model offers many benefits over that of memetics and the viral diffusion model. First, we can view the spread of messages and ideas as a system in which a state of semi-equilibrium is maintained, where individuals are influenced by complex motivations including the need to signal group affiliation. This explanation better describes the spread of messages and ideas in the realms of fashion, linguistics, and other real-world phenomena, as we will see. An ecosystem is a system of diverse objects, forces, and living organisms whose actions impact one another both positively and negatively. Thus, the ecosystem diffusion model allows for a more dynamic understanding of the spread of messages and ideas: an environment in which

individuals interact with an idea, accept or reject the content contained within, and are changed or inspired to act accordingly. Second, it allows us to focus on whichever part of the system that is most useful for the research question at hand. Rather than focussing on the message or idea itself (as with memetics) or the diffusion process itself (as with the viral diffusion model), the ecosystem diffusion model permits us to examine the spread of messages and ideas from the holistic system-wide perspective, from the perspective of the individual, or that of the message or idea itself. Finally, the ecosystem diffusion model allows us to examine the spread of messages and ideas through multiple processes—person-to-person, one-to-many (broadcast), one-to-few, or any combination thereof.

The most compelling aspect of my proposed model regarding the spread of ideas and messages in terms of an ecosystem is the possibilities for which it allows. By focussing on the diffusion process between two individuals, the analogy between the viral spread of messages and ideas and that of diseases is conceptually limiting. What happens to the message or idea after it “infects” an individual? The ecosystem diffusion model encourages exploration, and for one to consider the complex, iterative, and often surprising origin stories and actual diffusion route of ideas and messages in a population.

Next, I’ll explore the implications and possibilities of the ecosystem diffusion model using the research and professional opinions of the diverse individuals I interviewed for this project.

Bernadette Paolucci, Fashion Designer

Bernadette Paolucci is a fashion designer with ten years' experience creating garments for women, including stints at RuffHewn, Anthropologie, and American Eagle. She's one of the few people in the manufacturing chain of fashion that participates in every phase of a garment's creation. She sketches (either on paper or computer) or drapes¹ the design for a new garment, sends it to a technical designer to ensure it will fit a variety of body types, and receives and approves the sample from the manufacturer.

While some part of the spread of fashion trends can be attributed to person-to-person imitation, there's also an important element of cultural signaling. The cycle of fashion is simultaneously based on and contributing to the larger cultural processes of differentiation, co-option, rebellion, and adoption, and rejection of prescriptive trends, from taste makers such as Pantone and the runways of New York, London, and Paris. "Some people want to wear what everyone else is wearing, so they can blend in. But there are also people who are trendsetters, looking for things they've never seen before, trying to stand out," Bernadette told me (personal communication, November 6 2016). This broad dynamic—the pull of new trends and the push against them—is called anti-fashion (Polhemus & Procter, 1978), and it's how most fashion movements get their start. Thus, the cycle of fashion can be considered analogous to feedback loops of an ecosystem, in which each stage of the process provides the energy needed for the next stage of the process.

¹ A hands-on method of designing in which a garment is prototyped on a mannequin.

Feedback loops are a common occurrence in an ecosystem. Take this example of a feedback loop affecting climate change researchers have identified, taken from an F.A.Q. published online by *The Guardian* (2011):

Because ice is light-colored and reflective, a large proportion of the sunlight that hits it is bounced back to space, which limits the amount of warming it causes. But as the world gets hotter, ice melts, revealing the darker-colored land or water below. The result is that more of the sun's energy is absorbed, leading to more warming, which in turn leads to more ice melting—and so on.

Returning again to fashion, let's take the recent "hipster" fashion trend, which includes "distressed" items of clothing, such as a new pair of blue jeans that are faded, bleached, and/or ripped to appear pre-worn, faded. Paolucci explained the backstory of this style to me, using a recent fashion trend (the "hipster" look) as an illustration (personal communication, November 6 2016):

Wearing flannels and plaid, things with holes, looking grungy, that was the hipster anti-fashion look. Then brands packaged it up, turned it into a commodity, and over-marketed it. They killed it. New fashion trends start as a backlash to a current trend then become their own thing. Whatever is different becomes fashion. Then it goes mainstream, loses its authenticity, and dies.

While the viral diffusion model would be able to explain a portion of this process, it would result in only a surface-level understanding. Once established, the hipster look did likely travel from person-to-person, as individuals observed others wearing items such as the ripped jeans in public, and were motivated to find and purchase them. But that doesn't explain why an

objectively inferior product—jeans with holes in them!—was adopted by a significant segment of the population. To understand that, one would first have to understand the hipster ethos from which the trend was derived, namely, the attitude that “perfect” things are inauthentic, and that authenticity is all that matters.

That is, one would have to understand that fashion trends aren’t solely created by individuals imitating one another. They’re also dependent on individual and group motivations, which can manifest themselves as an embrace or a rejection of an existing trend. The holistic ecosystem diffusion model allows for these motivations, since it acknowledges that we are influenced by the interaction between internal and external factors.

