

Social Media and Public Opinion

Master's Thesis



VNIVERSITAT
DE VALÈNCIA

Màster Universitari en Interculturalitat i Polítiques
Comunicatives en la Societat de la Informació

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“Technology is neither good nor bad; nor is it neutral.”

First law of technology, Melvin Kranzberg.

Abstract.

Communication is used to develop identity. In digital communication identity building is based on different tools than in a real world setting. Reputation and social authority are therefore based on different aspects.

Social Media is human communication mediated through social software. Social software facilitate the creation of social networks in digital environment. Networks are a form of organization that increases the effectiveness of the individual and the whole network. During the last years Social Media, social networks, and Web 2.0 have been studied with the result that they are better understood nowadays. It now seems as if these phenomena are more than a technological advancement, rather a paradigm shift.

Opinion building is strongly connected to the process of shaping human society. Social communication, social networks, and reputation play a key role in this process. Opinion is a result of cultural, political, ideological, and social believes and desires and public opinion is the aggregate of dominant opinions within a society, communicated in public sphere.

Social communication through social media is increasing. The way public opinion is formed is strongly influenced by these new media.

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1. Introduction

Let's imagine the following:

About 30.000 years ago. A tribe of twenty to thirty human - women, men, children and elderly - lives in a cave in a country today known as southern France. The cave is located in a mountainous region and has always provided good protection for the tribe. But the recent months have been very difficult. The hunters had great difficulties to encounter large animal, forcing them to make ever longer journeys in order to find enough food for the whole tribe.

One day the hunters return from a long journey that lasted many days and nights. They have hunted not more than just a few rabbits and mice, just enough to feed the children. The tribe is desperate. Later that night the tribe sits around the campfire and the hunters tell that they have encountered a new territory while following the tracks of a herd of animals previously unknown to them. They have walked for days and when they caught up with the herd they encountered a place that was much more fertile and accessible than the mountainous countryside of their cave. The hunters have even found another cave suitable to provide shelter for the whole tribe. The men suggest that they should pack up and move the whole tribe to the new cave.

But the elderly and many of the women are very skeptic about this plan. They doubt that the new cave and the newly discovered animals are worth taking the risk. After all it would be a very difficult and certainly dangerous journey for the whole tribe. Most members of the tribe reject the plan until one hunter tries to explain how important the new animal would be to endure the upcoming winter months. To support his point the hunter starts drawing the shape of the new animal onto the wall. He draws all the details; the two horns on the forehead, the long fur, the slim legs, and the enormous body.

The other members of the tribe are thrilled. If there are animals as big as the drawing shows, there would be enough meat to overcome the winter without having to fear a hunger crisis. The fur of the animal could be used to make cloths, and the horns could be used as weapons and tools.

The painting provoked great turmoil among the tribe members and the impression it created caused many of the tribe members to change their opinion and agree that the risk of the journey is worth taking. As a majority of the tribe now agrees to the plan the elderly are forced to change their opinion, too. They decide to move to the new cave.

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This fictive example shows how human communication is a product of the technology invented by human beings to communicate. During the evolution of mankind the invention of technologies like painting, language, and writing have had great influence on the communication culture of human societies and on how opinions are formed. Public Opinion is the aggregate of all dominating opinions in a society and influences the way society formed. Hence the technologies humans invent and the way they use them have direct impacts on the evolution of mankind.

In the twenty-first century it is mainly the combination and the characteristics of modern technologies that influence society. In this thesis I will investigate how modern digital communication, especially social media, effect public opinion and shape today's human societies.

The first part of the thesis will provide a theoretic basis for the rest of the thesis. I will start to describe the fundamental basics of communication sciences and some of the most relevant theories and models. Secondly, I will briefly introduce public opinion and social networks as an important element of human society. After that I will explain how these elements translate to digital computer mediated environments and will lastly concentrated on the specific topic of social media as a new communication channel and a tool for forming social networks and public opinion.

The intention of this thesis is to provide a detailed overview about the technological, sociological, and anthropological understanding of social media. Furthermore I intent to explain the basic academic perspective on public opinion and show how both topics are connected to each other.

