Imitation, Technology, and the Western World

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Honours Study in Communication

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Acknowledgments

To the SFU Communications faculty, friends and family; many thank you and
grateful wishes for the creation of this study.

Abstract

The aim of this study is to determine the function of imitation through a comparative study of several perspectives: philosophy, social science, and neurophysiology. A significant aspect of the communication field, imitation is the study of mimicking, specifically in the development of languages, human behaviors, and human interactions. This mimicking nature of humans also relates to work being done on nurturing technology, such as in twenty-first century robotics research and development.

In this comparative study on imitation, I explore imitation in its contemporary manifestation: neurophysiology. By drawing on the work of neurologists Rizollatti and Sinigaglia, who explore the function of mirror neurons in humans in their text *Mirrors in the Brain*. I also compare the definitions of imitation through such authors as Plato, Aristotle, and Tatarkiewicz. Prior to defining imitation, however, I outline of my methodology. Following this outline, I look at the importance of imitation in social communication, the development of social life, and its influence on technology.

Methodology

Through my comparative study, I aim to study mimesis or imitation within the context of social communication. I conducted my study over the course of two semesters. In the first semester, I studied the philosophical approaches to

imitation. I looked at Tatarkiewicz, where I learned the basic concepts of imitation through the eyes of Plato and Aristotle. I then looked at Aristotle's *Republic*, Rene Girard's *Things Hidden since the Foundation of the World,* and then Gabriel Tarde's *Laws of Imitation.*

In my first semester, I looked at Aristotle's and Plato's definitions of imitation. These definitions later developed into the concept of imitation in its societal sense, which has to do with imitation and relationships between individual in a societal setting. Here are the questions:
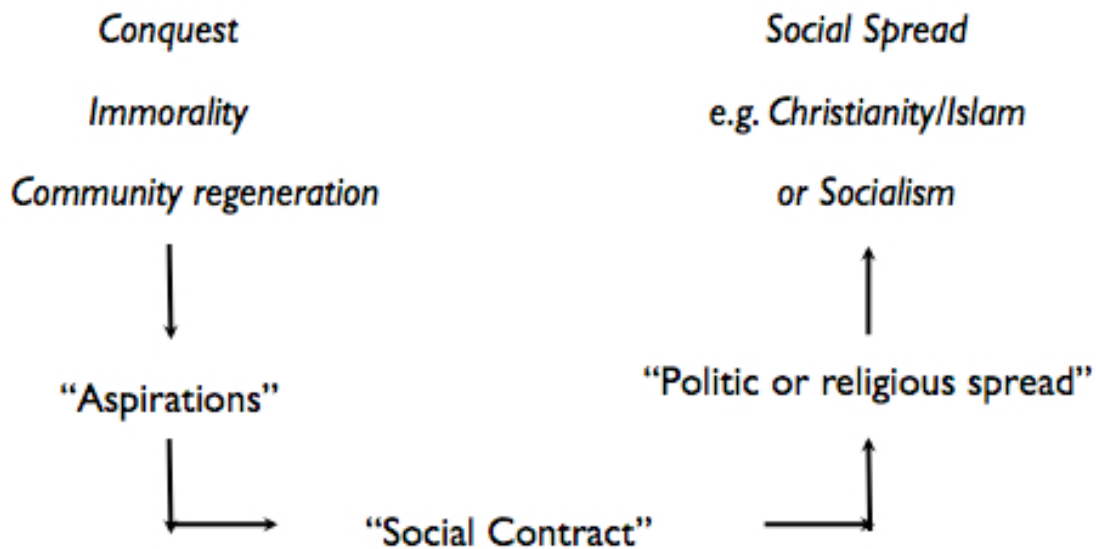
1. *Which are the most recent advances in mimetic studies?*

2. *What theories are influenced by mimesis?*

3. *What role does imitation play in creativity?*

4. *How does imitation plays a part in the development of technology?*

5. *What are the effects of mimetic desire in social communication, more specifically, in people and community relationships?*

This raises further questions: how do humans make meaning out of their interactions? How is meaning shaped through visual perception? Similarly, these questions apply to contemporary research on the development of robots. The following chapter describes the attempts to answer these questions. Also, I found that society is imitation, and imitation happens through several institutions in the social setting, for instance, religious or political settings, which we will talk about in the Social Communication section. The process of this social imitation

happens through desire and belief, which we could see below.