Robin Clark, Linguist

Robin Clark is a professor of linguistics at the University of Pennsylvania. Clark researches the evolution of language and the various processes and pressures placed upon language that influence the particular ways in which we communicate with one another. Clark spoke of the evolution of language in terms of a cycle, in which words fall in and out of favor, as they lose their emotive power or are co-opted by opposing political affiliations. Speaking of racially charged terms, Clark said (personal communication, September 21 2016):

About 120 years ago, African Americans started the NAACP. What does that stand for? The National Association of the Advancement of Colored People. Now would you ever call a black person a colored person? Never. It’s been demoted, collapsed [...] But now we’re beginning to see—of all things—*person of color* coming back. So it’s like every few years with these racial terms, you kind of have to re-invent them, because the signal

has degenerated. It may have lost its power, but it may have also gained unwanted connotations.

The process of promotion and demotion of certain words is what cognitive scientist, psychologist, linguist, and pop-science author Steven Pinker calls the *euphemism treadmill*. On his book, *The Blank Slate*, Pinker explains the process by which words fall in and out of favor: “People invent new words for emotionally charged referents, but soon the euphemism becomes tainted by association, and a new word must be found, which soon acquires its own connotations, and so on” (2002, p. 212).

As we saw with Paolucci above, this is a process that, when examined using the viral diffusion model, would point us toward a misleading interpretation of the phenomena in question. We could observe that the term “colored person” was once so widespread that an advocacy organization was created using that term in its name. But why did the phrase disappear from mainstream usage? According to the viral diffusion model, the phrase simply wasn’t used to communicate the subject to which it refers between individuals as frequently as it was previously. The “colored person” virus died out. In its place, a new virus that people preferred more, “African American” caught on, and people used that term to communicate with one another. Why the viral model correctly identified the fact that the term “colored person” was once popular and subsequently lost its popularity, we’re left to speculate regarding the reasons for this change.

But when we view this process through the lens of an ecosystem, we see that it’s really a cycle of differentiation and co-option similar to the cycle of fashion trends I explored above. Out-groups attempt to set themselves apart from the in-group by signaling their affiliation with

other members of the out-group by using a certain set of words or even an entire dialect. This resembles the ways in which cultural groups develop mutual fashion identities. When the language (or fashion trend) is co-opted by the masses or a smaller population that views that are incongruent with the originators, a new innovative form (or design) is more likely to be invented and embraced by that population. This is similar to the approximate state of semi-equilibrium properly functioning ecosystems maintain.

I turn next to my interview with graphic designer and Rutgers University professor Allan Espiritu, who believes the best way to get ideas and messages to spread is to make a meaningful, often disruptive, connections with his audience. Espiritu's work focusses on a population of one, and aims to change an individual's perceptions through their interactions with visual media.

Allan Espiritu, Graphic Designer

Espiritu's work doesn't aspire to be spread in the peer-to-peer sense; he aims to change the perceptions and everyday experiences of those who see his work. In the advertisements, books and other printed objects he designs, Espiritu tries to make personal connections that will stay with the viewer by disrupting the heuristics they use to automatically make sense of everyday images and forms. His work aims to create a lasting impression on the viewer, one that will change their perceptions as they interact with the world after they encounter Espiritu's work.

Espiritu's viewpoint is influenced by the often-confrontational world of fine arts and works like Marcel Duchamp's *Fountain* (1917), a porcelain urinal. Duchamp's *Fountain* inspires the viewer to question the boundaries of what might be classified as fine art, as well as the place

of everyday objects. Espiritu explains his affinity for fine arts and how it informs his work (personal communication, August 9 2016):

I think fine arts makes people question, and it's not accepted that graphic design can do the same thing. [People think] graphic design is disposable. I'm trying to make the everyday experience not an everyday experience. [But my clients] think the audience is dumb. They want to dumb everything down. So the perspective that I always try to bring into anything is, how do I keep people connected to the [things I make]?

In 2014, Espiritu created a multimedia promotional campaign for the Mural Arts Program. German artist Katharina Grosse visited the city to install a mural on the Northeast regional rail corridor between 30th Street Station and the North Philadelphia Station (Mural Arts Project, 2014). Espiritu created the look and feel of the installation as well as postcards, bus stop advertisements, and posters. He wanted to create a visual identity for the installation that captured the public's attention in a way that changed their relationship with fine art. One particular part of the visual identity was a postcard that was used to promote the installation. It was sent by direct mail and placed in public places and on community bulletin boards (such as those found in hotel lobbies and coffee shops). It featured multiple layers of typography, and each layer (and word) was written in a similar hue, giving the effect of words coming in and out of the viewer's consciousness. "A postcard isn't foreign, but the application, the way [the viewer is] interacting with it, *is* foreign. Most people get a postcard and throw it away. I'm not really into that. This postcard needs to be processed" (A. Espiritu, personal communication, August 9 2016).

In some ways, the goals of Espiritu's work is consistent with the theory of memetics. He's interested in the *idea itself* spreading in the minds of those who view his work, which is compatible with the aspect of memetics that describe memes as autonomous entities dedicated to replicating themselves for survival in the meme pool. His desire to create work that isn't disposable mirrors organisms in an ecosystem and their penchant for survival and dedication to their own reproduction.