2. Communication

2.1. Communication Sciences

Taking a closer look at the development of communication studies we understand that its breadth and interdisciplinary nature have made it difficult for institutions, academics, and students to position it in the educational system. There is still no clear consensus whether communication studies is a discipline, a field, or a topic. It draws heavily from psychology, anthropology, sociology, biology, political science, economics, linguistics, semiotics, literary studies, and rhetoric.

The classification of communication studies can vary from one academic culture to another. In the Anglo-Saxon world communication studies are often considered as part of both; the humanities and social sciences, while in Germany, for instance, they are considered part of Sozialwissenschaften (Eng.: social sciences) and Geisteswissenschaften (Eng.: “mind sciences”) a field similar to humanities, but with certain differences, as it does not include arts.

Even within the same academic culture we can often discover great disparities in the denomination and focus of communication studies, including “communication studies”, “rhetorical studies”, “communications science”, “media studies”, “mass communication”, “media ecology” and others.

Regardless of the interdisciplinary character and the difficulties of classification of communication studies, they can be defined as the study of humans' communicative capacities, including the study of humans' symbolic systems, like language and images, as well as the social relations and forms produced through communication.

2.2. Communication Models

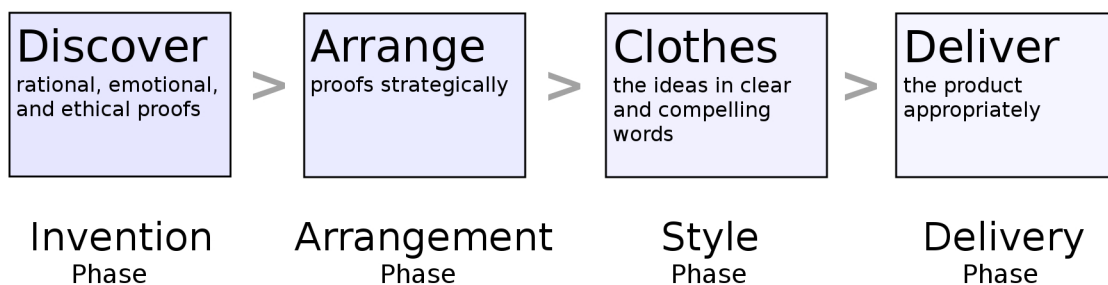
Communication is commonly defined as the sharing of symbols across time and space. The term communication comes from the Latin word *communis* which means “shared”, "common", or "universal"¹. Communication is the act of sharing information. Modern understanding of communication is based mainly on the Sender/Receiver model, which is grounded on three elements of communication: A sender, a receiver, and a message.

A variety of natural means exist to transmit communication such as body language, voice, eye-contact, and haptic communication. Additionally, media can be used to communicate, i. e. instance writing, drawing, audio, pictures, and video.

2.2.1. Classical and Linear Models of Communication.

One of the first attempts to develop a model of communication was done by the Greek philosopher Aristotle (384-322 B.C.). He focused on a public speech situation where one person speaks to a crowd (one-to-many). This situation is characterized by the fact that such a speech is uni-directional, there is little “sophisticated” feedback from the audience, and that the speaker pursues a definite goal; to persuade the audience and cast their votes in the speakers favor. The speaker holds the active role and the listener holds a passive role in this communication setting.

Speaker ...



Aristotle's Model of Communication.

¹ <http://en.wiktionary.org/wiki/communis#Latin>

Aristotle's Model of Communication is probably the most basic model for any rhetoric or speech class. It consists of four phases. The first phase is the Invention phase, where the speaker investigates and discovers emotional rational (logos), emotional (pathos), and ethical (ethos) proof that underline her idea. After that the speaker arranges these proof strategically, in the arrangement phase. The third phase is the style phase in which the speaker "clothes" her ideas in clear and compelling words before she delivers the speech as part of the delivery phase.