Desire   Belief

Conquest   Social Spread

Immorality   e.g. Christianity/Islam

Community regeneration   or Socialism

        ↓   ↑

"Aspirations"   "Politic or religious spread"

        └───→   "Social Contract"   ──┘↑

    In my second semester, I mainly looked at imitation from the perspectives of the social sciences [1] and neurophysiology. Neurophysiology is key in identifying that the concept of imitation. This was an ideal [2] concept which existed in Plato

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[1] More specifically, by observing social science through the perspectives of Tarde, Collins and Goffman.

   [2] Imitation is a means of getting through an ideal, a perfect and harmonious society. We need to define the notion of the ideal. Is it beauty? Here are a few definitions of perfection, an ideal, and beauty. Kant's Critique of Judgement, The notion of judging taste is a different one in terms of the notion of perfection or ideality in aesthetics, which we could take into account to the context of social communication. In the nineteenth-century, aestheticians thought of the notion of perfection as antiquated, while the philosopher Hegel who believes in a civil society, emphasized that "beauty is the absolute idea in its sensory appearance" (*A History of Six Ideas*, p.143). Theories of beauty come from a variety of aesthetic experiences. Such as: empathy, conscious illusion, enhanced functioning of the mind, counterfeits emotions and expression--- these are the values that we see in Goffman's notion of a society and all of which were

and Aristotle's writing, however, now it is a concept that exists in reality through scientific research of the brain. Of note, in this research, my focus is on the acting brain, where the brain acts as a social imitation mechanism, which we will discuss further in the social communications chapter. I found that visual brains act as mechanisms to develop sympathy between humans, apparent in social interaction rituals. Near the end of my research, I hypothesize that aside from social communication, imitation can also be applied in technological developments of the twenty-first century.

Three Vectors of Imitation in the Contemporary Western World

Based on my research, I categorized three vectors of imitation in the contemporary western world. These vectors are a) philosophy of imitation b) social science of imitation and c) neurophysiology of imitation. Each of these vectors contributes to the importance of imitation in social communication and

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indirectly implicated in the aesthetic theories. Furthermore, "the 19th century produced a compromised solution: taste and imagination serve beauty just as rules and rational thinking do" (ibid, p.150). Also, the saying of "rien n'est beau que le laid" – nothing is beautiful, save the ugly – made by contemporary comment of beauty, J. Stolniz. This saying emphasize that beauty develops from critique, limitation and correction. We could also conclude that beauty comes from saving the ugly. In other words, from correcting the ugly and the imperfect- hence, the need for Aristotle's definition of imitation- taking the true, and adding a part of our self to eventually create an ideal or a perfect community that develops.

the development of social life.

With respect to the origins of imitation, the concept first emerged in the world of philosophy, by Aristotle and Plato. Rene Girard also provides us with a perspective on humanity's sustenance throughout the century. Over the last centuries, the western world has experienced a struggle in power, through world wars. When conversations and negotiations fail to find a common ground, countries seek a point of peace through war. My research into *Things Hidden Since the Foundation of the World* shows us the importance of the scapegoat in triangular relationships and the use of violence as a solution to human mimetic desire. Violence creates a contagion of human mimetics that, Girard claims, builds and develops society. The role of of human mimetics are in the micro as well as macro level of the society; and its importance is, as opposed to creating a malfunction one, these mechanism develops a community.

Social Communications

By the definition of Goffman in the Presentation of Self and Interaction Ritual, social communication is *maintaining relationships of different individuals. This is based on the argument that we are social people, and have different social faces and masks. A child learn to smile by mimicking the face of the mother, and develop its mask then on.* Neurophysiologist Rizolatti and

sociologists Goffman and Collins put forward a view of social communication. So, humans imitate humans, as social communication implies. The neurophysiological study of imitation lets us see how we imitate and mirror each other, which is through the human brain.

