



CULTURAL LAG ON ELON MUSK'S COMPANIES IN *ELON MUSK: TESLA, SPACEX, AND THE QUEST FOR FANTASTIC FUTURE*

A THESIS

In Partial Fulfilment of the Requirements for
The Bachelor Degree Majoring American Cultural Studies
in English Department, Faculty of Humanities
Diponegoro University

Submitted by:

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**FACULTY OF HUMANITIES
DIPONEGORO UNIVERSITY
SEMARANG**

2018



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PRONOUNCEMENT

The writer affirms authentically that this project is compiled by himself without acquiring any result from other researchers in any university, in S-1, S-2, and S-3 and diploma degree. In addition, the writer ensures that he did not take the content from other publications or someone else's writing except for the references mentioned in the bibliography.

Semarang, 6th September, 2018

Muhamad Irfan Fadilah

MOTTO AND DEDICATION

“The only thing that makes sense to do is strive for greater collective enlightenment.”

— **Elon Musk**

“Stay hungry, stay foolish.” — **Steve Jobs**

This thesis is dedicated to the reader and the writer

APPROVAL

**CULTURAL LAG ANALYSIS ON ELON MUSK COMPANIES IN
*ELON MUSK: TESLA, SPACEX, AND THE QUEST FOR
FANTASTIC FUTURE***

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The writer realizes that this thesis is far from perfection. Therefore, the writer will be glad to receive any constructive criticism and recommendation to make this thesis better. Finally, the writer expects that this thesis will be useful to the reader who wishes to learn something about cultural lag and its effect to the society.

Semarang, 10th August, 2018

Muhamad Irfan Fadilah

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ABSTRAK

Penulis melakukan penelitian terhadap buku Ashlee Vance yang berjudul *Elon Musk: Tesla, SpaceX, And The Quest for Fantastic Future*. Penelitian ini bertujuan untuk membuat analisa terhadap kondisi *cultural lag* yang disebabkan oleh perusahaan-perusahaan milik Elon Musk. Penulis mengadopsi teori *cultural lag* milik William F. Ogburn untuk membedah fenomena sosial budaya yang tertuliskan karena perusahaan milik Elon Musk. Metode yang digunakan adalah kualitatif dan penelitian pustaka. Penelitian ini menunjukkan bahwa perusahaan-perusahaan Elon Musk menyebabkan atau akan menyebabkan kondisi *cultural lag* di mana budaya material bergerak lebih cepat dengan adanya inovasi dan meninggalkan budaya immaterial. Keadaan *cultural lag* ini selalu menyebabkan adanya *social adjustment* dan di beberapa kejadian *cultural lag* juga menyebabkan *social maladjustment* dikarenakan oleh masalah lebih besar yang dibawa oleh kondisi tersebut.

Kata kunci: *cultural lag*, *social adjustment*, *social maladjustment*, innovation

ABSTRACT

The writer conducts a research on Ashlee Vance's book entitled *Elon Musk: Tesla, SpaceX, and The Quest for Fantastic Future*. This study aims to put together an analysis on cultural lag caused by Elon Musk's companies. The writer adopts theory of cultural lag by William F. Ogburn to dissect the sociocultural phenomena happening because of Elon Musk's companies. The method used in this research is qualitative and library research method. This research shows that Elon Musk companies is or will be causing cultural lag conditions where material culture moves faster with the help of innovation and leaves immaterial culture behind. This cultural lag always results in social adjustment and in several incidents cultural lag also creates social maladjustment because of bigger social problem they bring.

Keywords: cultural lag, social adjustment, maladjustment, innovation

CHAPTER I

INTRODUCTION

1.1 Background of The Study

According to biography book written by Ashlee Vance, entitled, *Elon Musk: Tesla, SpaceX, and The Quest for Fantastic Future*, Elon Musk and his companies are arguably the face of futuristic ideas and breakthrough innovations that defines modern society. For that matter, this book will be the base for the writer's research in understanding their impacts upon American society. One phenomena or impact that could possibly emerge from such innovation is called cultural lag and this theory will be utilized to analyze the effects of advanced technology made by Elon Musk's companies--Tesla, SpaceX, and SolarCity.

With SpaceX, his oldest companies, Elon has proven that cheaper and reusable rocket launchers are possible when the rests of the world only rely on their governments and expensive yet stagnant rocket companies. His second most famous corporation, Tesla has shown the world that people can have sustainable and eco-friendly electric vehicles without going too deep into their pockets. Products and services presented by Elon Musk's SpaceX and Tesla have become technological improvements that most certainly affect the culture of American society, to say the least. For example, Tesla recently released its latest and cheapest cars called Tesla Model 3, which cost only \$35,000 for the base model. Other electric cars with similar performance (e.g 0 to 100 km/h in under 6 seconds & 200+ miles range) will cost drastically higher while cheaper electric vehicles

can only provide nearly half of Tesla's cheapest model's performance (Digital Trends). On the other hand, SpaceX is proving to be a powerful competitor in aerospace business after launching the reusable Falcon Heavy rocket which costs only 56 million dollars with the ability to load 64 tons inside. For comparison, ULA will cost 225 million dollars per launch of its Delta IV rocket and the engines are not reusable (Mashable).

One of the observable direct impacts of such innovations in a society is called cultural lag: a concept introduced by William F. Ogburn in his 1922's book, *Social Change with Respect to Culture and Original Nature*, which exposes a temporary social discrepancy because "various parts of culture are not moving at the same rate" (Ogburn, 1947: 200). The word "lag" means that there is one part of a culture, called immaterial culture, left behind by the other part of culture, called material culture, mainly because of innovation (the discussion of these two parts will be addressed in Chapter 3, along with the variables). This theory will then be used to analyze Elon Musk's companies, whose information are acquired from Ashlee Vance's biography book about Elon Musk and his companies entitled *Elon Musk: Tesla, SpaceX, and The Quest for Fantastic Future* and other supporting sources from journals and articles related to them.

There are seven companies, namely SpaceX, Tesla, SolarCity, NeuraLink, OpenAI, Hyperloop and The Boring Company, which Elon Musk is a part of; three of which he is the CEO (Verge). Each has its own unique goals and products but they share something in common: Elon Musk's vision of technologically-improved human lives (Vance, 2015). Surprisingly enough, there are only three of

them which have sold finished products and services. They are SpaceX, Tesla, and SolarCity, a solar panel provider company. Unlike the rests of his immature companies (Hyperloop, The Boring Company, NeuraLink and OpenAI) the products and convincing development of his three other companies should make them worthy of the cultural lag analysis since their effects on the society are already evidently noticeable.

To prove aforementioned argument about cultural lag phenomena in Elon Musk's companies, let's take some of Elon Musk's companies' innovations for examples. With autonomous driving, Tesla seems to offer a driverless vehicle but actually, the company advises all driver of its cars to not leave the steer (Vance, 2015). However, it turns out be a real caution. There are cases, one of which a traffic accident that was caused by the driver taking his hands off the steer. Tesla argued that it is not to blame since they never advise drivers to rely solely on the Autopilot and more importantly, Americans have to remember that majority of cars are not autonomous yet and autonomous cars are not a complete solution to traffic accidents. Arguably, there should be a law that prohibits this behavior while this feature are getting better and many cars are adapting this feature. There is a clear indication that this is cultural lag because material culture (Autonomous driving ability) are moving faster than immaterial culture (lack of law).

Different thing goes to SpaceX. SpaceX tries to make an advanced rockets with low price but the development is deterred by slow bureaucracy. This phenomena signifies the existence of cultural lag here. A material culture (SpaceX

rockets) are affected by innovation, thus one step ahead of the immaterial culture (bureaucracy).

