

**Analyzing the Significance of Humanity's Social Mindset in Shaping History and the
Future**

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

Every year millions of students earn their undergraduate degree and are sent out to face “real life” being told that they are the future and that they will change the world. In essence we are under the impression that each and every generation would create a paradigm shift.

Historically speaking, it is statistically improbable that every individual will instigate a paradigm shift, let alone every generation. It only takes an idea to spur a paradigm shift, but how does an idea go from pen and paper to a living and breathing ideal in the physical world? Thomas Kuhn made the term “paradigm shift” a common phrase when referring to radical change; he described it as a breakdown of old ideas (Hairston, 1982). A common example would be Darwin providing scientific backing to what he proposed to be evolution (Lucas, 1985). This was met with resistance, yet his model prevailed because it was scientifically sound, and thus the paradigm shift took effect. However, historical and scientific evidence are not the only drivers behind this alteration in ideals as can be seen in eras such as the Renaissance.

A paradigm is described as a set of related ideas that are generally accepted such as Newtonian physics (Bird, 2018). Therefore a shift occurs when old ideals are challenged and eventually replaced (Rodriguez-Sickert et al., 2015). Such a shift occurred when Einsteinian physics challenged Newtonian physics, or during the Renaissance when science was incorporated into art, or even the Industrial Revolution as machines decreased human labor requirements. These events were major turning points in the history of the world that propelled humanity forward in terms of knowledge and technology. This brings around the question that I would like to explore: what does it take to instigate a paradigm shift? Rodriguez-Sickert et al.

(2015) explore this question and propose a model that attempts to account for a few of the complexities that push forward a new paradigm.

Throughout this paper I will investigate how to achieve such a feat by delving into historical paradigm shifts and their causes, and determining if they were intentional or not. Based on this information, I will explore why some unintentional actions create a paradigm shift, while other world changing ideas fail to gain traction. In order to explore what role society has to play in the implementation of a paradigm shift I will be using the STS framework of trading zones to see how the economic and social impacts affect the development of ideas.

STS Framework

Given the multitude of factors that affect the common social mentality, it would be beneficial to analyze this under the lens of trading zones. When a paradigm shift occurs, this is a result in a change in mentality, and for the collective human intellect to drive in this new direction, certain barriers must be overcome. Barriers such as tradition, understanding, and even ethics. Referring to the Industrial Revolution, these barriers are seen in the jeopardization of jobs, and the ethical concern of automation. Ironically we are still challenging these mantras today with the pressurization of the rise of artificial intelligence (AI). These barriers are overcome by trading zones connecting the known with the unknown. Trading zones will be useful in determining what common fields play a role in the spread of information, and what causes this radical change to gain traction among society. This loci of sharing knowledge is essential to bridge the intellectual gap that forms as a result of taking the existing conditions of society for granted, and accepting them as the absolute truth (Gorman & Werhane, n.d.). It is

pivotal to recall the usage of trading zones as I explore the factors affecting the collective human mentality.

Data Analysis and Discussion

Marketing

Manipulation of human mentality is hardly a new concept. Marketing has been around for centuries and it is ever more present today, especially as companies try to appease customers who are more interested in customization (Fuat Firat et al., 1995). A historical case where marketing is used to manipulate perception is that of Kutol Products wallpaper cleaner. However, this antiquated product now has a more familiar name: Play-Doh. When Joseph McVicker inherited Kutol Products Company, their most successful product was the wallpaper remover which clean the walls of soot stains that were a result of burning coal for heating purposes, but the introduction of natural gas meant the end of soot stains and the end of the need for wallpaper cleaner (Rowe, n.d.). McVicker saved the company with his knowledge of marketing and the economy. Due to the pliable nature of the wallpaper cleaner, he rebranded it as molding clay to play with, which is now known as Play-Doh (*Kutol Products Company - Ohio History Central*, n.d.). This simple change in name, and through some clever demographic targeting, the company was not only salvaged but it is still thriving today.