The Working of Mirror Neurons

Neurophysioligist Rizolatti conducted research on how imitation works in the brain, through mirroring. The scientists revealed how the human mind works when visualizing another person's act; hence actualizing that the other is a human being. For example, when a scientist grabbed a cup of coffee, a brain scan of a monkey brain revealed that it too mentally grabbed a cup of coffee. It was the scientist's act of grabbing the cup of coffee, but the monkey's brain visually imitates the act of holding a cup of coffee. Where does this activity occur? This activity occurred in the frontal lobe, an area which reacts to electronic stimuli, mainly in the area of hands and mouths.

The experiments lead to the discovery that the 'anatomic-functional structure' of the 'agranural frontal cortex' (where the motor areas are in the frontal lobe) is more complex than what was thought in the past. This helps to find the dichotomy between the motor system on the one hand and the sensory systems (visual, auditory, olfactory, somatosensory, etcs.) on the other.

The scientists claim that the discovery of this mechanism, mainly the finding of vocabulary motor acts of the frontal lobe, has led to the discovery of

several learning mechanisms. First, 'motor reinforcement', which reinforced the perception when the monkey saw the scientist successfully grabbing the cup, resulted in a 'selection of the (frontal lobe) neurons that code efficient motor acts' (Rizolatti, pp.46). Secondly, vocabularies in the brain provide a place to associate the act and the 'visual accordance' that has been received by the neurons. Lastly, the act offers the motor system a stored inventory of acts at the foundation of the 'cognitive functions' which we traditionally apply to our sensory systems. This is the nature of the motor properties of a neuron located in our frontal lobe brain, the F5 visuo-motor neurons.

More importantly, the scientists found out that these neurons fire both when the monkey sees the act, and when it implements the act: 'we know that a certain percentage of these neurons discharges both during the actual execution of the act *and* while the object is being observed, showing a high level of congruence between the selectivity of the motor response (the type of grip) and that of the visual responses (the shape, size, and orientation of the object)' (pp.47). There are however, the conditions, such as when the object is only observed and no motor act is involved—this is when the condition is 'immediate, constant and specific'--- a purely visual act such as looking at a painting. As yet, the same neurons that are charged in such situations are also active when the action is executed in the light or dark, justifying the scientists classification of the act as part of 'motor neurons' (pp.47).

Similarly, according to the scientists, the visual and motor neurons have the same functional meaning. The F5 visuo-motor neurons send messages that

are exactly the same as the motor neurons (this happens when the monkey interacts with objects). In other words, when the monkey interacts with a certain object, the same motor neuron discharges as when the monkey is merely observing the scientist grabbing a cup of coffee (or other geometrical objects). As a result, "If the neuron also discharges in the same way in this condition, this discharge should convey an identical message to that sent when the animal moves, but which, instead of determining an overt action, remains at the *potential stage"* (pp.48). The animal does not act on grabbing an object, but merely observes it and the brain classifies it as a potential stage, happening when the monkey looks at a given object. So what happens? Whenever the monkey looks at a potential that has been located on the vocabulary, the neurons fire a signal that symbols the gesture of grabbing the object, but instead of interpreting it as an action, sends the signal that it is a potential of the action. However, the scientists remind us not let our attention be diverted to the control or execution mechanisms; the focus of this experiment on mirror neurons. They are the "functions to be ascribed to the vocabulary of motor acts when there is no explicit intention to act" (pp.48). As yet, we need to remember that as humans we are slightly different than another in genetic make-ups. This is apparent in our facial characters and our perception of the world. However, as the experiment has found out, mirror neurons in our brain let us perceive each other's actions, through visuo-neurons and mirror neurons, and classify them as acts, potential acts, or intentions. This is a useful social communication mechanism. At the macro level, western cultures have different predefined objectives.