To this extent, in utilizing cultural lag theory as a mean of analyzing Elon Musk's companies and their cultural impacts—which two of them have been mentioned, there should be a valid source of information where all necessary data to conduct cultural lag analysis are provided. For this purpose, Ashlee Vance's *Elon Musk: Tesla, SpaceX, and The Quest for Fantastic Future* serves the function of being the primary sources of this study. Academic journal, online article and interview transcription of Elon Musk and his companies will also be used to give supporting arguments to this study. Even though the biography book is not the only source of data, the accessible content are expected to allow the writer to observe Elon Musk's companies thoroughly and understand his intention behind them without having to interview him in personal. Only if certain question posed by this analysis cannot be fully answered, other source of information will be sought.

Unlike films and novels, Ashlee Vance's book with its biographical nature provides distinctive material from which a research can be conducted. He writes this book by the help of qualitative interview and personal documents related to Elon Musk. Ashlee Vance visited many of Elon's close friends and family to construct a legitimate life story of him. Besides allowing us to see life's experience through Elon Musk's point of view, Ashlee Vance's book also feasibly assists us in seeing social change that has been affected by Elon Musk and his

companies. To support this argument, Brian Roberts, in his book *Biographical Research* says:

Biographical research has the important merit of aiding the task of understanding major social shifts, by including how new experiences are interpreted by individuals within families, small groups and institutions.

(Robert, 2002:5)

This argument, along with several careful measures to investigate biography¹, and historical evidence are going to form a valid and relevant framework for this study to elevate cultural lag phenomena in real life so that people in general can be aware faster towards the change in their cultural and social surroundings. In conclusion, all these relevant information and data will help this study to verify that Elon Musk's companies are and/or will be causing cultural lag and, if confirmed, to explain why such phenomenon can happen.

1.2 Scope of The Study

This study focuses on possible cultural lag phenomena that is occurring or will happen in American modern society because of the inevitable nature of Elon Musk's innovations through Ashlee Vance's book and real life circumstances. These innovations will only include three of his seven companies (SpaceX, Tesla, and SolarCity, since they are the companies which have produced finished products or deemed to be making radical changes that no other company is doing.

There will be instances where Elon Musk's companies have effect upon society not in present, but in the future. The writer will try to describe such

¹ Ten Rules of Biography by Hermione Lee

possible outcome based on information and analysis about the issue. It is necessary to foresee the cultural lag to prevent accumulation of problems and this is in line with William F. Ogburn's argument, that says,

“Since lags in social movements causing social maladjustments follows changes in material culture, it follows that there will be an accumulation of these lags and maladjustments.”

(Ogburn, 1922:280)

To defend this assumption, the study will also consider that every variable in real life except Elon Musk's companies stay in the same condition.

1.3 The Purpose of The Study

- The study attempts to reveal the reason(s) behind certain cultural lag phenomena that happens because of Elon Musk's innovations.
- The study is going to identify social adjustment/maladjustment that occurs/will occur because of cultural lag after Elon Musk's innovation takes place.
- The study tries to provide analysis on the advantage and disadvantage of Elon Musk's companies and the effect they have upon the well-being of American society both present and future.

1.4 Method of the Study

According to Suryana (2010), a qualitative research is inductive, meaning that the hypothesis is based on facts found in the data and it emphasizes on meaning rather than generalization as in quantitative research. In other words, the qualitative research aims to acquire in-depth understanding of underlying problems, unlike quantitative research which attempts to

generalize an issue by statistical and numeric information. Therefore, this research is a qualitative since the research attempts to meet all qualitative criteria.

The writer uses library research to support the analysis of the novel. Library research finds and chooses related information from various sources based on related expert's opinion to support an argument, "involves identifying and locating sources that provide factual information or personal/ expert opinion on a research question; necessary component of every other research method at some point." (George, 2008: 6).

1.5 Organization of the Writing

- Chapter 1: Introduction

This chapter includes background of the study, scope of the study, purpose of the study, method of the study, and organization of the writing.

- Chapter 2: Objects of the Study

This chapter groups the content into Companies Profile, Summary of the Object, and People's Initial Responds.

- Chapter 3: Theoretical Framework

This chapter describes core theory of cultural lag and biographical research theory for the purpose of analyzing biography book.

- Chapter 4: Cultural Lag Analysis

This chapter will include the analyses of many instances of cultural lag phenomena caused by Elon Musk's companies. The subchapters are divided based on each company.

- Chapter 5: Conclusion

The content of this chapter is the summary of all discussion and analysis in the previous chapter.

CHAPTER II

OBJECT OF THE STUDY

2.1 Literature Review

2.1.1 Ashlee Vance

Ashlee Vance is a journalist, columnist, and author, who was born in South Africa but had worked in numerous American media in his life. Before working in New York Times, he had worked in The Register and Bloomberg Business. Mainly focusing on covering business world, he often puts an interest in the business of technology. His only book *Elon Musk: Tesla, SpaceX, and The Quest for Fantastic Future* further showcase his interest in technology field where everyone currently seems to want to taste because how big and impactful it can be to the world. With this book, he gains a deep insight of Elon Musk, a famous figure in tech and startup world because of his audacity, standout character, and brilliant ideas that contributes to American culture.

2.1.2 Elon Musk: Tesla, SpaceX, and The Quest for Fantastic Future

This book tells the story of Elon Musk and his companies from their inception up until their success. It showcases the struggling process of an effort that does not only aim to create revenue from technology but also improve the quality of human lives. Tesla with its sophisticated all electric cars, SpaceX with its reusable and cheap rockets, and SolarCity with its solar panel combine to make a purposeful attempt at creating new and better possibility for the society. With Ashlee Vance's interview with Elon Musk's relative and friends and Musk's personal document, this book offers a rich and meaningful information about what

Elon Musk and his companies have done to prove their worthiness and what they can possibly do for the society in current times and the future.

2.2 Companies Profile

2.2.1 SpaceX

The company was established in 2002 by Elon Musk and some of his friends after getting 200 million dollars from eBay's PayPal acquisition in the same year. The name derives from Space Exploration (SpaceX). On its website, www.spacex.com, this company displays a bold and clear description of itself: "SpaceX Designs, Manufactures And Launches Advanced Rockets And Spacecraft" (SpaceX). SpaceX promises to be able to launch crewed spacecraft as soon as 2024 (National Geography). Recently, the company has launched its biggest rocket, Falcon Heavy, which is partially reusable, unlike any other rocket launchers. SpaceX is also famous for its cost-effectiveness, proven by offering the same rocket features for more than half of the competitors' prices. "SpaceX can undercut its U.S competitors—Boeing. Lockheed Martin. Orbital Sciences—on price by a ridiculous margin" (Vance, 2015).

2.2.2 Tesla

Tesla is an American electric car manufacturers which was founded by Elon Musk and four of his friends in 2003 (Tesla). There are 3 models of cars Tesla has produced, namely Model S, Model X, and Model 3 (Tesla). Also, Roadster and Tesla's Semi Truck are also planned to hit the market in 2020. Although it is not the first electric vehicle company and one of the youngest, too, Tesla has become one of the biggest competitors in this industry in general. This

is partly because the different marketing method Tesla chooses to take, which is through its own website, unlike any other major car companies (Vance, 2015). One distinctive features of Tesla's cars is its range, charging time, and performance which are comparably better for its price than any other electric cars. Tesla's version of autopilot has also been deemed as one of the best and safest of its contenders.

2.2.3 SolarCity

This solar panel company manufactures and also installs its product to American residential and business places. Actually, SolarCity was not founded by Elon Musk but now is headed by him (Vance, 2015), instead the founder of this company is Lyndon Rive and Peter Rive in 2006. Since Elon's take on it, he has made it subsidiary of his other company, Tesla. This decision is efficient since SolarCity completes Tesla; it provides a solar panel from which solar energy can be used to charge Tesla cars faster. Statistic-wise, SolarCity has produced approximately 28% of non-utility solar installation in the U.S, according to Solar Energy Industry Association in 2015. It was also named the second biggest solar panel company in America in 2013 by Solar Power World Magazine (Solar Power World Magazine).