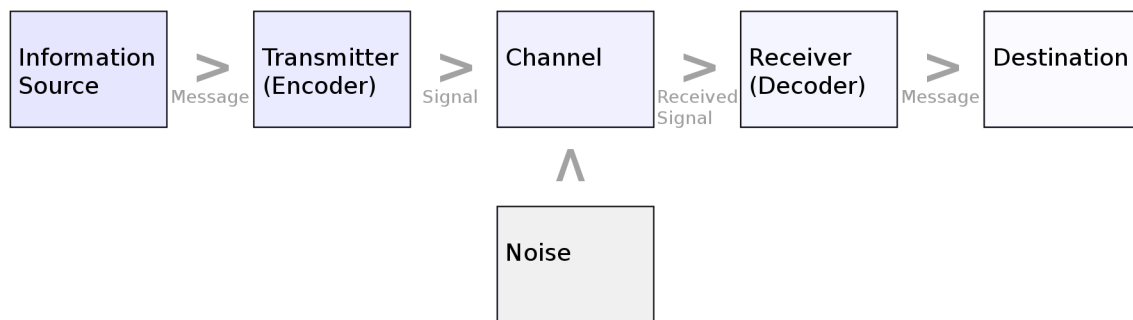
Many of the very basic qualities of good speech are being described by this theory, such as eye-contact, clear voice, voice modulations, rhetorical pauses, highlighting of specific arguments and many more.

Another approach to rhetorical discourse, was done by Lloyd Blitzer (1968) who is very much focusing on the persuading element of rhetoric. Although Blitzer did not invent a model of communication some of his ideas have been useful to further understand communication. Blitzer said that rhetoric is always persuasive, can only be understood in its context, and that it is "A mode of altering reality, not by the direct application of energy to object, but by the creation of discourse which changes reality through the mediation of thought and action." (Blitzer, 1968: 4)

Another model, similar to Aristotle's model, is called Lasswell's model or Lasswell formula² after its inventor Harold Dwight Lasswell. Its basic idea is to understand communication as WHO (communicator), says WHAT (message), in WHICH CHANNEL (medium), to WHOM (receiver), with WHAT EFFECT (effect)! This formula was developed after World War II and is a result of Lasswell observing Nazi propaganda and the rise of mass-media. The advantage of this model is that it is easily understandable and therefore easily applicable to a great variety of communication situations. A disadvantage is that does not consider neither feedback from the audience nor noise that underlie the message.

Another transmission model of communication, which has been developed only a year after Lasswell published his formula, is the Shannon-Weaver Mathematical Model (Shannon and Weaver, 1949). This model is strongly focused on the necessity to provide a useful theory, that helps engineers to find the most efficient way to transmit electrical signals from one place to another. In this model a INFORMATION SOURCE sends a message to a TRANSMITTER who encodes it into a signal and sends it via a CHANNEL to a RECEIVER who will then decode the signal into a message and hands it to the DESTINATION.

2 <http://communicationtheory.org/lasswells-model/>



The Shannon-Weaver Mathematical Model, 1949.

The role of the receiver was newly introduced in this model giving the process an element of correction. This is crucial since it is the basis on which the modern concept of feedback is developed. “The key concept associated with this elaboration is that destinations provide feedback on the messages they receive such that the information sources can adapt their messages, in real time. This is an important elaboration, and as generally depicted, a radically oversimplified one.” (Foulger, 2004)

In addition to that, the Mathematical Model of Communication considers noise as a relevant element in the communication process, therefore this model has certain advantages over earlier models. It is theoretically more elaborated than Lasswell's formula for instance and it is widely applicable to other scientific research, such as behavioral sciences.

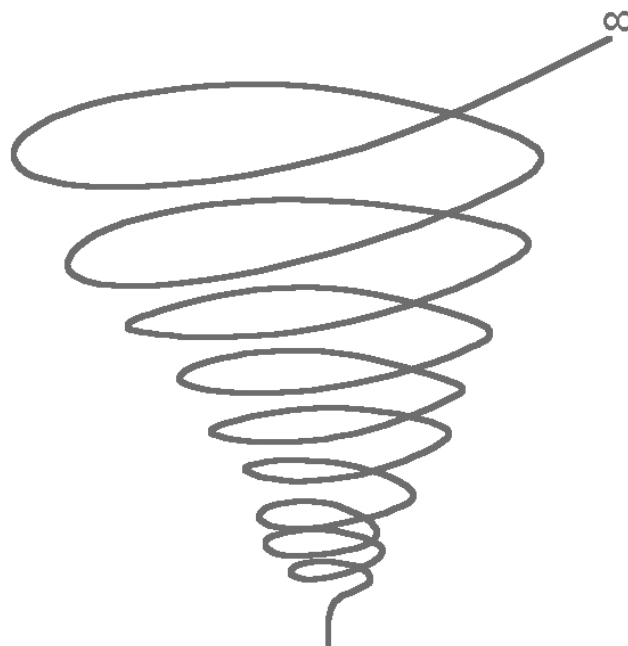
An important extension of the Shannon-Weaver Mathematical Model has been provided by David Berlo (1960) who has clearly separated the model into parts and further defined the qualities and properties of each element in the communication process.