But when Espiritu uses his work to change a viewer's perception of a medium and the possible ranges of perception that media can achieve, he's actually thwarting the theory of memetics. He doesn't want to replace an existing meme with one of his own creation. Espiritu is the anti-meme artist: he rejects easily replicated ideas and wants to break the heuristic processes his audience use to make sense of cultural objects. He wants his audience to question its relationship with ideas and reality. Theories of memetics don't allow for this type of interaction.

Further, if one were to judge Espiritu's work according to the viral diffusion of ideas and messages, it would not score highly. The kind of awareness he wanted to achieve was in the mind of just one person. In fact, the design of his postcard likely made it *more* difficult to share with another person, since its legibility was intentionally obfuscated. By definition, the viral diffusion model is limited to the examination of content that is transmitted from person-to-person, omitting a whole host of alternate possibilities in the process. While the goal of his project was to increase awareness of Grosse's installation, he had a secondary objective.

A key benefit of an ecosystem approach to the spread of messages and ideas is that it offers a framework through which we can examine the diffusion process from the viewpoint of an individual, a population, or the ecosystem at-large. When examined through the lens of an

ecosystem, we can explore the diffusion of messages and ideas from either a broad or narrow perspective, as appropriate to the research question at hand. We can put the *individual* at the center of our inquiry, examine how his ideas affect people, and how that might change the way they perceive the world around them in the future. While the viral diffusion model is limited to person-to-person contact, the ecosystem diffusion model permits us to examine creative works from the viewpoint of the individual, not just a population of infected, susceptibles, and immunes.

Limitations of the Ecosystem Diffusion Model

In some ways, my proposed model is a continuation of a conception of sociological phenomena that dates back to the earliest days of sociology as a discipline—to Comte and Spencer in the mid-nineteenth century and their conception of society as a biological organism (Park, 1921). But as mentioned above, I fully acknowledge the risk and potential fruitlessness of replacing a model based on an imperfect analogy with another model based on a somewhat problematic analogy. Next, I'll consider some potential problem areas and weaknesses of my proposed model.

Ideas Are Not Living Things

When discussing the limitations of the viral diffusion model, I pointed out that ideas are not diseases. It would be disingenuous to neglect to point out that, in fact, ideas are not literally the animals, energy flows, or minerals that one might find in an ecosystem, either. While I've argued that using the framework of an ecosystem to understand the spread of messages and ideas

in a culture is more useful than that of the viral diffusion model, the reliance on a wholly dissimilar phenomena involves a host of significant caveats.

In the viral diffusion model, diseases are a proxy for ideas, and viruses are a proxy for the particular type of disease and the specific transmission process (person-to-person). Under my proposal, the proxy for messages and ideas themselves are the individual components of an ecosystem—organisms, energy flows, feedback loops, etc. Thus, it's important to point out that the move from inanimate messages and ideas to that of living organisms and dynamic processes is not a clean one. However, I'd argue that messages and ideas are more like living things than one might first assume: they're alive in *us*. While messages have a physical form (i.e. as these words on a page), they are meaningless until they're processed by one's mind. Once there, they *are* somewhat analogous to living objects, since our memories aren't the stable objects we tend to believe they are, and are subject to revision each time they are recalled (Bridge & Paller, 2012).

Statistical Models

A noteworthy limitation of my proposed model is that it doesn't improve upon the statistical utility of the viral diffusion model; in fact it diminishes it further. While communication professionals could use a person-to-person diffusion model to predict how far and wide a message or idea might spread in a population, the ecosystem diffusion model offers no proxy for this. Thus, my proposed model is more of a conceptual framework, which can help our understanding of the true ways in which messages and ideas spread in a culture. Although it

doesn't offer a math-based counterpart, the utility of such models are largely illusory anyway, as I argued above.

Selective Omission

This is the one limitation for which I have no defense: I am selectively choosing which elements of an ecosystem to emphasize and which to ignore, for reasons of practicality and relevance. However, I'm not aware of any omissions that contradict my ultimate conclusions or diminish the usefulness of the present discussion.

Conclusion

What began as a journey to critically examine the usefulness and accuracy of an analogy we take for granted, the viral diffusion model for the spread of messages and ideas, has ended at a place that's not altogether far from that starting point: a conversation about an imperfect analogy. Over the course of ten interviews conducted with professors, researchers, authors, analysts, and creators, I came to fully recognize the limitation of the viral diffusion model. I also picked up on a common theme among the interviews: that messages and ideas spread in a manner that is more similar to the dynamics of an ecosystem than that of a virus.

My proposal, the ecosystem diffusion model, offers a more robust account of the spread of messages and ideas in a culture. First, we can view the spread of messages and ideas as a system in which a state of semi-equilibrium is maintained, where individuals are influenced by complex motivations including the need to signal group affiliations. Second, it offers a framework to examine the diffusion process from the perspective of the individual, the message

or idea itself, or the system itself. Finally, the ecosystem diffusion model allows us to examine the spread of messages and ideas through multiple processes—person-to-person, broadcast, or a combination thereof. Despite the limitations of the ecosystem diffusion model, I hope it creates a more nuanced and complete understanding of the spread of messages and ideas in a culture.