2.3 Summary of the Biography

Elon Musk was born in Pretoria, South Africa in 1971. He grew up in a suburban family who lived in an apartheid South Africa. His father was an engineer and his mother was a dietician. When he was little, Elon was known to be a quite kid who liked to immerse himself in his own imagination. It was in part

because of his magnificent focus and visualization ability that differentiated him from kids his age who only likes to play. Elon was also a fan of science fiction novels and it also helped shape his future idea such as making electric cars and flying a rocket.

Long story short, Elon Musk realized he could not realize his dream of achieving bigger things and offer greater enlightenment in South Africa. He just knew his birthplace would not take him to the place where he wanted to so Elon made use of his Canadian ancestry to eventually go to America. Departing from South Africa with so called American Dream, he was forced to stay in Canada for a while, instead. Finally, the opportunity to go to the U.S came in form of education. He succeeded in entering University of Pennsylvania where he met many great people with whom he shared many great ideas ever since.

His zeal turned into firstly a smaller products and then gradually become a much bigger companies. It was proven by the founding of Zip2, a restaurant location service which, in the end, was bought. Elon Musk made profit from this agreement and then created a new company which transformed to what we know as PayPal. Again, he sold the company and made hundreds of million dollars from this transaction.

These ventures finally brought him to the company he has dreamt of since he was a child. Couples of scientists that had a forum to discuss aerospace mission and dream of transferring human to outer space was introduced to Elon Musk. He was directly very impressed with the idea that he was not hesitant to invest million dollars to create a company which was then named SpaceX. Many people thought

this move to be a nonsense made by some newly born millionaire but Elon wanted to prove that this company was about to change some crucial philosophy of how the aerospace industry works.

Currently, SpaceX has shown to the world that reuse of rocket launcher was possible and in fact a great business idea. They made agreements with private and even government institution to bring their load to earth orbit and then use the rocket's main engine to be used again for another flight. This has made a drastic decrease of the price per launch and renders competitors speechless, even envious. The whole aerospace industry seems to be distressed by this innovation. Elon admitted himself that this approach is actually there for everybody to use but Elon Musk and co were the first one to be audacious enough to utilize this.

However, it was a rough start for a young company like SpaceX to reach its goals since the beginning. Unlike many aerospace companies who are backed up with government money, Tesla had to be motored solely by its investor money and even from personal pocket of Elon Musk (Vance, 2015). Only years after its initial establishment that SpaceX could secure agreement with government. Same thing goes with general public's interest in this matter. People argued that private aerospace company is no longer making sense in this era and all SpaceX could do was possibly only harm environment. Ultimately, this negativity is slowly erased by Elon's brilliance in managing his business and his faith in his goal.

Tesla had somewhat similar fate in his early days as SpaceX. Skepticism towards the idea of realizing all-electric cars is a common thing for Tesla. Fear of battery inadequacy, lack of security measures surrounding electric cars, and

envious competitor had been a barrier from the start. Even after delivering the products, problems seem reluctant to leave Tesla. User's unpreparedness for Tesla autopilot technology proves that people have to adjust their behavior towards innovation. Moreover, the car's battery pack also shows how sensitive and dangerous a lithium-ion can be and supposedly indicate that Tesla may have insufficient funds to support its Research and Development office.

Surprisingly enough, negative framing of Tesla's products does not come solely from its conventional car counterpart, but from oil companies, who feel threatened by Tesla's presence. But once more, Elon Musk successfully made it through these hard times and it totally delivers the promise they give to the customers. Tesla was awarded one of the best cars produced in 2012 by several auto magazines and its cars could live up to the hype of becoming more of a gadget than a car, which are intentionally more earth friendly than most of the cars on the street right now.

To complement these companies, Elon Musk is also the chief of a company called SolarCity. This company was originally created by Elon's cousin but Elon ended up being the biggest shareholder. However, the idea to make fortune by building a solar energy company was originally Elon's suggestion but his cousins were the ones who decided to start it all. The company has not been edging on bankruptcy, unlike Elon's main companies, Tesla and SpaceX. SolarCity become what it is right now because the business they do rely on efficiency. Currently, it does not make its own panel but its software is the primary feature that makes SolarCity interesting. It also offer the customers the

freedom buy the latest panel with an overall pricing that is still lower than conventional electricity.

Despite the fact, it does not mean SolarCity is free from any problem. It faces challenge from local utility department, who makes solar charges huge amount of taxes for those who utilize solar panel. This ordeal seems to prove that incumbents are less impressed by green technology than most people in American soil. They fear to lose their base consumer so it means that they are not embracing sustainable technology. This reason alone makes SolarCity's business annoying for the established competitor.

2.3 People's Initial Response

When talking about the early days of Elon Musk's companies, be that Tesla, SpaceX, or SolarCity, the reaction of people will vary from amused, confused, to even terrified. It is clear that what these companies are doing and has planned to do since the beginning will turn people's heads.

For example, Tesla has arguably become a new status symbol of modern rich men and women since, as Ashlee Vance said in the book, Tesla sold them an image of seemingly being in the future. However, a bigger audience saw the proposition of driving a car with a huge amount of battery is horrifying and prone to electric shortage. On the other hand, from the perspective buy a Tesla buyer, he/she has a tendency to think that Tesla's feature, such as autopilot, is a solution to drive without gripping the steer whereas it is a wrong assumption (Vance, 2015).

Meanwhile, SpaceX faces more complicated challenges because the company deals with government and other big companies. SpaceX should convince every party that its rocket is safe and capable of doing what it promises (Vance, 2015). How does a new small private rocket company can achieve such difficult goals of having cheap and reusable rocket launcher? The question lingers even after the success launch of first SpaceX rocket.

Different from its two brother companies, SolarCity might be people's most favorite companies of Elon Musk. By bringing services and products that actually benefit household, SolarCity has to deal with an unhealthy competition from electric and utility companies that has been established long before SolarCity. It turns out people actually need SolarCity. The writer thinks that it is common because solar energy business has long been desired yet lacks of innovation.

These reactions shows that immaterial culture still lags behind when the technology is already available. It does not always mean that American people's way of thinking and norm are to blame. Sometimes, a bigger entity such as another more enormous private companies and government should also change their behavior towards these competition and alternative so immaterial culture can keep up with the advancement of material culture.

CHAPTER III

THEORETICAL FRAMEWORK

3.1 Biographical Research

The writer has quoted earlier a statement from Robert Brian about the importance of biography in understanding specific social and cultural phenomena. He further explains that all information written in biography can be obtained from "oral history, personal narrative, biography and autobiography" or "diaries, letters, memoranda and other materials". It can be concluded that biography can be used as a trusted reference of real life reflection in which a certain phenomenon progresses because it is reflected on reality.

There are ten rules of how a type of literature can be classified into biography, as Hermione Lee express in her book *Biography: A Very Short Introduction*, which are: 1)the story should be true, 2)the story should cover the whole life, 3) nothing should be omitted or concealed, 4) all sources used should be identified, 5) the biographer should know the subject, 6) the writer should be objective, 7) biography is a form of history, 8) biography is an investigation of identity, 9) the story should have some value for the reader, 10) there are no rules for biography (Lee, 2010).

Even though these requirements shall be argued over and refined, the writer think that the ten rules can cover whole aspect of biography as a tool for dissecting social and cultural phenomena.

A biographical research, as one type of nonfiction literature, should be conducted differently from fictional work research because basically a biography

encompasses real life events that may be directly affected by and affect social condition, unlike fictional literature (Roberts, 2005). Biography also has to tell the truth and its ability to expose sociocultural phenomena related to subject's life adds more distinction from fictional literature.

However, with seemingly unlimited way to tell story of an individual, research of biography has to be classified to avoid confusion with one another. Roberts (2002) and Josselson & Lieblich (1993) classify biographical research into five most often noted category: 1) Scholarly chronicles, the most common type of biographical research that tells someone's historical portrayal with the emphasis on development of a quest plot, 2) intellectual biography, a type of research that does not fully tell its story in a structured chronological order and used as an intellectual/educational purpose, 3) life history writing, a recording of someone's memory in a form of journal, diaries, testimonies, and personal essays, 4) memoir biography, the form of biographical research that put emphasize upon the stylistic and presentation of story of life that foreshadow similar experiences for the reader, and 5) narrative biography, a biographical research that does not rely upon strict facticity and accepts interpretation on the subject because it is primarily defined by its relation to the reader.