2.2.2. Non-Linear and Multi-Dimensional Models.

The Helical Model of Communication understands communication as a dynamic process. “At any and all times, the helix gives geometrical testimony to the concept that communication while moving forward is at the same moment coming back upon itself and being affected by its past behavior, for the coming curve of the helix is fundamentally affected by the curve from which it emerges. Yet, even though slowly, the helix can gradually free itself from its lower-level

distortions. The communication process, like the helix, is constantly moving forward and yet is always to some degree dependent upon the past, which informs the present and the future. The helical communication model offers a flexible communication process.” (Dance, 1967: 296)

The important advantage of the helical approach, which might lack theoretic elaboration, is that it suggests that communication is, among other things, additive and accumulative. That means that communication creates more communication. This aspect has clearly become very interesting concerning the very recent invention of digital communication tools and new qualities and new quantities of communication.



The Helical Model of Communication, 1967.

Other non-linear models of communication are Westley and MacLean's Conceptual Model from 1957 (Westley, MacLean, 1957), which is based on the idea that communication does not start with the communicating person, but rather when a person responds to her environment, and Becker's Mosaic Model of Communication which, very roughly explained, describes communication as an act of remixing previous communication. Both models, which I will not explain in detail at this point, need to be understood to create an understanding of what communication is.

Especially when it comes to investigating in communication one has to dig deeper into theory and look at Multi-Dimensional levels of communication models. Here the most noteworthy is Ruesch and Bateson's Functional Model (1951) where communication is happening on four

levels: INTRAPERSONAL, INTERPERSONAL, GROUP INTERACTION, and finally on a CULTURAL LEVEL. These levels form another dimension in communication. Lastly the Transactional Model developed by Barnlund (1970) is model that sees communication as transactions and communicators as attributer, which give meaning and value to certain events. This model also implied the non-linear approach that individuals engage simultaneously in the act of sending and receiving a message.

2.2.3. Other Approaches to Communication Models.

Apart from the rather technical approaches to communication models various scholars have been trying to develop different models based on different fields of study. Certainly there are a lot of psychological (Luskin, 1970) and constructionist approaches (Goffman, 1959; Lanham, 2003) for communication models, which will not be treated in detail at this point.

The model suggested by Wilbur Schramm (1957) on the other hand has to be considered, since it provides another important view on communication and will remain interesting especially regarding the evolution of digital communication technologies. Schramm suggested that we have to consider the IMPACT that a message has on the TARGET. Here he further differentiates between desired impact and undesired impact.

According to Schramm the form of the act of communication can differ greatly depending on various characteristics of the group, such as cultural background, education, experiences (etc.), and the transmission of information is governed by three semiotic rules: (1) Syntactic, the formal properties of signs and symbols, (2) pragmatic, here the relations between communicators and their signs and expressions is significant, and (3) semantic, which is the study of signs and symbols.

According to this model communication can only happen were a group (at least two) is present and is therefore a form of social interaction that is based on a set of learned symbols and expressions.

2.3. Communication Theories

This chapter is not intended to provide a detailed overview about communication theories, but to introduce a few theories that are of strong importance for the topic of social media. These theories are an important theoretic element for the understanding of later chapters.

Communication theories that are directly connected to the topic of public opinion are being treated in chapter 4. “Public Opinion”.

2.3.1. Media Choice Theory.

Media choice, the reason why a person chooses a particular medium over another one, is an important topic in media studies. The question about the choice cannot be answered applying one theory only, because of human beings' complexity of psychological patterns of reasoning.

Goecke (1997) distinguished between four central approaches, often titled Media Choice Theories: (1) The subjective media acceptance theory, (2) the social influence approach, (3) the Media Richness Theory, and (4) the task-oriented approach.

According to Galushkin (2003) the Media Richness Theory is related to the Social Presence Theory which can be combined to Rational Choice Models. Both classifications have their advantages and disadvantages. Because of the difficulties of categorization of these theories, I will describe the four approaches developed by Goecke first and then add the Social Presence Theory with the concept of Rational Choice.