The Nature of Society: Setting Predefined Objectives

> "Societies everywhere, if they are to be societies, must mobilize their members as self-regulating participants in social encounters. One way of mobilizing the individual for this purpose is through **ritual**; he is **taught to be perceptive**, **to have feelings attached to self** and **a self expressed through face**, to have pride, honor, and dignity, to have considerateness, to have tact and a certain amount of poise" (Goffman's *Interaction Ritual*, pp.44)

Individuals solidify into a society and, as the study of social communication implies, the purpose of communication is to maintain relationships between different selves. As sociologist Goffman suggests above, in order to have a society, its individuals must regulate themselves in social encounters. In order for this to happen, a set of rituals are established. Individuals are thought to 'be perceptive,' that is, they have feelings that are expressed through the face. A face that concedes of pride, honor, dignity, considerateness; having tact and poise (pp.44). This is the ideal society in a state of beauty. Another mechanism that Goffman emphasizes is that society has 'predefined objectives' (pp.240). When these are set, society develops. Below are the set of predefined objectives as classified by Goffman in the *Presentation of Self:* a) technically b) politically c) structurally d) culturally e) dramaturgical.

> a) *"technically" in terms of its efficiency and inefficiency as an intentionally organized system of activity for the achievement of predefined objectives.*
>
> b) *"politically," in terms of the actions which each participant (or class of participants) can demand of other participants, the kinds of deprications and indulgences which can be meted out in order to enforce these demands, and the kinds of social controls which guide this exercise of command and use of sanctions*

c) "structurally," in terms of the horizontal and vertical status divisions and the kinds of social relations which relate these several groupings to one another.

d)   "culturally, " in terms of the moral values which influence activity in the establishment---values pertaining to fashions, customs, and matters of taste, to politeness and decorum, to ultimate ends and normative restrictions on means, etc.

e)   the dramaturgical perspective, like each of the other four, can be employed as the end-point of analysis, as a final way of ordering facts. This would lead us to describe the techniques of impression management employed in a give establishment, the principal problems of impression management in the establishment, and the identity and interrelationships of the several performance teams which operate in the establishment.

<div align="right">

The Presentation of Self, pp.240

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Goffman argues that team collusion is likely to happen when 'collusive communication' occurs. A collusive communication that are conveyed to cause no contradictions or differences to the illusion that are being fostered to the audience (pp.177). This collusive communication could happen as, in social communications there are different individuals, and according to sociologist Collin, "[we] differ in detail, but we are everywhere mentally akin, since we are constructed of the same ritual processes" (Interaction Ritual, pp.203). Differences could cause chaos. But similarities bring us closer to each other. This is where social structures come into being and help us develop. (We could identify this with Girard's theory on sacrifice and violence). However, we need to turn our attention to an example of such collusive communication, when a character of communication occurs.

In social interactions, such as conversation, participants, in essence, adopt a character or persona which is done through maintaining expectations. However, there are occasions where maintaining a character fails, which prevents the audience from realizing that the situation has occurred. "Persons who are admitted to this secret communication are placed in a collusive relationship to one another vis-à-vis the remainder of the participants" (Goffman's *Presentation of Self*, pp.177). In keeping secrets from the audience that is present, the participants maintaining candor; and the character they project is only a show. As a result, a confirmation of 'backstage solidarity' is applied, and an anticipation of the audience's reaction, such as unacceptability, is likely to happen in a social situation.

Social Development

Definitions of Imitation

One of the main influences on this study is Tatarkiewicz, specifically his *History of Six Ideas.* It conceptualizes the concept of mimesis in two ways. First, mimesis is the copying of the true, and second, mimesis is the mimicking and the adding of self. In this chapter, I will also look at the definition of imitation through social eyes and how we apply it in our everyday life. Following this, I will consider several definitions of imitation.

Imitation in Our Daily Life

The foundation of the study of imitation is theater. Its origins are Ancient

Greece. In Plato's *Republic*, imitation is used as a mechanism that furthers the study of theatre. In theater, humans act as inter-actants. Based on human interactions and situations in daily life, the same principles can be applied, in reverse, to human interactions in daily life. According to settings and context, each of us lives according to our roles. For example, a boss in the setting of an office will act in the role of a leader. While outside the office, the boss might have other roles, such as a wife, or a friend.