Marketing opens the trading zone for an exchange of ideas. A company intends to inform the consumer of not only what their product is, but why the consumers need it. Lamentably, some of the most brilliant products that were the result of thousands of man hours never reach the consumer market as intended. This was the case for Jim Clark. Jim Clark discovered the vitality of strategizing a marketing plan as he tried to implement his Interactive Television (ITV).

His device would allow individuals to access the internet through their television sets; unfortunately, this idea in 1992 was ahead of its time. How was Jim Clark supposed to know that the internet would be more accepted in the mobile phone industry than the television? As Kittu - one of Clark's co-workers - put it, "We solved a problem that was not that important to many people" (Lewis, Michael, 2000). Their problem was in the consumers interest. People did not want to spend five thousand dollars for this new piece of technology, because they did not have Clark's vision. This ties into the next factor in affecting human mentality, economics.

Economics

The complexity of economics is worthy of people dedicating their lives to the study of it. As George Washington said, "A people... who are possessed of the spirit of commerce, who see and who will pursue their advantages may achieve almost anything" (Straub, 2014). At the birth of the United States and certainly before then, the "spirit of commerce" has driven humanity to make illogical decisions. In hindsight one such illogical decision would be the institution of Leadership in Energy and Environmental Design (LEED) certifications, even though today the program is economically sound and strongly supported by the unlikely duo of environmentalists and politicians.

Today's world is faced with a growing problem in resource consumption and has drawn the attention of policymakers which has seen the transferral of agenda from the Millennium Development goals to the Sustainable Development Goals in 2015 (Schandl et al., 2018). One such proponent towards sustainability would be LEED certification. LEED is the main rating system to judge how sustainable new buildings are (Akçay & Arditi, 2017). While this is a great initiative that promotes a more sustainable lifestyle, it does not make sense why civil engineers

and architects went along with this, given that many expensive adjustments would have to be made on their building for that LEED certification. The reason can be found in many cities such as the District of Columbia which have made it a requirement that all new buildings be at least LEED Silver certified (*Green Building Act of 2006 | Ddoe, n.d.*). However, given that it is more expensive to construct LEED certified buildings, it tends to attract a higher income community which creates a whole new set of problems that can be looked into further (Hopkins, 2019). The social implications will need to be investigated further. Figure 1 signifies the impact that this program has had globally as of 2017, meaning this is the result of under two decades of dedication to this sustainability initiative. This global impact is evidence of a paradigm shift.