1. According to the **Subjective Media Acceptance Theory** the use and adoption of specific media is dependent on individual affections. Therefore the reasons of choice are not based on objective criteria such as efficiency, but on personal subjective preferences. I. e. a perceived value of the medium influences the decision of choice. “Perceived Usefulness³” and “Perceived Ease of Use⁴” are the central specifications of the acceptance of media (Davis, 1989). These personal preferences of media acceptance are

3 *Perceived Usefulness* is defined as “the degree to which a person believes that using a particular system would enhance his or her job performance”. (Davis, 1989: 320)

4 *Perceived Ease of Use* is the “degree to which a person believes that using a particular system would be free of effort” (Davis, 1989: 320)

not necessarily static and can be influenced from the outside. For instance, training programs for employees have great influence on the subjective acceptance of newly introduced technologies.

2. **The Social Influence Approach** focuses on the influence that our social environment has on the acceptance of media. The general opinion from our neighbors, coworkers or friends have great influence on our opinion and compete with individual preferences. The concept of "critical mass" is essential to the social influence approach. It basically describes that the desirability of a medium grows with the quantity of its users. Once a critical mass of users is reached, the medium gets a proper momentum of growth. The term critical mass was popularized by Robert Metcalfe, in Metcalfe's Law⁵, and is inseparable from the concept of network effects which was first coined by the Theodore Vail, President of Bell Telephone, in Bells annual report of 1908 (Galambos, 1992).
3. **Media Richness Theory.** This theory (also known as Information Richness Theory) was developed by Daft and Lengel and describes that media have different values (Daft, Lengel, 1984). The medium identified with the highest value, i. e. the richest medium, is face-to-face communication. Leaner (i. e. less rich) media are in descending order, video conferencing, telephone, two-way radio, written addressed documents (e. g. letters), and unaddressed documents (e. g. posters). The theory has been developed in 1984 and is applicable to modern digital media as well. According to Daft et al. the key aspects of media richness are (1) capacity for immediate feedback, (2) the amount of cues and channels, (3) language, and (4) the degree to which the intention is focused on the recipient. The determined richness based on this four key aspects describes how immediate and effective the medium is. The very rich medium face-to-face communication comes with a very strong social presence⁶, which means that social implications have to be considered determining the value of a medium.
4. **Task-Oriented Approach to Media Choice.** This model was developed after a coherence between the task that a medium shall solve and the ability of the medium to solve this task was found. The basic requirements a medium has to meet are accuracy, speed/user-friendliness, trustworthiness, and complexity. The choice of the medium

⁵ *Metcalfe's Law*, see chapter 4.4. Network Value

⁶ *Social Presence*, see chapter 2.3.2. Rational Choice Model.

depends on the necessity of a task to be handled rather, accurately, quickly, confidentially or easily. This concept was developed through the works of Klingenberg and Kränzle, who conducted empirical studies about new forms of office communication (Klingenberg, Kränzle, 1983).

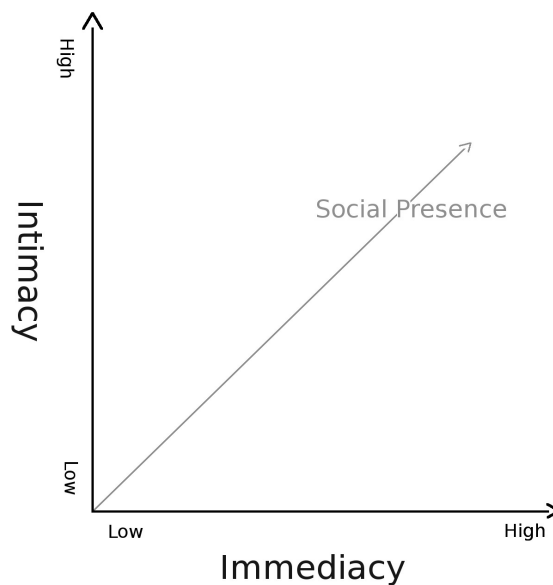
The application of the four theories described above has limitations. Often it is not possible to follow this strict concept when investigating communication. That is why different categorization models, such as the Rational Choice Model, can be more useful to apply.