In the next section, I've included the expanded versions of the three individual profiles that appear on the website portion of this project, which are accessible via www.capstone.marchummel.com.

Interview One

Fashion through the lens of biology

Interactive version of this story is available at <http://capstone.marchummel.com>

Introduction

Do you remember when people (OK, mostly guys) thought it was cool to wear ridiculously baggy pants? Or when bell-bottom jeans were in style?

The fleeting popularity of these seemingly irrational styles raises an obvious question: How do fashion trends spread? Why did thousands of young ladies decide to wear tube tops in the 90s? Why were ripped jeans in vogue during the 2010s?

People who claim that ideas spread like viruses have a simple answer. They think that mere **imitation** explains the way fashion trends spread. Let's use the platform-shoe trend of the 1990s as an example. All the young women in a city were inspired to wear platform shoes, simply because they observed other women sporting them (either in-person or on social platforms such as Pinterest). Thus, platform shoes *caught on*, similar to the way a single child who is carrying the chickenpox virus can single-handedly wipe out the stellar attendance record of an entire kindergarten class.

In the *The Tipping Point* (2002), Malcolm Gladwell explores the power of the virus analogy to explain everyday events. He says:

"The best way to understand the emergence of fashion trends, the ebb and flow of crime waves, [...] or any number of the other mysterious changes that mark everyday life is to think of them as epidemics. Ideas and products and messages and behaviors spread just like viruses do."²

I will readily concede to Mr. Gladwell that some parts of the fashion cycle are likely driven by observation and imitation. But most messages, ideas, and fashions don't really spread

²Amazon synopsis.

like viruses. They spread more like interconnected objects in an ecosystem. In ecosystems, when one thing changes, it affects everything else.

After all, when a certain style becomes popular among the "cool kids," there will always be angsty rebels ready to react with a counter-fashion of their own. They'll wear their ball caps backwards, or to the side. Then the cool kids steal that new look, forcing the rebels to respond yet again. Out of this competitive drive to set oneself apart from others, new trends are formed. This is called anti-fashion.

To learn more about this process, I talked to a fashion designer who has worked for Anthropologie, American Eagle, Mossimo, and other well-known fashion brands.

Her name is Bernadette Paolucci.

She's petite, has bangs, and long brown hair she cuts herself. Bernadette is fond of vintage clothing and was wearing a long dress with little gold stars on it when we met. She was told it was made in the 1930s, although she questions the credibility of the vendor who sold it to her. The garments she makes have been on countless first dates, job interviews, and rollercoasters. Her work has even appeared in mainstream pop culture: the actress Alexis Bledel wore a top she designed while at Anthropologie in the Netflix reboot of *Gilmore Girls*.

Her brain is always tuned to her work. She knows that inspiration for her next design can come from anywhere, like from a chance encounter with a fashionable young woman on the street.

"Yesterday I saw someone wearing a pleated velvet emerald green skirt, about ankle length, and a washed indigo quilted cocoon jacket over it. I've never seen pleated velvet in that

color before. She looked great," Bernadette says. "When I see someone who pulls off a unique look, I take that inspiration back to the studio and manipulate it into a design, or incorporate into my own personal style," Bernadette explains. "I never would've thought to throw together that outfit with the velvet skirt. It was awesome."

Bernadette describes her personal style as a quirky mix of nostalgia and playfulness. She expresses her singular look through an extensive wardrobe of skirts, dresses, high heels, sweaters, and T-shirts curated over a lifetime of visits to thrift stores, flea markets, and events like the legendary bi-annual textile and antique show in Brimfield, Massachusetts. To Bernadette, fashion is a way of setting her apart from others and expressing her unique identity.

"I always try to stand out," Bernadette says. "At least a little bit. Not in a *crazy* way—but I want to look different, in a cute way. I want to be seen as professional. Fashion-forward."

The types of clothes we wear can show that we're different from other people. This is the logic at work behind the pricing strategies of breathtakingly expensive brands like Burberry and CHANEL. Since only a select few can afford to purchase a \$26,000 Burberry satchel, the woman who carries one broadcasts her exclusivity and uniqueness to everyone who might pay attention and is "in the know." And as much as clothing choices show that we're different, they also demonstrate that we belong to a group. The woman with the bag that costs as much as a new car is simultaneously signaling that she is distinct—and also part of an elite group of people who appreciate expensive goods produced by luxury brands.

"Most people want to wear what everyone else is wearing so they can blend in," Bernadette explains. "But some people are trendsetters and are always looking for things they've never seen before, trying to stand out."

As Joseph Heath and Andrew Potter explain in their book *Nation of Rebels* (2004), "distinction always involves inclusion and exclusion. It involves re-affirming one's membership in the superior in-group and, at the same time, disavowing membership in the inferior out-group" (p. 128).

This social dynamic underscores why the idea that fashion trends spread like viruses is wholly insufficient: It doesn't account for people's **motivations**. We don't blindly copy the attitudes, behaviors, and styles of others. We actively choose which people we want to associate with and ignore everyone else.