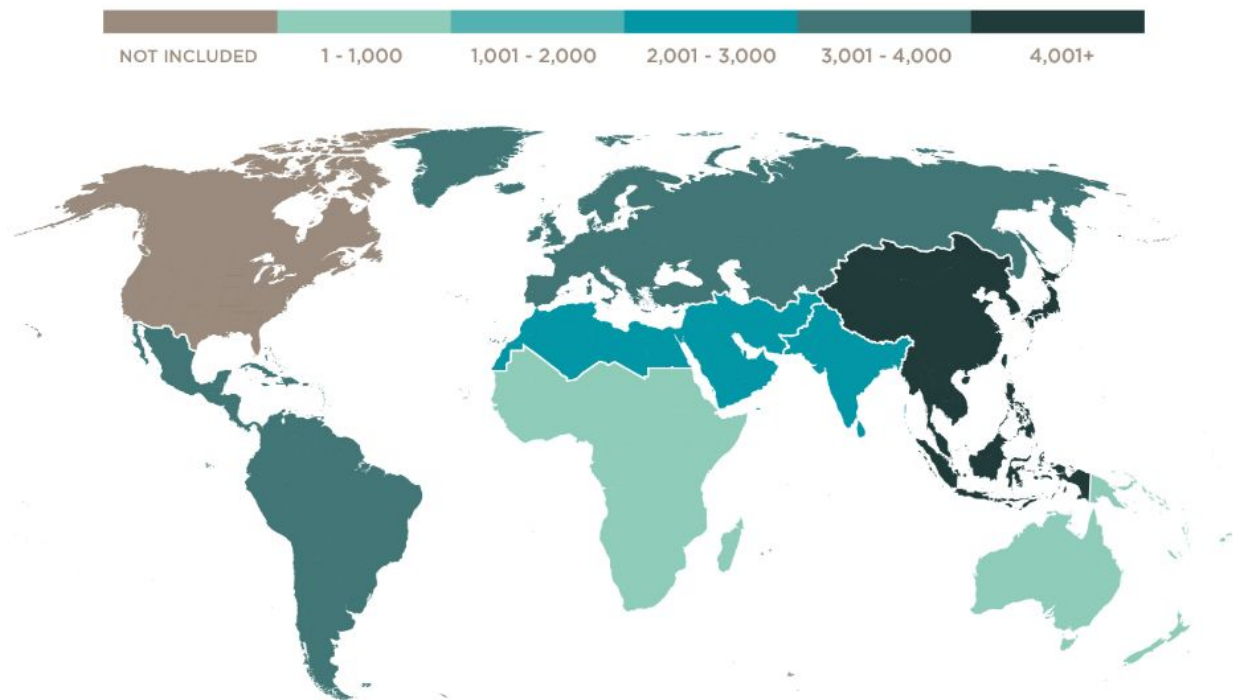


Figure 1. Map of the count of LEED projects globally - outside of U.S. and Canada (*UN Habitat Report Highlights Global Impact of LEED | U.S. Green Building Council, n.d.*)

The implementation of LEED was a paradigm shift of necessity, this was forced upon the world and policymakers acted as the trade agents of the trading zones to make sure it was

accepted even though it may not have been economically feasible. In this case all external factors were deliberately disregarded in order for this change to take effect. While LEED certifications created a paradigm shift, the environment won out over economic feasibility but there is another case study where a paradigm shift failed to take that seems to contradict this reasoning.

Why aren't road cells around today? Road cells collect the kinetic energy from cars to convert it into energy sources ("Recovering Energy from Traffic," 2019). We do not see these commonly today because countries cannot handle the economic impact on converting roads, nor is there confidence that it will last through all weather conditions in addition to normal use (Symeoni, n.d.). It will be interesting though to see if it will adapt to the market as Kutol Products did, or if it will remain as an invention of the past as Jim Clark's ITV. This sheds a new light on the situation because unfortunately, the economy usually holds greater weight than environmental impact when it comes to policy making. This is ironic due to how a healthy economy can be dependent on a healthy environment. The case of the LEED certifications seemed to be the exception to the rule.

The effect of climate change on the economy is attempted to be predicted through the hedonic approach, yet this can hardly be considered accurate because it fails to account for changes that people may implement such as using more fertilizer or even fluctuations in the stock market from exterior causes (Deschenes & Greenstone, 2004). Although a model for the future is uncertain, it is clear that a prosperous economy relies on the environment and vice versa. Therefore, it is necessary for trading zones to be able to prevent miscommunication and provide a vision for the future concerning economics and the environment, where it would be beneficial to both involved parties. Despite good intentions though, and the statistical backing,

economics and the environment will continue to vie to have greater control over people's ethical reasonings. This brings up the question whether one's intentions are really factored into the persuasiveness of sowing their ideas into their peers minds.

Intentionality

Films are created with the intent to grasp the audience's attention, and this is achieved in more ways than the content of the film. Successful films put extensive research into developing a solid background and plot that people can relate to. Additionally, marketing can be a key factor in whether a film flops, this would spell bad news because low viewership would mean low profit. Once again it is evident the influence that marketing has in people's daily lives. Everyone is familiar with the Disney franchise because Disney excels in reaching out to the public and generally delivering a widely acclaimed film, and they have been like this since the very beginning of the company. All factors were in place to create a paradigm shift, the marketing to the public, the economic feasibility of consuming Disney products (i.e. movies), all that was needed was an idea; that idea came in the form of the movie, *Bambi*, even though it was unintentional. The Bambi Factor refers to the greater sentimentality towards the preservation of wildlife and nature due to the anthropomorphizing of the forest creatures (*How 'Bambi' Hoodwinked American Environmentalists*, n.d.). This is interesting because this was not an intended consequence when the movie was made, but the audience seemed to take the message that the movie conveyed to heart, so how could a paradigm shift occur if it was unintentional? The answer lies in paradigm shifts that were intentional, and therefore all factors going into it were known.