The importance of imitation is also applicable to the study of television. Much television programming is based on actual situations and events of daily life or based characters derived from our everyday world. The events that are portrayed on television, are "drawn" or imitated from everyday life. For this reason, what children see in television is a significant influence on their behaviour. In other words, what children see is important during their peak time of learning, since children imitate what they see.

Imitation Through Tarde's Eyes

There are several ways of seeing imitation. According to Tarde, imitation is a spread of belief through desire and intentions of a subject, or meme. This leads us to the evolution of society. Tarde states:

"As for the beliefs and desires which seem neither to aid nor injure, neither to confirm nor contradict, each other, they cannot interfere with each other any more than two heterogeneous waves or two living types which are too distant from each other to unite. If they do appear to help or confirm each other, they combine by the very fact of this appearance or perception into a new practical or theoretic discovery, which is, in turn, bound to spread abroad, like its components, in contagious imitation… the conformity of aims and beliefs of which we are speaking, this mental likeness, which may characterize tens and

hundreds of millions of men at the same time, is not born all of a sudden. It is produced little by little; and extends from one man to another by means of imitation" (p.24-25)

This quotation emphasizes that 'belief and desires', when they do not contradict each other, could benefit the society in a whole, as society undergoes a mutual exchange of services. The exchange of services leads to a division of characters and roles (p.115) The evolution of society happens through language. Another important concept according to Tarde is this mental likeness that may characterize us. As we will see later, we are all inherently, the same. Our differences are only slight. In communication studies we learn that language bridges the information of differences and similarities. The imitation of selected information could lead us to great inventions--- such as one that we will discuss near the end of this study.

"It is said that great geniuses, great inventors are apt to cross each other's paths. But, in the first place, such coincidences are very rare, and where they do occur, they are always due to the fact that both authors of the same invention have drawn independently from some common fund of instruction. This fund consists of a mass of ancient traditions and of experiences that are unorganized or that have been more or less organized and imitatively transmitted through language, the great vehicle of all imitations" (p.14)

In its societal sense, imitation functions to further develop society. This raises the question, how does imitation benefit contemporary western society? On order to answer this question, we need to further define imitation. Before going to Tatarkiewicz, I will examine the definitions of imitation put forward by Aristotle and Plato.

Imitation through Plato 's eyes

Copying from the true

Imitation through Aristotle's eyes

Adding of the self in copying

An example of the copying of the true is when a child directly imitates the smile of the mother. That is, according to Plato, a direct imitation of what is true. In turn, when the child grows, dependant on the child's identity, it begins to add a part of itself, this is Aristotle's view of imitation. For example, we smile in response to a feeling of joy; when we grow, we might express the feeling of joy in several ways. One of which is by smiling, as we have learned through imitations from our mother, or by drawing, as we have learned through school. In drawing, we add a piece of our creativity; this is Aristotle's view of imitation. An extension of philosophy, imitation could be vectorized in social science and neurophysiology. In this next chapter, we are going to look at imitation in the context of philosophy, as viewed by Rene Girard and Henri Bergson.

Social Imitation in Philosophy

In order to gain an understanding of the human science, in this study, I will consider the study of humans in the philosophical sense. It is important to note Girard's concepts regarding sustaining and developing human cultures. The following chapter looks at imitation and how it develops human cultures.

The Foundation of Humanity

What is the basis of humanity? There are a few interesting perspectives as to what the foundation of humanity are. In *Things Hidden Since the Foundation of the World*, Girard explores how society has sustained itself since the beginning of the world. He bases his argument on two key mechanisms: violence and scapegoating. Girard claims that throughout the centuries, humanity has gone through a period of chaos and harmony. For every generation, there is a war and revolution to recharge a politically unstable climate. War is the violent element. Society then blames a person or thing as a scapegoat. This is the archetype that Girard proposes. For example, he examines the biblical story of Jesus of Nazareth.