With this categorization in mind, the book *Elon Musk: Tesla, SpaceX, And The Quest for Fantastic Future* can be grouped into a scholarly chronicles. The research completes all requirement to be included in this category because Ashlee Vance wants to reveal all significant information about Elon Musk and his companies in order to offer holistic insight of the object of the biography.

3.2 Biography Analysis

Since Ashlee Vance's book about Elon Musk and his companies is classified into a biography and biography is a nonfiction literature, there are certain aspects of literary analysis that differ from a fiction work. This operative by *Literacy Connects of Regional Professional Development Program* helps the writer in building the analysis on the book by choosing important aspects of a biography to be regarded as a valid primary data of the study.

3.2.1 Subject

This is the general topic, content, and ideas contained in the text.

3.2.2 Occasion

It is the time and place of the piece; the context that encouraged the writing to happen. This can be a large occasion (an environment of ideas and emotions that swirl around a broad issue) or an immediate occasion or specific event.

3.2.3 Audience

The audience is the group of readers to whom the piece is directed. The audience may be an individual, a small group, or a large group of people. It may be specific or more general.

3.2.4 Purpose

It is the reason behind the text. It indicates what the author wants the reader to think or do. It is also one way for the writer to convince the audience to think, feel, and believe in a certain way.

3.2.5 Speaker

This is the voice that tells the story; his/her background. This also functions to check whether there is bias because it will affect the text written and points made.

3.2.6 Tone

This is the attitude a writer takes towards the subject or character: It can be serious, humorous, sarcastic, or even objective. This examine the author's choice of words, sentence structure, and imagery. Often in informational text, the tone is objective because the author is simply relaying information and is not trying to sway the audience; however, in literary non-fiction as with fiction, the author may want his/her audience to feel a certain way about the situation, characters, etc.

3.3 Theory of Cultural Lag

William F. Ogburn originally introduced cultural lag concept as a hypothesis in his book called *Social Change with Respect to Culture and Original Nature* in 1922. In the chapter four, he claimed that there must be some sort of adjustment happening among the society when there are rapid changes take place. (Ogburn, 1922). This changes, he said, happen in two parts of a culture: material and immaterial culture.

Culture, as explained in *Introduction to Sociology* (2013) published by OpenStax College, has two different parts, material and nonmaterial culture:

“Material culture refers to the objects or belongings of a group of people. Metro passes and bus tokens are part of material culture, as are automobiles, stores, and the physical structures where people worship. Nonmaterial culture, in contrast, consists of the ideas, attitudes, and beliefs of a society.”

(OpenStax, 2013: 5)

It can be concluded that material culture refers to all concrete objects that a society has put meaning into while nonmaterial culture is linked with more abstract ideas that make a culture itself, such as norm, value, decision making, worldview, knowledge, law, attitude, behavior, etc. Based on the theory, Musk's companies' products can be grouped into material culture. From the theory, we can also deduce that material culture includes all concrete objects which his companies have created and nonmaterial culture encompasses every abstract concept that surrounds their existence. Furthermore, William F. Ogburn asserts:

“The thesis is that the various parts of modern culture are not changing at the same rate, some parts are changing much more rapidly than others; and that since there is a correlation and interdependence of parts, a rapid change in one part of our culture requires readjustments through other changes in the various correlated parts of culture.”

(Ogburn, 1922: 200)

The explanation above shows that there is interdependence of parts of culture and there are two variables here. One is independent variable and two is dependent variable. Independent variables are part of culture—mainly material—that forces other part of culture—mainly immaterial—to change and dependent variable are parts of culture that follow.

The result of this cultural lag condition is the existence of social adjustment within the society. Should there be any social problem emerging as a result, it will be called social maladjustment. Lack of regulation, moral problems, financial insufficiency, among others are examples of negative impact cultural lag might bring to the society. Nonetheless, one important thing to note is that material and

nonmaterial culture can be either independent or dependent variable in a cultural lag condition and Ogburn is aware of this.

“Concerning the question of whether in modern times the initiation of the vast cultural changes that are taking place so rapidly lies more largely with the material culture or with the nonmaterial culture, it should be recalled that there are a great many changes occurring in the material culture because of inventions.”

(Ogburn, 1922:269)

He argues that material culture often becomes the independent variable because of its fast changes and innovation, and nonmaterial cultures generally becomes the dependents variable since they tend to stay in status quo until there is a change that they have to keep up. Despite this fact, nonmaterial cultures can sometimes be the independent variable if certain abstract ideas proves to change first before the material culture.

Ogburn’s finding about this issue was obtained when he conducted a research through observation of several phenomena in America. One of the phenomena is a possible insufficiency of wood from forest caused by people’s high wood consumption and a passive government on the issue. The decreasing number of wood in the forest describes the rapid change that happens in the culture, specifically material culture. One part has been the subject of rapid change and is called the independent variable, so clearly the immaterial culture (people’s behavior and government response) lags behind.

Eventually, the problem was acknowledged and government took action. It was realized that conservation was needed to preserve the forest and there has to be an equal education for people to be more aware about their use of wood and

their environment in general. This process is what is called an adjustment. An adjustment happens when the dependent variable (immaterial culture in this case) which lags behind keeps up with the independent variable.

The other example was taken from accidents occurring in workplaces and its lack of fair compensation. The industrial work has been progressively improved and human's job was easily assisted by the introduction of machineries. The problem is that not everyone was accustomed to handling machine and they are prone to be victims of machine malfunction. However, this problem had never occurred when there is no machinery around.

It is clear that a massive change happens in material culture (machineries) and again, government and people's knowledge as the immaterial culture have to be adjusted to have a balance. Nonetheless, lack of safety measure around the machine and insufficient compensation can harm people, shown by the number of deaths in this time. Government did take action about this but during the process the number of deaths in the workplaces was insignificantly decreasing because the compensation did not ensue.

At the end, there should be an ideal condition after a cultural lag. This, however, is a very broad issue to address. Ogburn also says that if changes still happen in the society, cultural lag will always be part of our society.

“Society can exist without unemployment insurance, but unemployment may be a much better social condition. People can live in periods of considerable social maladjustments, but it does not follow that such a life is the most satisfactory or that effort should not be made to make better adjustments in the society.”

(Ogburn, 1922: 267)

One thing for sure is that different condition of parts of culture will have to be as harmonious as they can get as soon as possible so that people can live under considerably sustainable society condition.

CHAPTER IV

CULTURAL LAG ANALYSIS

In this chapter, the writer would like to analyze cultural lag phenomena happening because of Elon Musk companies' innovation. All analysis in this part will be supported by data from main object of the study that is Ashlee Vance's *Elon Musk: Tesla, SpaceX, and The Quest for Fantastic Future*.

There are mainly 3 subchapters in this chapter. The division will be made according to each company—Tesla, SpaceX, and SolarCity. Furthermore, these companies will also be divided into specific cultural lag phenomena that is happening or might happen when necessary. Each explanation will include both direct quotation from the object and theory in order to serve accurate and trusted information and arguments

4.1 Tesla

4.1.1 Tesla Electric Cars and Possible US Financial Problem

“With Tesla Motors, Musk has tried to revamp the way cars are manufactured and sold, while building out a worldwide fuel distribution network at the same time. Instead of hybrids, which in Musk lingo are suboptimal compromises, Tesla strives to make all electric cars that people lust after and that push the limits of technology.”

(Vance, 2015)

Vance, having analyzed Musk and his companies, said this and it shows how new and innovative this specific companies is. Also, from the quotation above, the writer is convinced that Tesla is breaking certain established culture in

United States. Tesla does not just create a new technology of a car itself, but how it is manufactured and sold as well. No wonder if this breakthrough makes much stir in the society. One sector being hugely impacted by Tesla is oil companies and oil culture as a whole in America. Eventually and unsurprisingly, these components can disturb US financial stability.