Looking back on the LEED certification program factors such as the economy and the civil engineers' opinion were ignored to implement the program. The act of ignoring them did not mean that they were not present to change people's perceptions, but they were addressed in their dismissal to ensure the enactment of the plan. This was an important step forward in improving the public's emphasis on sustainable projects, however sustainable solutions today may appear outdated compared to technology developed in the future. This brings about a distinction that should be considered, since many times new technology is just improving outdated equipment, would an actual paradigm shift be occurring or is humanity just gradually adapting to circumstance. Due to Moore's law, the exponential rise in computer technology, this change will be even more difficult to distinguish as humanity would have to quickly adapt to the sudden jump in computing power available.

Improving vs. Creating

Currently one of the greatest influences on humanity's collection of ideals is the evolution of computer technology. Certainly there will be a paradigm shift in the future when artificial intelligence becomes more prevalent, in whatever form that may be. However, the question is whether a shift is occurring now. As previously mentioned, Moore's law is demanding people to adapt quickly, but is adaptation the same as a paradigm shift. I think the answer lies in the reasoning behind the adaptation. In previous well known paradigm shifts there seemed to be a goal, the Renaissance aimed to join art and science, Darwin's idea of evolution intended to prove his theory, the Industrial Revolution was directed towards automation of labor, but what is the purpose behind improving computer technology. There is no doubt that it makes life easier, and I am grateful for it as I type this paper on my laptop, but can making life easier be

an attainable goal? Would not there always be something in the way that can be improved upon? Time has graced humanity with hindsight in seeing the path that each previous shift in mentality has led to, but on the precipice of change once again there is a need for trading zones. Trading zones will allow knowledge to be shared about the plans for the future, and the capabilities of the software. Humanity's plans for the future even extends beyond our earthly atmosphere as my capstone group explored in designing a self-sustainable colony on Mars.

Technical Application

My capstone team designed a in situ resource utilization (ISRU) plant on Mars that would produce enough hydrogen and oxygen to fuel a return trip as well as have the capability to provide water and oxygen to the colonists. The design of this facility keeps in mind the effect on the environment and aims to be cost effective. The technology is available, so why is this not implemented on Earth currently.

We are stuck in a world brimming with technological ideas, but also one that is not always accepting of them. Yet it is imperative to have a paradigm shift in the usage of materials. Therefore, from the aforementioned evidence there must be factors to be considered. The recycling of materials must be economically feasible. Community programs may have more success initially than approving government agendas. However, not only must it make sense financially, it must answer the question why do people need it. This is where marketing comes into play. This must be presented as a society need instead of a societal preference, marketing will be able to achieve this without having the government crack down in a big brother fashion. Finally, it is important to share information whether company CEO's are discussing ideas, or

consumers need to be filled in the loop, this trading zone of information is pivotal in driving this mentality change forward.

Conclusion

Marketing, economy, societal opinion, and external factors such as the environment, each play respective roles in developing an idea into a worldwide phenomenon, and thus a paradigm shift occurs. These factors must be considered, whether they are being disregarded as with LEED, manipulated like with Play-Doh, or unintentionally create an effect as with Bambi. In each case, no matter the intention, people's perceptions were changed. This is not a perfect formula, but it is undeniable that economically feasible ideas that are popular with the public are most likely to gain traction. In the end, it is poetic that humanity paves the way for ideas to gain traction so that in return the ideas may pave the way for humanity's future. Therefore, manipulation of people's ideals literally has the power to shape history. Looking towards the future is uncertain since we are not granted the hindsight that we have when studying history. This uncertainty can be slightly cleared by the sharing of information through trading zones. Marketers, economists, engineers, and so on have a vision for a project, but it is through collaboration and communication that the project will succeed. The current social climate is dense with deliberations of COVID-19. However, this pandemic was treated differently based on the media coverage of how the public should respond by taking measures such as social distancing. These ideas are not new, but they are presented as a social need instead of a preference. Flattening the curve is evidence that the sharing of information through trading zones has the capability to greatly impact people's lives which is the point of instigating a paradigm shift.

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