According to Christian mythology, Jesus is a hero that is sacrificed for the good of many. Due to human's sin, his body endured much violence. He

endured this to release the tension of fault. Our main attention here lies on the recurrent mechanism of imitation. How is this connected to imitation? Girard claims that this is a scapegoat mechanism and violence functions to repair society's fault. This has become a ritual for the human culture. The chapter below explains concepts that are conducive to our research of imitation in communication.

How Humanity Sustains and Develops Culture

As a comparison, in the study of economy, crisis is a stable element in time. Taking this into consideration we could derive similar conclusions regarding the study of humans. This crisis that specifically leads to a crisis of violence is a 'vicious circle', claims Girard. In order to put an end to the vicious circle of violent crisis, Girard points to several concepts. A significant concept that Girard points to his reader is the victimage mechanism. "We have seen that, in the founding murder, the victim is held responsible for the crisis; the victim poralizes the growing mimetic conflicts that tear the community apart; the victim breaks the vicious cycle of violence and becomes the single pole for what then becomes a unifying, ritual mimesis" (p. 40). As we can see, through a series of biblical-as-myth analysis, Girard points that the victim breaks the 'vicious cycle of violence', and *acts* as a unifying element for the community in the conflict, leading to a 'ritual mimesis' or an appropriation of the victim as a solution to the problem of the 'vicious cycle of violence'. This is what is described as 'victimage mechanism' or in other terms, scapegoating, and as claimed by Girard, is the foundation for

what is human in man: "If this mechanism is the foundation for everything that is human in man, for humanity's most ancient institutions, such as hunting or the incest prohibition, the question then becomes the process of hominization, or in other words the transition from animal to man" (p.84).

This fosters the development of human culture. In a way, an act of violence in order to control violence is needed to sustain and develop humans in the process of homonization. In other words, this concept of victimage mechanism has been utilized over and over again throughout human culture, in order to keep society from chaos. The result, society is constantly re-ergenizing itself. However, there is a need to maintain a degree of violence, as to prevent chaos. This brings us to question, what happens when violence is taken to the degree of war? Does it make or break humanity? "In order to appreciate the problem of controlling violence, we must also consider that strange activity we call war, which along with cannibalism, must have appeared early in human or pre-human groups" (p.85). This very fact makes war inescapable in order to have a society full of peace, which is a very strong statement to be made. Nevertheless, we must acknowledge the fact that, according to Girard, societies suppress rage and we have the desire to be first place and to dominate: "One of the essential conditions for the organization of men in cooperative societies was the suppression of rage and of the uncontrolled drive for first place in the hierarchy of dominance" (p.86). In other words, human struggle for power, and in doing so, we could say that there are energies of rage and anger emotions. Even in our

daily life, we could acknowledge much struggle for power in political institutions, which, claims sociologist Collins[3], happens in the Western World and also on a global level.

As an example, in everyday life, we see this in a community where power and status is highly important. When this is the case, 'righteous anger' is an example. In everyday rituals, the use of anger at the right time enhances human culture's morality, and is a form of victimage mechanism and is prevalent in the Western world, more specifically in societies where the church and state are fused. As Collin Randall, in *Interaction Ritual,* wrote, 'it is where [the spheres of church and state] (the power hierarchy and the status community) are fused that righteous anger is most prevalent' (p.128). However, a higher focus of the political power in the organization is still in place--- with a claim of the organization as a community as for 'wielding power' (p.128). Hence, the implication of deviance-hunting is possible, even if the organization is placed in a modern society, acting as 'moral entrepreneurs' in such society (ibid). Collin also emphasizes that these deviance hunters usually come from traditional and rural

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[3] On a micro level, we could see the murdering of the victim in the emotional level of familial setting. Girard puts an emphasis on the relationship of father and son, on the desire of breaking an interaction ritual of imitation by murdering the father, as yet, this is the behaviour of our father, which in turn brings us back to imitation in the setting of family. On a macro level, the use of violence such as a righteous anger happens when war occurs, as a tension releaser. The use of righteous anger has been known to enforce coalition of communities, which reinforces Girard's point of view that human has intense emotions of anger; and, to some degree, the use of anger to release tension at the appropriate time. In some setting, it gives a sense of membership to a group. This pattern of violence is apparent in familial setting, and claimed author, has been since the foundation of the world.

communities, in effect creating a 'collusive solidarity' of community in a modern society, and rituals of conformity in the society. This contributes to a structured community, which enhances the development of social structures and institutions.