The analogy of an ecosystem is far more robust. The spread of fashion trends is more akin to the state of actions and reactions we see in healthy ecosystems, also called *equilibrium*. In an equilibrium, when one thing changes (say, the decline of the salmon population in the Pacific), it causes another thing to change (like the decline of the bear population, which depends on the salmon for sustenance). Every change, no matter how small, sparks a reaction somewhere else.

The same is true in the world of fashion when a fringe trend is co-opted by the commercial fashion machine and re-packaged for mainstream tastes.

"Most fashion trends start out as anti-fashion," Bernadette explains. "At first, being a hipster was an anti-fashion. Wearing flannels and plaid... things with holes... looking grungy. That was anti-fashion, because it took an existing thing and co-opted it for a different purpose. Flannels were originally thought to be just for farmers. But then hipsters started wearing them to underground music shows, and big fashion companies noticed and turned it into a bigger trend.

They marketed it and then they killed it. That's the cycle. It starts as a negative fashion reaction and becoming this thing. Then it becomes mainstream, and it dies.”

Once it was established, the hipster look did likely spread from person-to-person, as individuals observed chic people wearing ripped jeans and were motivated to find and purchase those products. But they didn't copy the look of just anybody. They imitated the people in *their* social group (the “in-group,” in Heath and Potter's parlance). Crucially, the ripped jean was congruent with a key part of the hipster ethos, and the attitude that “perfect” things are inauthentic. To hipsters, authenticity is all that matters. Unfortunately, we don't get to choose the types of viruses we become infected with. Thus, the social dynamic is another important indicator that the virus analogy is insufficient.

The analogy also leaves no room for the economic realities of the fashion industry. When someone gets a cold and spreads it to another person, there isn't a third-party that approves the transmission. But in order for a fashion trend to spread, it first has to be mass produced. The fashion companies (and the designers, buyers, and merchandisers they employ) are that third-party, and they decide which fashions are available to be spread in the first place. But in order to meet the critical mass of a true epidemic, the trend has to be purchasable.

In order to truly understand how fashion trends spread, we have to understand that fashion trends aren't solely created by individuals imitating one another. They're also dependent on social dynamics, availability, and individual motivations. The ecosystem model allows for these complications, since it acknowledges that we are influenced by the interaction between internal and external factors.

Interview Two

It takes more than a virus

Interactive version of this story is available at <http://capstone.marchummel.com>

Introduction

How did meditation and the Buddhist tradition of mindfulness go from a once-obscure ritual, to its relatively mainstream place in American culture today, with over 100 guided-meditation apps available on the Apple App Store? Those who claim that ideas spread like viruses might assert that meditation caught on by traveling from *person-to-person*, similar to the way in which the common cold can infect an entire office in just a few days.

That sounds intuitive enough. But messages and ideas like meditation don't actually spread like viruses. They spread more like independent entities interacting in an ecosystem. They react with other parts of the culture, and evolve as they bump into other people and cultural practices. The reality is a lot more messy than the "idea virus" adherents like to admit. To learn more about how meditation went from a sacred religious act to a mainstream American activity, I spoke to lifelong devotee and advocate, Dr. Michael Baime.

A clarifying note: "mindfulness" refers to a specific Buddhist ritual and state-of-mind. Meditation is part of mindfulness, but mindfulness involves much more than breathing exercises. For this essay, I'll use the term "mindfulness" when referring to this specific movement, and "meditation" when referring to the more generic act.

"I was looking at the sky and something happened."

Meditation found Baime when he was just six years old. He didn't learn about it from a friend, a book, or a documentary. As he puts it, he didn't *find* meditation at all. Meditation found *him*.

"I was looking at the sky and something happened," he explains. "I had this dramatic experience of time stopping, of falling in contact with everything. I found that I could make that feeling happen if I did certain things with my mind. Like the way I focussed on the sky, or if I walked at a certain pace."

He asked his parents if he could formally study mindfulness in the Buddhist tradition at around the age of twelve. They were supportive, but his options were limited by geography: the suburbs of Pittsburgh in the mid-1960s weren't exactly teeming with Buddhists. Baime's family eventually found two locals willing to mentor their son, and he began his somewhat-formal exploration of mindfulness by age fourteen.

In his mid-20s, Baime began studying with the Tibetan Buddhist Chögyam Trungpa. He seriously considered studying to become a monk, but his teacher pushed him to go to medical school where he would be able to help more people.

Baime followed his teacher's advice and went to medical school. He eventually found a way to combine his desire to help people and his belief in the healing power of meditation. After a stint as director of a medical practice at a Philadelphia-area hospital, he started the University of Pennsylvania's Program for Mindfulness in 1992. The program has since helped over 170,000 patients harness the power of meditation to cope with stress, trauma, and medical ailments.

With his background as a practicing medical doctor, I was particularly curious about his thoughts regarding the popularity of the term "going viral" to describe the spread of messages and ideas. When I asked him about this, he gave the kind of patient, well-thought out response one might expect from a man who has devoted his life to mindfulness.

"Along with the meaning of viral as denoting the wide dissemination of content, it also denotes a kind of superficiality and transience to me that seems not so meaningful," Baime says. "I associate it with the fleeting and superficial quality of a lot of our communication now. Books, big ideas, things that matter deeply don't tend to go viral. They actually require a subtle and complex narrative."