One main argument is that there are thirteen oil companies in United States of America (BP Report) and they are all major players in the industry. Additionally, most of oil trades in the world are using American dollar. If oil demand is low, it means that the price will decrease along with it and American dollar loses its value and less used in international oil transaction. This possibility can happen because Tesla is “building out a worldwide fuel distribution” that can accommodate electric energy Tesla cars need around the world. Simply put, the more electric cars—especially Tesla ones—sold, the less oil people need. This changes the condition of American dependency on oil.

According to William F. Ogburn’s theory of cultural lag, the technology of making all electric cars available, which is a material component of a culture, is independent variable in this condition. It moves more rapidly than the other part and pushes the established culture of consuming oil in America to change. The technology pushes everyone to convert to electric energy and leaves oil behind and this makes culture oil the dependent variable in this cultural lag phenomena.

“Where one part of culture changes first, through some discovery or invention, and occasions changes in some part of culture dependent upon it, here frequently is a delay in the changes occasioned in the dependent part of culture.”

(Ogburn, 1922: 201)

The effect of this cultural lag for oil companies and America can be observed by taking a look at possible financial problems caused by the phenomena. All kinds of oil products are going to be slowly reduced and it weakens dollar as well as oil companies themselves because their income will also decrease (Baumeister & Lutz, 2015). If dollar weakens, there will plausibly an increase in price of many products and slows people ability to buy something and it impacts the company who sell their products directly to customers. The worst thing that can happen is dollar could be no longer used in world oil transactions. This is social maladjustment and it is caused by cultural lag. The possibility of this social maladjustment, which is “less harmonious as an adaptation than the period which precedes or follows” (Ogburn, 1922:278) from happening is better to be acknowledged to prevent accumulation of maladjustments. As Ogburn asserts,

“Since lags in social movements causing social maladjustments follows changes in material culture, it follows that there will be an accumulation of these lags and maladjustments.”

(Ogburn, 1922: 280).

The fact that electric car companies, especially Tesla, have not won over most of the streets in United States does not necessarily mean Tesla does not disrupt current condition of society and possibly oil companies, too.

“As Craig Venter, one of the earliest Model S owners and the famed scientist who first decoded man’s DNA put it. ‘It changes everything about transportation. It’s a computer on wheels’”.

(Vance, 2015)

This line in the book proves that Tesla products has changed one’s perspective about a car and care less about conventional vehicle. Additionally, Vance also quoted David Tarpenning, co-founder of Tesla. “People who used to go after Lexus, BMW, and Cadillac brands saw electric and hybrid cars as a different kind of status symbol.” It shows that slowly and in unexpected way people are thinking about buying Tesla cars. What the writer means by unexpected way is that it turns out a green minded and futuristic companies, such as Tesla, sparks an interest for upper and upper mid class people to buy its products. Just as explained in the book, “It did not just sell someone a car. It sold them an image, a feeling they were tapping into the future, a relationship.” (Vance, 2015)

With this fact in mind, it is reasonable to predict that sooner or later Tesla and its electric car can be so much more interesting for many other American people because how much earth-friendly and futuristic the car is said to be. This

means more cars will be sold and oil will be less used. This can lead to the first assumption that financial problem is going to arise because of this condition.

Even though in the discussion above the writer describes the possible disadvantage of cultural lag caused by Tesla, there might be, however, an advantage from this issue, too. Positive thing that might come out which is caused by decreasing number of oil used, is an improvement in earth sustainability. That is of course if electric cars are being more driven and oil companies decides to invest on renewable energy, not just because of its environmental factors, but also for its future profitability in their business.

In conclusion, Tesla electric cars are causing a cultural lag issue here because it is a form an innovation in technology that moves faster than the established culture. Tesla cars are material culture and their position as independent variable can disturb the existing American culture of oil and cause social maladjustment. The reason why it is called maladjustment is that oil will be seldom used because electric cars are more commonly driven and the fact that oil is one core industry of USA support the notion that much less oil usage will lead to financial problem. It is probably the disadvantage of this particular cultural lag but there is one possible advantage of using electric cars and that is an improvement in earth sustainability.

4.1.2 Tesla's Business Model and Its Effect towards Job Loss Probability

4.1.2.1 Direct Sales Model

The co-founder and CEO of Tesla had already made a plan to create a new and alternative way for people to buy and own a car. It had been all clear from the start in their mind what they are going to do in Tesla, as Ashlee Vance stated, "With Tesla Motors, Musk has tried to revamp the cars are manufactured and sold." (Vance, 2015). This new method is implemented in Tesla business model and are designated to disrupt how people feel and think about acquiring and maintaining a car. This is a possible threat for several businesses that rely on a car's overall service, such as gas station, car maintenance, and car dealers.

"The direct sales model embraced by Tesla stands as a major affront to car dealers used to haggling with their customers and making their profits from exorbitant maintenance fees."

(Vance, 2015)

What this means is that the amount of money paid by customers will be the real price of the car. It is a more transparent method of buying a car compared to old style of car dealership who can increase the amount of retail prices however and whenever they like.

"Tesla set up a booth, and people showed up by the dozens writing \$100,000 checks on the spot to pre-order their cars. 'This was long before Kickstarter and we just had not thought of trying to do that.' Tarpenning said."

(Vance, 2015)

This model also enables Tesla to offer some sort of pre-order system that will make the retail price even cheaper. It is a win-win solution for both parties since Tesla needs additional money to produce cars and in return, people who order it ahead of time will get it faster than anyone else. Despite this positive numbers, direct online store has not yet been considered a better transaction method by the rest majority of American people since cars have to be wholly checked before bought. (Inside EVs). Cars are expensive and burdened by tax, thus adjustment needed in this case.

According to theory of cultural lag, this is an adjustment people have to make when there is an advancing technology such as direct online store for cars. As stated in the Ogburn's book. "Material condition change and the changes in the adjustment follow later." (Ogburn, 1922: 211). Material culture, in this case direct online store, leaves the immaterial culture of buying cars from third parties. People will need to change their behavior towards buying a car because according to Vance, car dealership charges "exorbitant fees" and direct online store is more beneficial.

On negative side, there is a maladjustment happening here since car dealers may lose profit because their business is disrupted by such innovation. The impact is that people will lose job when their business cannot compete with innovative and arguably better method. This unwanted consequences is what

Ogburn said as social maladjustment which is “less harmonious as an adaptation than the period which precedes or follows”. (Ogburn, 1922:278).

4.1.2.2 Free Electric Charging Services

The second business model Tesla implement is a free electric charging service. It is marketed as an integrated system of overall “electric environment”. Tesla has installed 1000 (Vance) free charge pods across United States to provide an ease for Tesla drivers. Those pods are also powered by solar panels which adds up to whole earth-friendly stand of the company.

“These so-called supercharging stations are solar-powered, and Tesla owners pay nothing to refuel. While much of America’s infrastructure decays, Musk is building a futuristic end-to-end transportation system that would allow the United States to leapfrog the rest of the world.”

(Vance, 2015)

However, the theory of cultural lag suggests that there will be a social adjustment whenever there is an innovation in material culture. Ogburn said this in his book, “Material culture in changing causes other social changes in what was defined as social adjustment.” (Ogburn, 1922:278). One major adaptation people have to deal is they cannot travel far away without information about the location of these supercharging stations. Therefore, people are hesitant towards this as the stations are not nearly as many as gas stations which are already available even in the corner of United States.

At the end, one problem arise: people will be stuck in the middle of their travels when they do not have electric fuel and supercharging station is nowhere near. This is one of the effects of this particular cultural lag. However, it turns out, this particular problem give birth to better condition for the society. To make a conducive situation after this problem for both Tesla and the society. Tesla creates a technology called “regenerative braking” that also improve battery life. As stated in Vance’s book.

“Model S also take advantage of what’s known as regenerative braking, which extends the life of the brakes. During stop-and-go situations, the Tesla will brake by kicking the motor into reverse via software and slowing down the wheels instead of using brake pads and friction to clamp them down.”