In support of this, Girard adds that the progression of social institutions are fueled by 'mimetic desire', which in the transition of man from animal, has been transformed to a 'contagious group phenomenon' with the solution of the murder of a 'communal victim' (p.77). As a comparison, a dominant character in the animal man self is 'instinctual dominance', while in the human stage, this scape-goat mechanism is a resolution to human desire of chaos contagion. In essence, violence must be purported to one, for the good of many. This concept has been an archetype in several mythologies and literatures throughout the century. One apparent archetype is the story of Jesus in the bible. A resonation of desire to violence a person in order to save a community. In other words, to move society to the past. So, according to Girard, the human culture is able to sustain itself by the use and legacy of victimage mechanism and scapegoating. Both of these mechanisms allow for human, on the individual level, to release tension, such as, in the example given above, in the context of social interaction ritual of Collin's political hierarchy setting that is prevalent in the modern society. This scape-goat mechanism is also prevalent in other level of the society, such as in a more micro family degree, while at the macro level, this happens in the setting of social-

political institutions.

Technology

The Evolution of Creativity

Almost all of us acknowledge that Darwinism have been the core concept of evolution arguments. Based on the theory of variation and selection, Bergson puts in context a creative setting to evolution[4]. Relevantly, these chapters help us with the theory of imitation, and how robotics is going to develop by imitating nature and humanity.

Metaphysical Space of Creativity

According to Bergson's theory, imitation, which causes evolution, happens through what is called a symbolic transfer. Since we have started communicating communication is about the transferring of symbols; in the current world, this is represented by language, by audio, written or visual. These means of communication need a space setting, which is, claims Bergson, metaphysical and when multiplied and imitated, enhances creativity and as an effect, creates a creative evolution. This creative evolution could happen because of a source of energy, which is revived by relating, or what Bergson refers to as "élan vital" or

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[4] According to Bergson, Evolution imbues a 'real persistence of the past in the present', this means to get to know the natural system and living being, and understanding or gaining knowledge of the artificial intelligence applies to an advance of that life, or in Bergson words, applies to the 'extrimity' (Creative Evolution, p.15)

vital impulses (*Creative Evolution*, p.163).

How is Imitation Important in Technology?

It is obvious that the Western World today stands on a ubiquitous technology of social media and imitation. Similarly, we could take the mechanism of imitation in social life as the basis for robotics development. Just as mirror neurons create our reality in the brain through a visual imitation of human and object interaction, so have human imitating nature.

Technological Application of Imitation

At the end of the twenty-first century, imitation is applied in the field of technological development. This is apparent in the work of David Hanson, whose robots "show emotion" (TED presentation, 2009). In this context, Hanson is applying an Aristotelian sense of imitation, by merging robotics and art to design a robot which contains life. On another level, Hansen is building robot neurons in an attempt to mimic human expression and emotion. This kind of mirror neuron experiment is also apparent in another study of building brains, by Henry Markram. The name of the project is "Blue Green." Scientists are attempting to build a brain out of neurophysiologic stimulation of pictures. In another sense, these scientists attempt to imitate nature, by copying the brain of rats, in order to achieve a higher understanding of human intellectual abilities and result in an artificial intelligence.

In this context of technological application of the robotics development, we could derive that the ideal is artificially adapting itself by the help of a scientist in order to achieve an artificial intelligence with consciousness or a higher brain functions. How does the scientist Markram does this? With the model of a mouse, taking its brain tissue out of its nature, and allowing the tissue to live outside of the brain of rat. This cell is what is considered as the view of the world that holds an elegant, complex view of meaning. The concept is similar to taking a chip of a computer, and analyzing if this chip works, deconstructing and reconstructing the brain and neuron.