To Baime, the concept of something "going viral" is the antithesis of everything mindfulness stands for. Mindfulness is pro-thoughtfulness, pro-deep thinking. To him, the viral analogy is superficial and shallow.

There are two major problems with the assertion that mindfulness spreads like a virus, beyond the superficiality Baime insists it connotes. First: The viral analogy implies near-instant contagion. When you come in contact with a virus in the real-world, say when you touch the stainless steel door handle a person infected by the flu recently touched, the virus works its way past your immune system within hours. Mindfulness doesn't work that way. Second: Mindfulness came to the west thanks to the a favorable confluence of outspoken advocates, educational reforms, and changes to the political landscape. While the person-to-person spread of mindfulness helped it race across the U.S. faster than it may have otherwise—it's only part of the story.

Slow Viruses

While some ideas spread quickly, others take much longer to catch on. Compared to the rapid spread of online content, mindfulness travels from person-to-person very slowly. It's not like the most famous photo of 2015: the blurry image of a blue dress that spread around the

world in an instant.³ "It requires actual contact and a significant amount of exposure before it can be passed onto the next person," Baime explains. "You have to practice it for awhile before you feel the real impact of it. It doesn't happen like a cultural, internet-driven process. When people feel the impact of meditation, it changes their lives. They become proselytizers, intensely committed to its dissemination. [From there], it goes from person-to-person, friend-to-friend, sister-to-brother."

The Journey West

Mindfulness may have spread from person-to-person once it made its journey to the west. But how did it come to countries like the United States in the first place?

It spread throughout mainstream American culture thanks to a variety of forces, both direct and indirect. The story includes decisions made by military leaders, lawyers, church leaders, and even the directors of the higher education system. Jeff Wilson, professor of religious studies at the University of Waterloo, traces the explosion of mainstream attention toward meditation after the 1970s in his book, *Mindful America* (2014). He begins with U.S. legislators. In 1965, Congress passed the Higher Education Act of 1965 and the G.I. bill for veterans, which made it easier for Americans to go to college. Around the same time, schools started to add religious studies departments, many of which taught students the tenants of Buddhism (2014, p. 28). Then, Congress repealed a range of immigration laws which had restricted the ability of citizens from Asian countries to move to the United States.

³ <http://knowyourmeme.com/memes/thedress-what-color-is-this-dress>

These changes, coupled with an increasing familiarity with concepts of psychology and American military and political involvement in Southeast Asia, demonstrates how the seeds were planted for the mainstream-ification of mindfulness in the 1960s. Mindfulness and meditation didn't spread to the U.S. via person-to-person communication. It spread thanks to the unintentional alignment of forces that it *more likely* to catch on.

Unfortunately, the viral analogy is a concept without the nuance we need to account for this wide range of distinct elements that came together to prime the U.S. citizenry for mindfulness. But when we think of ideas as spreading like elements of an ecosystem, we can better understand the *real* ways in which ideas spread. In an ecosystem, independent forces come together to change the environment in a spontaneous, uncontrollable manner. Every part affects the other part. Heavy rainfall causes flooding, which causes animals to migrate, which gives way to new winners and losers in the food chain. A similar conceptual chain enabled mindfulness to spread across the west. Immigration, education, and other cultural forces created the environment mindfulness needed to thrive.

As we've just seen, the viral account for the spread of mindfulness is clearly insufficient. But it misses another important part of the story: the role of advocates and personal devotees (like Dr. Baime), and the power of the media to help these individuals reach a wider audience.

Media Influences

Once the cultural stage was set, mindfulness had the potential to spread across the U.S. But it likely would've remained as a fringe interest reserved for just a few members of society if it weren't for the work of several prominent advocates. One such early influencer is Thich Nhat

Hanh, whom Wilson calls "one of the [...] true celebrity Buddhists in the west" (2014, p. 34), noting that Hanh has been interviewed by Oprah Winfrey multiple times. He used his platform on Oprah and other channels to broadcast his message to a large audience simultaneously.

Jon Kabat-Zinn is another individual who helped popularize meditation in the U.S. He was one of the first to suggest there might be an empirical link between mindfulness and stress reduction. His work helped legitimize the mindfulness and popularized the idea the mindfulness could bestow concrete health benefits upon its practitioners.

Michael Baime agrees that Kabat-Zinn was an influential person in the mindfulness community. "He got lucky," Baime says, "because his work was featured in Bill Moyers' 1993 PBS special that became very popular. There was a lot of real interest in meditation right after that. That was the beginning of interest that provoked research." Thus, Kabat-Zinn helped usher in a new way to understand mindfulness which continues to the present day. Mindfulness is no longer an activity for the cultural fringes. It's widely acknowledged as a way to reduce stress, recover from an illness, and improve overall health. But Kabat-Zinn didn't create a movement by himself. He relied on television, the publishing industry, and other prominent mindfulness advocates like Deepak Chopra and Chögyam Trungpa to get his message across.