2.3.2. Rational Choice Model.

The Social Presence Theory from Short, Williams, and Christie (1976) proclaims that communication is most effective if the medium, has the appropriate social presence that is needed to deliver the message. Together with the Media Richness Theory it forms part of the concept of Rational Choice Models of media which were developed by Galushkin (2003).

Two key aspects define the quality of social presence: Intimacy and immediacy. Intimacy describes the quality of the contact between sender and recipient. A face-to-face situation, where each person can directly detect the reaction of the conversation partner, is considered to be the most valuable. This interpersonal contact is a very essential form of communication between human beings. In such a conversation it is most difficult to lie, confront or simply escape the situation, but most facile to convince. The opposite of interpersonal communication is mediated communication, such as letters, smoke signals, telephone, radio, television, where sender and receiver do not have to be proximate.

While intimacy determines the value of space and distance, immediacy specifies the value of time in communication. We can differentiate between synchronous and asynchronous communication. A letter is asynchronous, response and feedback are delayed. Face-to-face communication is synchronous, because it facilitates instant feedback and interaction.



Intimacy and Immediacy in Social Presence Theory

If we draw a coordinate system and we position immediacy on the x-axis and intimacy on the y axis. Social presence would then be a straight graph with linear growth. The more interpersonal and synchronous a medium is, the higher is the social presence, the more mediated and asynchronous a medium is, the lower its social presence. This theory goes together with the Media Richness Theory, they are considered to be Rational Choice Models of Communication.

2.3.3. Habermas' Theory of Communicative Action.

The Theory of Communicative Action (Ger.: Theorie des kommunikativen Handelns) is a two-volume book from 1981 by the German philosopher-sociologist Jürgen Habermas. It was translated to English and published in 1984. This extensive work touches many sociological aspects, especially current of its day, like the critique of late capitalist societies, the repositioning of the concept of rationality from modern philosophy and social theory to language, or Habermas' ideas on argumentative speech. Since it is unnecessary to fully describe this theory at this point, I will especially focus on just some of the aspects mostly connected to Communication and Social Networks.

According to Habermas the normative basis of society lies in language as an interpersonal medium that facilitates social interaction. This new approach of communicative rationality is an

alternative to the established concept of purposive rationality as introduced by Max Weber.

Habermas writes: “I would like therefore to take up once again the concept of communicative action expounded in the introduction and, by drawing upon speech act theory, to pursue those aspects of the rationality of action neglected in Weber's official action theory.” (Habermas, 1984: 284)

On this basis four models of actions from individuals in society are outlined by Habermas: (1) teleological action, when an individual, guided by maxims, acts with the goal of achieving a specific end, (2) normatively regulated action, where individuals in a social group, in order to fulfill expectations, accept common values of that group, (3) dramaturgical action, where an individual regulates public access to her proper intentions and desires, and (4) communicative action, where two or more actors establish relationships with the goal to reach an consensus about the situation (and their plans of action) in order to coordinate themselves based on agreement.

“Finally the concept of communicative action refers to the interaction of at least two subjects capable of speech and action who establish interpersonal relations (whether by non verbal or by extra verbal means). The actors seek to reach an understanding about the action situation and their plans of action in order to coordinate their actions by way of agreement. The central concept of interpretation refers in the first instance to negotiating definitions of the situation which admit of consensus. As we shall see, language is given a prominent place in this model.” (Habermas, 1984: 86)

The ideal speech situation, according to Habermas, is a communication situation where no distortion of communication is present. That means that there are (1) equal opportunities for dialog initiation and participation, (2) equal opportunities for interpretation and argumentation quality, (3) freedom of dominance, and (4) no disillusion of the speech intentions.

These pragmatic conditions facilitate comprehension and reasonable discourse. Habermas knows that this idealization of speech situations in reality is not possible, but he claims that it should be at least implicitly applied before every discourse. Only then, through communicative reasoning and the organization of actions, communicative action evolves.