The neurophysiologist's aim is to reach an ideal by asking questions: in ten years, will artificial intelligence be able to be creative in itself? Will it be able to have its own consciousness, a soul of its own? The creator, Henry Markram, hopes that it will be able to have its own consciousness. That it will tell humanity how to collaborate with each other. A significant development that I discovered is robotic development, through Henry Markram's Blue Green Project (TED Presentation, 2009). All in all, imitation here are taken into the creative evolution of life; the life of an artificial intelligence --- a further justification of the human life with the purpose of enhancing our life. As a reaction, this poses further questions for research in the application of imitation in technology.

Conclusion

These two semesters have led me to the conclusion that imitation influences robotic development. Through looking at several authors that portrays a picture of social communication, which lead us to a point that imitation influences social development and inherently the development of technology in the 21st Century. By looking into Henry Markram's Blue Green Project, we can see that he is imitating nature, through mimicking the brain of a rat. It's the simple concept of deconstructing and reconstructing a computer. This leads me to question the implication of imitation in robotics. How will it develop and influence other stakeholders in contemporary Western society? This further question should be a starting point for a research in the application of imitation in technology, and is a long-term research foundation for the application of imitation in social communication. In essence, this study have discussed the elements of social communication leading to social developments on the notion of imitation in human interaction.
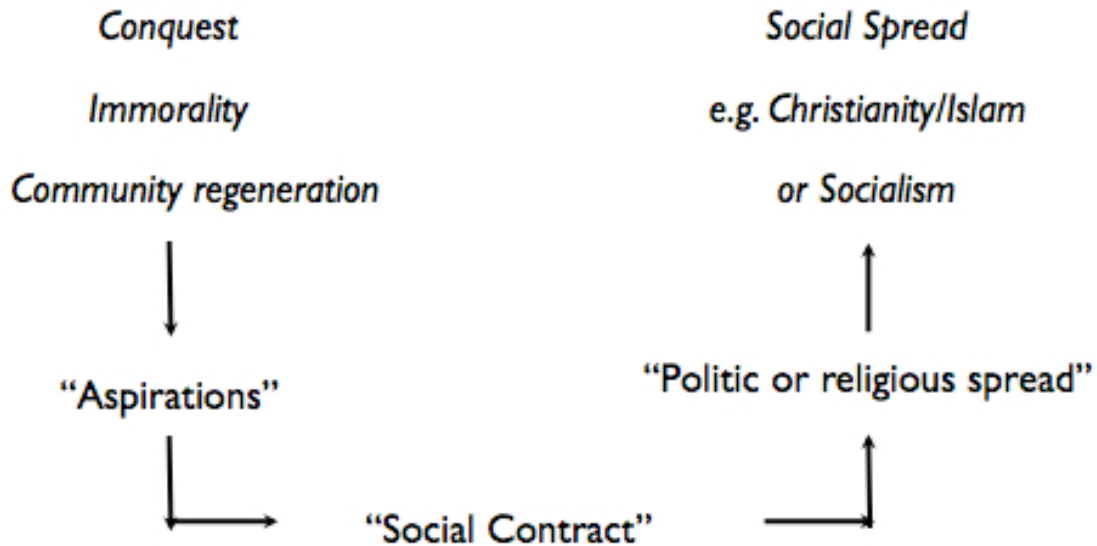
Appendix 1: Research Questions

6. *Which are the most recent advances in mimetic studies?*
7. *What theories are influenced by mimesis?*
8. *What role does imitation play in creativity?*
9. *How does imitation plays a part in the development of technology?*
10. *What are the effects of mimetic desire in social communication, more specifically, in people and community relationships?*

Appendix 2: Desire to Belief in Social Imitation

Desire

Conquest

Immorality

Community regeneration

↓

"Aspirations"

"Social Contract"

Belief

Social Spread

e.g. Christianity/Islam

or Socialism

↑

"Politic or religious spread"

Appendix 2: Imitation through the eyes of Plato and Aristotle

Imitation through Plato 's eyes

Copying from the true

Imitation through Aristotle's eyes

Adding of the self in copying

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