(Vance, 2015)

Another effect from cultural lag comes in a form of social maladjustment: people will lose jobs and their businesses. This possible outcome happens when electric cars are widely used and gas stations are seldom visited. The supercharging technology, which is a material culture itself, does move forward faster than the existing business of oil thus making the business of gas stations need to follow. It may result in job loss which is a disadvantage of the cultural lag. Nonetheless, there is a possible advantage of it, too. That is when Tesla and electric cars are driven by many more people and the need for electric car charger

will arise, therefore the opportunity to transform gas station into commercial electric charging stations is viable option to revive their business.

4.1.2.3 Almost Non-existent Maintenance Fee

“Tesla also does not anticipate making lots of money from servicing its vehicles. Since electric cars do not require the oil changes and other maintenance procedures of traditional cars.”

(Vance, 2015)

The third service Tesla offer is almost nonexistent maintenance fee. It works because the cars are electric and there is no need, or at least little need, to maintain the function of the components, unlike those of conventional cars. Things such as gear, gas tank, oil tank, and other materials are not included in Tesla cars and it explains why Tesla cars are almost free of maintenance.

The cultural lag happening here can be seen by the advancement that enables Tesla to make this service possible. It becomes the independent variable that forces another culture, such as getting cars serviced, to change. The dependent variable, which are car shops, has to change accordingly to the fact that number of electric cars is increasing. This is harmonious with what Ogburn says in his book:

“Where one part of culture changes first, through some discovery or invention, and occasions changes in some part of culture dependent upon it, there frequently is a delay in the changes occasioned in the dependent part of culture.”

(Ogburn, 1922: 201)

Nonetheless, there is still a problem. Even if electric cars are more popular now it does not mean that car shops can transform their service right away. Now the maladjustment comes in a form of, again, job loss and business failure because car shops have a hard time of keeping their business focusing only one type of car. As this condition is “less harmonious as an adaptation than the period which precedes or follows” (Ogburn, 1922:278), it is called a maladjustment.

What might be advantageous from this cultural lag issue regarding maintenance is that people will contribute to earth sustainability if Tesla cars and electric cars in general are used more greatly so that it is viable to transform once-gas station into an electric charging station.

4.1.3 Security Issue in Tesla’s Internet Update

Another issue worth mentioning in this case is how Tesla deals with its cars problem and that is through internet connection:

“While the owner slept, Tesla’s engineers tapped into the car via the Internet connection and downloaded software update. When the customer took the car out for a spin in the morning and found it working right, he was left feeling as if magical elves had done the work. Tesla soon began showing off its software skills for jobs other than making up for mistakes.”
(Vance, 2015)

Even if Tesla is a futuristic company with its breakthrough innovation, there is one thing holding back its reputation and that is how it deals with car problem. The technology is available as an innovation here but this technology can possibly create a social maladjustment which is more dangerous than the previous social

condition. This update technique can lead to abuse of personal information. The original purpose of this service is of course fixing the car but if there is an irresponsible person taking info of the owner or error in the database, the leakage of this data can turn into unlawful action. The personal data can be sold, manipulated or used in negative way. The possible maladjustment happening here must be understood, says William F. Ogburn, since it is less harmonious and to prevent it from piling up to become a bigger problem (Ogburn, 1922: 278&280).

What Tesla is doing with its business model shows that these services have not been considered at all and offers the customers something new that is worth taking note. Many people buy this prospects but proofs show that there are certainly many aspects to consider. There has been instances that conveys that cultural lag does exist among this technology and how unready some aspects of American culture is. Some of instances may end up being social maladjustment, such as job loss. However, there still might be an advantage of this business model because how beneficial it is in the future, once electric cars, especially Tesla, are widely used. The clear possible benefit is that earth will be more sustainable.

4.1.4. Problems and Adjustment Surrounding Tesla Features

4.1.4.1 Tesla Battery

“The next year. Tesla had another voluntary recall. It had received a report of a power cable grinding against the body of the Roadster to the point that it caused a short circuit and some smoke.”

(Vance, 2015)

As revolutionary as Tesla is, the company is not necessarily free from technical problem. The line from the book above shows that there is still one major thing that makes American people doubt Tesla's technology and that is the battery. It cannot be considered a minor problem because it directly endangers one's safety. Even though the technology provided by Tesla is innovative, that does not mean there is not a single flaw in the system. There could have been death and many more unwanted situations both for Tesla and the society.

The material culture, according to theory of cultural lag, although moves faster sometimes makes unpleasant consequences in the end, for example the social maladjustment as mentioned above. But also as the theory predicts, the social maladjustment paves a new way for society to have a better future, no matter the fix comes from either the society or the material culture itself. It is shown that after the accident, Tesla made an improvement in the battery department, as Vance said in the book:

“Tesla did its best to put a positive spin on these issues, saying that it would make “house calls” to fix the Roadsters or pick up cars and take them back to the factory. Ever since. Musk has tried to turn any snafu with a Tesla into an excuse to show off the company's to attention to service and dedication to pleasing the customer. More often than not, the strategy has worked.”

(Vance, 2015)

Tesla is committed to make a better technology in order to ensure everyone's safety when driving a Tesla car and set a conducive environment in the society.

4.1.4.2 Autopilot

Another major technical problem from Tesla comes from its own best-selling feature, called Autopilot. There is a statement in the book that explains about the feature:

“Musk also unveiled a new suite of software for the Model S that gave it autopilot functions. The car had radar to detect objects and warn of possible collision and could guide itself via GPS.”

(Vance, 2015)

The nature and definition of Autopilot can confuse people and misinform them about the feature in Tesla cars. People could think of it as an autonomous driving with completely hands free navigation but actually it is not. Tesla, with its official statement in the website says, “Tesla Autopilot does not prevent all accidents – such a standard would be impossible – but it makes them much less likely to occur.” (Tesla).

Unfortunately, this statement was issued after a traffic accident happened that involved one American man named Walter Huang who died because of the accident. Autopilot, in spite of its name, is just a semi-autonomous way of driving Tesla that will warn of possible collision and still require people to have control over their car all the time. However, from the log data taken from his cars, Tesla argued that Walter took his hands off the steer. From the look of the issue, this is what Ogburn said as social maladjustment;

“Where one part of culture changes first, through some discovery or invention, and occasions changes in some part of culture dependent upon it, there frequently is a delay in the changes occasioned in the dependent part of culture.”

(Ogburn, 1922: 201)

It is true that technological improvement pushes immaterial culture around them to be better and keep up with current demand but it is also possible for a material culture to cause such problematic issue. What the writer means by problematic is that the accident can be either the driver’s fault or Tesla’s fault.

One thing is clear, anyway, that this is what is called a lag; the moment where immaterial culture takes time to keep up with the technology/material culture (Ogburn, 1922: 201). And from the proof mentioned above, there are still misinformation and confusion about the innovative technology, in this case Autopilot.

People need to realize that the feature is indeed not meant to be taken for granted. It is not created so people can freely leave the steer and let the car do the driving. According to theory of cultural lag, the collision can be regarded as social maladjustment because it causes a negative effect for the society (Ogburn, 1922:278), even if it is just one person. There has to be an adjustment however and since it created such bad issue, it will be called a social maladjustment.

The adjustment should come from the government and the company itself. It is mandatory for Tesla to issue a clear information and limitation about

Autopilot feature itself so people do not generalize the technology and take it for granted. This prevent them from leaving the steer behind and rely solely on Autopilot. On the other hand, the government should regulate Autopilot usage on the road.

This argument is backed up by statement from William F. Ogburn that asserts, “One important function of government, for instance, is the adjustment of the population to the material conditions of life, although there are other governmental functions.” (Ogburn, 1922: 202). Furthermore, although Tesla’s Autopilot has been proven to be innovative technology, information about it—which is a nonmaterial culture—shall adjust to existence of Autopilot itself because it has caused problems in American Society and Ogburn states that maladjustment is not favorable and should be measured in each instance (Ogburn, 1922: 280). The reason why Tesla is also responsible for this is amplified by Ogburn’s theory of cultural lag, too:

“Such a development creates a quite a task for those who would direct the course of social progress, the task of eliminating these maladjustments by making the adjustments to material changes more rapid.”