The role of influential individuals like Kabat-Zinn and the books, TV shows, and talk-show appearances that helped catapult them to fame underscores the limitations of the viral analogy. Most messages and ideas spread based on a combination of person-to-person sharing and more traditional broadcast channels, in which a message is disseminated by one company (or person) to many others. The person-to-person model of the spread of ideas sacrifices nuance and detail in favor of simplicity. But when you simplify the process too much, as I believe many

internet-era thinkers have, it loses its practical applicability and fools us into believing ideas and messages can succeed without the help of a range of other channels and prominent influencers.

Interview Three

Personal connections

Interactive version of this story is available at <http://capstone.marchummel.com>

Introduction

Designers shape our culture, but only for a moment.

Design is one of the most trend-adherent forces in our society. The worlds of advertising, product design, fashion, and architecture each tend to share a common visual vernacular that evolves, in-sync, over time.

Take the humble can of Pepsi. When the aluminum vessel for this well-known soda was first introduced in 1948, it was adorned with an illustration of a bottle cap with the words "Pepsi-Cola" emblazoned upon its face. The design evolved over the decades that followed, as the brands adjusted the appearance of their aluminum canvas to appeal to the ever-changing tastes and whims of the youth demographic. It went from an illustrative design with ad copy promoting the benefits of the product ("Genuine!" and "Fills two glasses!"), to the minimalistic aesthetic of the can sold in stores today.



Now let's look at Pepsi's penultimate rival in sugar water, Coca Cola. Compared side-by-side, we can see how the development of each respective design changed over time, with broad

similarities over the decades. Coke's early designs featured line-based illustrations and bold graphics, much like the cans of its eternal foe, Pepsi. The appearance of these two cans was particularly similar in the 1990s, when each featured textured backgrounds and a drop-shadow behind the lettering in their respective logos. The congruencies continue to the present day, with a design that's bold but minimal, with lowercase copy ("pepsi" and "classic," respectively). The broad design trends these products embody were not limited to Pepsi and Coke. The specific elements (i.e. the drop shadows and textured backgrounds of the 90s versus the current minimalist design) were in broad use in the graphic design of most industries, including advertising and software.

How does an entire visual culture coalesce around a single aesthetic, with no apparent coordination taking place between them? Proponents of the viral analogy for the spread of messages and ideas would say that this uniformity exists because designers are imitating each other as trends spread from designer-to-designer. When Pepsi's creative team tries something new—say a bold minimalist design—the creative folks over at Coke like what they see and give it a try, too. Pretty soon, minimalist design is everywhere: from the operating system on your mobile phone, to the design of the menu at your favorite restaurant.

But design trends don't spread from designer-to-designer. They spread more like individual entities in an ecosystem, where one small change effects the rest of an interconnected system. For every new trend, there's a person ready to resist it with a style of their own. Some designers, like Allan Espiritu, a professor at Rutgers University and prominent member of the Philadelphia graphic design community, eschew the idea of trend-based design altogether.

"My approach is definitely oppositional to traditional design," Espiritu says. "I'm not comfortable with traditional design. I'm more interested in the idea than what the visuals look like. I'm not a visual designer. I was always uncomfortable with that."

A Different Approach

Since design trends are always evolving, no one object is precious or permanent. What's new today is old-fashioned next week, and obsolete next month. To most designers, this is a fact of life. It's never questioned, if it's ever noticed at all. The constant chase of the latest new thing is how they make a living, after all. But some designers are uncomfortable with this fact and the environmental and cultural impacts they bring about.

"I'm in an industry that's disposable," Espiritu says. "Graphic design adds junk to the world."

To combat this waste, Espiritu makes work that people want to keep. After all, the only reason graphic design is disposable is because most people get a postcard in the mail, read it, and put it in the trash. (Or if you're like me, you read it and put it on the fridge until you move to your next apartment.) If you make things that are different and remarkable, people might be compelled to keep them forever, Espiritu figures. This is how he subverts the traditional (disposable) role of graphic design in society.

"I love graphic design but I hate being a graphic designer. Fine art is treasured while graphic design is not," he says. "Fine arts makes people question things, but it's not accepted that graphic design can do the same thing. And that's where it's always been kind of a problem for me. I always try to figure out how I can keep people connected to the things I make."

Espiritu's approach to graphic design is the antithesis of those whose sole goal is to get their work to "go viral." He wants to change the perceptions and everyday experiences of those who see his work. In the advertisements, books and other printed objects he designs, Espiritu tries to make personal connections that will stay with the viewer by disrupting the heuristics they use to automatically make sense of everyday images and forms. His work aims to create a lasting impression on the viewer, one that will change their perceptions as they interact with the world after they encounter Espiritu's work.

From Espiritu's perspective, ideas don't spread throughout a culture from person-to-person. They spread from *artist-to-individual*. From his studio in the Crane Arts building in Northern Liberties, Espiritu's GDLOFT produces work that he hopes you'll be compelled to keep. This is how he gets his ideas to spread.

The Idea Destroyers

PDA (Philadelphia Design Awards) is an annual competition for Philadelphia-based graphic designers. It's sponsored by the local chapter of AIGA, the professional association for design. Each year, designers from all over the Philadelphia region submit the magazine covers, product packaging, website designs, and advertisements they created during the preceding year. The top submissions are then chosen by a panel of experts and the winning work is featured in a beautiful paperback catalog, which is made available to visitors to the exhibition.