(Ogburn, 1922: 280)

One clear purpose for this measure is to provide justice for both the driver and Tesla involved in traffic accident. Punishment should be applicable if Autopilot is proven to be the root of the accident. It could mean that this feature

has to be pulled out from the market so Tesla can develop it and test it further. However, the driver should not be ruled out as the one who is responsible for the accident because if it is proven that the driver take his/her hands off the steer, they should be punished for ignoring traffic rules. This fair review is important because one party could be harmed if there is not a clear rule when a new technology is involved. The worst scenario is the driver could leave without compensation or Tesla could receive bad reputation.

At the end, this particular social maladjustment leads to a condition which is most satisfactory for the society, as theory of cultural lag suggests about condition under which a society can live harmoniously.

“Society can exist without unemployment insurance, but unemployment may be a much better social condition. People can live in periods of considerable social maladjustments, but it does not follow that such a life is the most satisfactory or that effort should not be made to make better adjustments in the society.”

(Ogburn, 1922: 267)

Satisfactory conditions for this particular cultural lag may be that government ensure that there will be a fair review of the accident in the future and Tesla informed explicitly and clearly that Autopilot is not, in fact, an excuse for somebody to let his/her car drive autonomously.

4.2 SpaceX

4.2.1 SpaceX as a Disruption in Established Aerospace Industry

“With SpaceX, Musk is battling the giants of the U.S. military-industrial complex, including Lockheed Martin, Boeing. He’s also battling nations—most notably Russia and China. SpaceX has made a name for itself as the low-cost supplier in the industry.”

(Vance, 2015)

It is clear that SpaceX offers more than what Lockheed Martin, Boeing, Russia and China do in aerospace industry because its low price and efficiency. Its rockets are able to bear similar load with almost, if not more than, half of the price.

“SpaceX can undercut its U.S competitors—Boeing, Lockheed Martin, Orbital Sciences—on price by a ridiculous margin” (Vance. 2015). What SpaceX does here is pushing the limits of aerospace industry by creating new and out of the box method and technology. It has disrupted existing aerospace industry which used to be occupied by incumbent companies.

The method and technology used by SpaceX is very game-changing because it reuses the major parts of rocket, such as the thruster, so that it can cut the price off. “SpaceX has been testing reusable rockets that can carry payloads to space and land back on Earth, on their launchpads, with precision.” (Vance,

2015). Another reason for its cost-effectiveness is SpaceX keeps its production within its own company, not buying parts and engines from external manufacture. As Vance said, “Where these competitors rely on Russian and other foreign suppliers, SpaceX makes all of its machines from scratch in the United States” (Vance, 2015).

This established industry can only make repetitive effort with significantly high fees of getting rocket to space. As Vance said, “They were building a Ferrari for every launch, when it was possible that a Honda Accord might do the trick.” (Vance, 2015). The word “they” refers to the incumbent companies such as Lockheed and Boeing, emphasizing how expensive and inefficient they are in building a rocket launcher.

Even though SpaceX is far cheaper than its competitor, they assure safety with affordable price for their incoming consumers. Vance said, “To date. it has flown satellites for Canadian. European, and Asian customers and completed about two dozens launches.”. It shows that if the price of commercial rocket from SpaceX becomes cheaper in the future and the likes of Lockheed and Boeing do not attempt to decrease their fees, those companies will lose consumers in the years to come.

By analyzing this phenomena through the scope of cultural lag theory, the writer realizes that there are significant changes happening because of the creation

of SpaceX. The technology made by SpaceX are the material culture moving rapidly in a way that they are cheaper and more efficient. The established culture, in contrast, still acknowledge rockets as an expensive and out of reach technology. This is in line with what William F. Ogburn says in theory of cultural lag:

“Where one part of culture changes first, through some discovery or invention, and occasions changes in some part of culture dependent upon it, there frequently is a delay in the changes occasioned in the dependent part of culture.”

(Ogburn, 1922: 201)

The incumbent companies, which become dependent in this case, receives pressure to keep up with what SpaceX is doing in order to not only save their businesses but also provide more economic approach towards US aerospace sector so that US can still remain as one of the biggest power in the industry.

According to the quotation above, there is an adjustment that needs to be done by SpaceX competitors and that is the way they build their rockets. By offering similar technology, such as reusable engines and self-produced parts, they can contribute to stronger force of US aerospace industry. Also, keeping up with the technology that proves to be better yet cheaper does not mean that they cannot make profit out of it. In the end, all of them translates into a better condition for the society, particularly US and its aerospace industry which have been in forefront position all these years.

4.2.2 Stagnant US Bureaucracy and the Development of SpaceX

Continuing the first line about how SpaceX tried to battle the established culture of aerospace industry from previous sub-chapter. Ashlee Vance claim.

“But that, in and of itself, is not really good enough to win. The space business requires dealing with a mess of politics, back-scratching, and protectionism that undermines the fundamentals of capitalism.”

(Vance, 2015)

Different from previous sub chapter that discuss the effect of innovation in aerospace industry towards the incumbent companies, this subchapter talks about how bureaucracy, as part of the culture, resists to change when material culture, such as SpaceX development, takes one step ahead.

Even though SpaceX can arguably claim that it can have an affordable rockets with premium ability, there is still one obstacle that makes it harder than SpaceX originally expected, and that is US government bureaucracy. Such obstacle deters SpaceX from developing its rocket by restricting rocket trial and making it difficult for SpaceX to acquire permission from the government. For example, Ashlee Vance stated,

“There were times when SpaceX would want to make a change to its launch procedures and any such change would require a pile of paperwork. SpaceX, for example, would have written down all the steps needed to replace a filter—put on gloves, wear safety goggles, remove a nut—and then want to alter this procedure or use a different type of filter. The FAA would need a week to review the new process before SpaceX could

actually go about changing the filter on the rocket, a lag that both the engineers and Musk found ridiculous.”

(Vance, 2015)

There is a clear indication that the advancement of technology or the pace at which technology accelerates is far ahead of immaterial culture, in this case bureaucracy. SpaceX needs to have a fast progress to live up to their target. Otherwise, they will run out of money before they can create or fix a rocket because government prevent them from doing so. Government may have their own reasons why they do such measure and one of them is safety but in the statement above it is shown that SpaceX has done what is required but still cannot do much because slow process on the government side.

Despite the sluggish bureaucracy, there is one branch of US government that actually cares about SpaceX and that is US military. It can be proven by the statement from Ashlee Vance book:

“Instead, the military desired cheaper, smaller satellites that could be reconfigured through software and sent up on short notice. ‘If we could pull that off, it would be really game-changing.’ said Pete Worden, a retired air force general, who met with Musk while serving as a consultant to the Defense Department.”

(Vance, 2015)

Military is one of the biggest spender of US financial budget and it is reasonable that they want to have a similar performance of rocket for their military purpose in half of the price. US military’s big expense also comes from

the fact that they are still using the incumbent rocket companies who sold them the expensive machine. Once they knew of the existence of SpaceX, they could not help but put an interest to the project.

Due to military demand for speedy, reliable, and easy access to rocket. SpaceX become a darling for such big governmental sector. They would not have all three from Lockheed, Boeing, etc. Another possible consumer of SpaceX rockets are scientists, who wants to have cheaper access to space without having to doubt about the length of the process itself. As Vance said in the book:

“Like the military, scientists wanted cheap, quick access to space and the ability to send up experiments and get data back on regular basis. Some companies in the medical and consumer-goods industries were also interested in rides to space to study how a lack of gravity affected the properties of their products.”

(Vance, 2015)

Now from the two cases explained above about how much interesting SpaceX is for many parts of the society or even government, the writer sees there are discrepancy between two major parts of the culture which are closely related. One is the technology itself and how potential it can be for many people, such as military, medical purposes, and consumer-goods purposes. The other one is the bureaucracy, the culture of taking too long a time for something that is clearly simple and urgent to support the technology.

There is an issue where the demand for speedy rocket development cannot be met just because it is virtually not allowed to. SpaceX must deal with this problem even though they are able to do in faster way. FAA, the department responsible for issuing permission for rocket companies is the subject of an adjustment and its bureaucracy is the main focus here. This can lead to a better accommodation for SpaceX development.

“Society can exist without unemployment insurance, but unemployment may be a much better social condition. People can live in periods of considerable social maladjustments, but it does not follow that such a life is the most satisfactory or that effort should not be made to make better adjustments in the society.”

(Ogburn, 1922: 267)

The excerpt above supports the notion that it is desirable for society to head into a better condition. It may be stated, therefore, based on the proofs and incidents surrounding SpaceX and FAA bureaucracy that the ideal condition after this particular cultural lag is a faster process of developing a rocket and that means gradually cheaper rockets for wider commercial needs, as well as those of military and medical purpose.

SpaceX rockets have been deemed a breakthrough innovation in aerospace industry with all its cheap, reusable, and fast technology. The advantage and benefit of SpaceX development could only be better utilized when it is backed up by swift bureaucracy process, which unfortunately is the cause of cultural lag in this case. FAA is the immaterial culture which resists to change while SpaceX is

the material culture, affected by innovation, which advances faster. The probable adjustment for the bureaucracy is to change the lengthy process into a supportive one so the cultural lag exist no longer than it is desired and provide benefits to purposes such as US medical and military.

4.3 SolarCity

4.3.1 SolarCity Lacks the Support It Deserves

With SolarCity, Musk has funded the largest installer and financier of solar panels for consumers and businesses.... SolarCity has managed to undercut dozens of utilities and become a large utility in its own right.”

(Vance, 2015)

With its solar panels service. SolarCity has managed to be a competitive force in utilities sector. Unsurprisingly, the main reason for this is the price. It may not be as cheap as another utilities in the U.S at first sight due to its expensive tools and panel. However, once bought and installed, it will be cheaper in long term. Because of this, many people wanted to possess such technology and service. Besides that, it is another opportunity to save the earth by using Sun as a renewable energy. In no time, SolarCity has become one of the desirable solar panel providers in USA, as Vance said, “six years later, SolarCity had become the largest installer of solar panels in the country.” (Vance, 2015).

It was all good with SolarCity before a more fierce force stepped in to interfere in the utilities competition. As a new companies that provides new and cheaper services, SolarCity has posed as a serious threat for another utilities

company which involves governmental policy and politics. This instance of rather unhealthy competition occurs in Nevada. Nevada Energy, the state-owned utility company are issuing a policy which makes people who have bought and installed solar panel pay more than when they do not use solar panels at all.

It is inappropriately unfortunate for the society because Nevada are exposed to sunlight throughout a year and that is a big opportunity to self-sustain the environment by using solar energy. What is worse is that the policy came through from apparently fear of losing the money and competition. It is clear that people can cut their own monthly utility bills as much as 90% and undeniably that will affect Nevada Energy income. But the fact that this advantage for the people are being denied by the politic showcase how an immaterial culture, such as law, is slow to respond to an innovation—SolarCity.

SolarCity has provided many solar panels in Nevada and is brave enough to offer it with no down payment with lease system. This technology and services becomes reality since the price of the equipment decreases. SolarCity's technology and service are the material culture and independent culture which is doing a move forward but unfortunately. The immaterial culture—the law and politics of Nevada Energy is not at the same level of advancement as SolarCity. It is the dependent variable which is desired to change. All of this makes a complete cultural lag case. As Ogburn suggests:

“Where one part of culture changes first, through some discovery or invention, and occasions changes in some part of culture dependent upon

it, there frequently is a delay in the changes occasioned in the dependent part of culture.”

(Ogburn, 1922: 201)

An adjustment is needed for this immaterial culture, not only to sustain a fair competition, but also to save earth by supporting a renewable energy use.

This instance has even reached the point where it can be called a social maladjustment because it has made a problem for the people of Nevada. As Ogburn suggest, because “it is less harmonious than the period which precedes or follows” (Ogburn, 1922: 278). There was strikes to repeal the policy and readjust it to be better for the people. They feel that they are being extorted just because they are using solar panel, and not services provided by the state. The effort to monopolize the utilities does not only endanger the people but also refuse the endeavor to save the earth by using clean energy.

“It is desirable to reduce the period of maladjustment, to make cultural adjustments as quickly as possible” (Ogburn, 1922: 201). William F. Ogburn said this in his book and in SolarCity vs. Nevada Energy case, the statement still applies. There is much desirable condition where utility is being fairly distributed across the state. There should be changes in the policy to make it more earth-friendly for people who have bought it and tries to use clean energy.

SolarCity has offered its best effort to sell people the solar panel, which is known to be earth-friendly and less costly in long term. People are actually buying it but unfortunately unfair competition from state-owned Nevada energy makes it

difficult for both Tesla and society to move forward into better future. Nevada Energy tries to take away the benefit of solar panel itself and have a monopoly around the utility industry. It is desirable, however, to turn this maladjustment into a quick adjustment by changing the policy into a better one that suits everyone. It is arguably necessary because it can save many people a lot of money and sustain the earth more efficiently.

CHAPTER V

CONCLUSION

Elon Musk's companies—Tesla, SpaceX, and SolarCity—are innovators in their own specific industry. They bring new and refreshed methods, technology and business models in approaching the market. This is causing cultural lag in certain part of American society since material culture are affected by innovation to move forward faster and leave immaterial culture behind. A social adjustment is expected to happen after cultural lag takes place. The adjustment comes in various forms and it is a way for immaterial culture to keep up with available technology. However, if something bad happens along the way, it will be called a maladjustment. Maladjustment brings more serious harm to the society, such as death, wound, or financial instability. The writer has found that the three companies cause cultural lag in specific part of American society.

In Tesla, people are given the option to keep using oil or convert to electricity. Those who decides to choose electric cars adjust their energy use, thus making it a social adjustment. On the other hand, the more people buy electric cars, the less oil used. This condition can affect oil companies and US financial stability in long term. It is what is called a maladjustment. Second maladjustment Tesla could create is job loss around United States of America. With its business model featuring almost free maintenance, free charging pods, and direct sales model, Tesla could overthrow many jobs in oil and automotive industry. The condition will surely harm many people but once settled, business can actually

benefit from the use of electric cars. Next cultural lag Tesla cause is related to safety and security of the person that uses its cars. Tesla's features, such as huge battery, Autopilot, and update through internet are material culture that people shall adjust to. However, more often than not, there is a maladjustment in each of Tesla's features, such as battery's short circuit, Autopilot unclear instructions, and the risk of private information misuse because of update via internet. This can cause personal harm, or in a worst case, a death.

In SpaceX, the proofs that show immaterial culture being left is the slow bureaucracy against the rocket development from Tesla which requires fast and concise process. The adjustment needs to be done in this part. Not to mention all the competition, which is a form of immaterial culture itself, needs to catch up with technology that Tesla has already showed off to sustain a better American aerospace industry.

In SolarCity, it has been proven that the technology is already available and people are doing adjustment to this material condition by buying solar panel that could maintain itself with lower price than conventional utility. However, the maladjustment comes when such convenience is disturbed by authority that feels out of competition because SolarCity exist. People could face a huge loss because they will have to pay much more than when they do not possess solar panels.

It should be noted that social adjustment may be suggested and maladjustment may be acknowledged before they happen, according to William F. Ogburn, to prevent cultural lag from creating an accumulation of maladjustment.

It is also worth knowing that as long as innovation exist in culture, either material or immaterial, cultural lag will always follow and that means there is a space for possible adjustment or maladjustment happening in the society. Despite the continuous change because of cultural lag, there are always two side of a coin in the matter: the advantage and disadvantage. Both have to be considered to maintain the condition of American society, or society in a larger context, to be satisfactory for them to live in.

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