As an active member of the local design community, Espiritu was tapped to design the paperback catalog for PDA 2008. Each catalog features a brightly colored cover, spine, and back. But there's a twist: The color of each catalog is at least 1% different, making no two covers

exactly the same. When stacked, the spines display the colors of the rainbow. This is one of the ways Espiritu makes a connection with his audience.

"The idea is that each catalog is an original," Espiritu says. "So hopefully you won't throw it out. Because if you do, it doesn't exist. You've destroyed the idea. I always think about how I make people want to keep the thing rather than making it a disposable object. I have to think of something new every time," he says.

Espiritu's PDA catalog shows how color and a limited quantity of printed artifacts can challenge the assumptions we have about well-established cultural objects, like a paperback catalog. While he hopes that people enjoy his work and share it with others, he's more interested in the one-to-one connection between an individual, the final product, and its creator. For him, a project is successful only when it challenges your assumptions about how things are supposed to look and function. He rejects the kind of easily replicated ideas on which the viral analogy tends to focus. He wants his audience to question its relationship with ideas and reality. That's an idea that's not easily shared with others. But it's how Espiritu believes he can make a lasting impression on his viewers.

"I'm trying to make the everyday experience not an everyday experience," Espiritu says. "If you make someone work for something, I think they get more connected to it. And people want to do the work, in some cases. Or at least they'll keep thinking about it."

The Mural Arts Project

In 2014, Espiritu created a multimedia promotional campaign for Philadelphia's Mural Arts Program, a city-funded initiative which commissions artists to create paintings and

sculptures in public spaces. When German artist Katharina Grosse visited the city to install a mural on the Northeast regional rail corridor between 30th Street Station and the North Philadelphia Station⁴, Espiritu created the promotional campaign for the exhibition. The campaign included printed postcards, bus-stop advertisements, and posters.

Espiritu's design for the exhibition featured quotations from Grosse, arranged as intricate layers of typography. Rather than creating a literal representation of her work, Espiritu captured the spirit of her work. "I represented the artist's *approach* to her work, which makes no distinction between background and foreground. Everything is a canvas."

It was also designed to be difficult to read.

"I like the idea of confusion. Confusing the viewer. The words [on this postcard] go in and out. You'll stay with this because you'll wonder, was that a mistake? Am I supposed to read that?"

The allure of this project can be described by the gap theory of curiosity, established by behavioral economist George Loewenstein in 1994. His theory states that when we recognize a gap in our curiosity, it captures our attention and the gap demands to be fulfilled. He compares the pursuit of curiosity in biological terms, saying that information gaps "produce the feeling of deprivation [...] The curious individual is motivated to obtain the missing information to reduce or eliminate the feeling of deprivation." When our curiosity is satiated, the result is a feeling of pleasure. The very process of the pursuit of knowledge enhances "the pleasure subsequently derived from obtaining [the] information" (1994, p. 87).

⁴ <http://gdloft.com/portfolio/mural-arts-psychylustro/>

"If you make someone work for something," Allan suggests, "you'll make them more connected to it. The postcard isn't foreign, but the application, the way you're interacting with it, is novel. With a postcard, you're supposed to get it and throw it away. But I'm not really into that. With this project, the experience of getting a postcard isn't just 'Oh, I read it, now I'll throw it away.' This postcard demands to be processed."

It's through these little moments of confusion that Allan hopes his ideas will resonate with his audience and cause them to take fewer things about their visual landscape for granted.

"I try to disrupt the way you interact with graphic media. I'm interested in giving people a different experience. Because we're all doing the same thing every day. We're kind of zombies. And I hate to be bored. So how do I disrupt boredom of someone's experience? Even if it's just a stupid little thing, like a postcard. If you're distracted, then I've broken your everyday routine, and I've done my job. Maybe the next effect is you start to question everyday things. I like when fine art makes you question your everyday experiences, like walking, talking, or reading," he says.

Like traditional advertising and graphic design, Espiritu's work is designed to draw attention to his clients' work. But if one were to judge Espiritu's work according to the viral spread of ideas and messages, it might not score highly. The kind of awareness he wanted to achieve was in the mind of just one person. In fact, the design of his postcard likely made it more difficult to share with others, since its legibility was intentionally obfuscated.

The viral analogy is limited to the examination of content that is transmitted from person-to-person, omitting a whole host of alternate possibilities in the process. While the goal of his

project was to increase awareness of Grosse's installation, he had a secondary objective: to change the viewer's perception of everyday items, beyond just the one postcard.

A key benefit of an ecosystem approach to the spread of messages and ideas is that it offers a framework through which we can examine the process from the viewpoint of an individual, a population, or the ecosystem at-large. When examined through the lens of an ecosystem, we can explore the spread of messages and ideas from either a broad or narrow perspective, as appropriate to the research question at hand. While the viral analogy is limited to person-to-person contact, the ecosystem model permits us to examine creative works from the viewpoint of the individual, not just as a binary population of those who have been exposed to the virus, and those who have not.

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