The primary concern of The Theory of Communicative Action are the processes of rationalization and colonization of the lifeworld. The concept "lifeworld", which is very complementary to communicative action, was introduced by Edmund Husserl in 1936 and is explained as:

“In whatever way we may be conscious of the world as universal horizon, as coherent universe of existing objects, we, each “I-the-man” and all of us together, belong to the world as living with one another in the world.” (Husserl, 1936: 108)

Habermas has built on the concept of lifeworld in his social theory. For him lifeworld is the environment for competences, practices, and attitudes in one's cognitive horizon. He writes that:

“Subjects acting communicatively always come to an understanding in the horizon of a lifeworld [...] The lifeworld also stores the interpretive work of preceding generations. ” (Habermas, 1981: 70)

According to Habermas communicative action is the medium for practical rationality. In contrast to that there are rationalization and colonization processes present that are due to technical rationality. This technical rationality is what governs systems of instrumentality such as bureaucracy, industries, the capitalist economy as a whole, and democratic political government. Because ideas of importance to this industrial system are only transmitted based on the rules of itself (the system), communication is systematically distorted and when the resulting consensus from distorted communication is accepted as normatively relevant from people then the lifeworld is colonized.

The relationship of lifeworld and system are of major subject in Habermas' theory and basis for a whole category of criticism towards post-modern capitalist societies. These critical ideas lay out a groundwork for the study on modern societies and gain even greater relevance with the upcoming of digital communication.

2.4. Conclusion

As mentioned earlier all of the models and theories above have certain weaknesses and strengths. For investigation one will have to fully understand all these aspects and has to clearly define which of the models one wants to apply during the investigation. Additionally it has to be questioned if any of these models are truthfully applicable to the investigation at all. The theoretic groundwork of communication sciences is far from being fully understood and with the mainstream distribution of digital communication technologies new aspects might become visible that earlier could not have been considered.

3. Public Opinion

Regardless of whether democratization in the “new Middle East” succeeds or authoritarian forms of government prevail once again, one fundamental change has already become clear: no one will be able to govern without taking into account domestic public opinion.

Joschka Fischer, Ex Foreign Minister of Germany⁷

3.1. Introduction

Opinion can be defined as a subjective believe that is based on the interpretation of facts and emotion. Usually there are many elements that influence how a person forms opinion, such as cultural background, education, understanding, beliefs, and desires. Where different opinions are present, the subject is not fully supported by factual information and some of the factual information is not being accepted by one side of the opinion.

⁷ <http://www.project-syndicate.org/commentary/fischer66/English>

3.2. Public Sphere

The term Public Sphere in its contemporary understanding is mainly formed around the ideas of Jürgen Habermas which he expressed in his *Habilitationsschrift* “The Structural Transformation of the Public Sphere – An Inquiry into the Category of Bourgeois Society” (in German, *Strukturwandel der Öffentlichkeit. Untersuchungen zu einer Kategorie der bürgerlichen Gesellschaft*). This work has been very influential, especially after its translation to English in 1989, and is often used as a conceptual foundation of other public sphere theories. Although the ideas expressed in this book are often discussed controversially and many of them are criticized by a great variety of scholars, it still remains “the most significant modern work on its subject” (Calhoun, 1999 : 5).

About the role of Habermas for academics Bohman and Rehg wrote: “Jürgen Habermas currently ranks as one of the most influential philosophers in the world. Bridging continental and Anglo-American traditions of thought, he has engaged in debates with thinkers as diverse as Gadamer and Putnam, Foucault and Rawls, Derrida and Brandom. His extensive written work addresses topics stretching from socio-political theory to aesthetics, epistemology and language to philosophy of religion, and his ideas have significantly influenced not only philosophy but also political-legal thought, sociology, communication studies, argumentation theory, and rhetoric, developmental psychology, and theology. Moreover, he established himself prominently in Germany as a well known intellectual, commenting on controversial issues of the day in German newspapers such as *Die Zeit*.” (Bohman, Rehg)

The subject of his most famous work “The Structural Transformation of the Public Sphere”, which was translated to English twenty-seven years after its original German publication, is “the historically specific phenomenon of the bourgeois public sphere created out of the relations between capitalism and the state in the seventeenth and eighteenth centuries. Habermas sets out to establish what the category of public meant in bourgeois society and how its meaning and material operation were transformed in the centuries after its constitution.” (Calhoun, 1999: 5)

Growing from the need of merchants for accurate information about distant markets the public sphere evolved providing a space for private individuals and government authorities to freely meet and discuss about public topics, issues, and concerns. In his analysis Habermas explains the role of the so called “institutional criteria” as a precondition to the public sphere. He refers to the coffee houses of Britain, *salons* of France and the *Tischgesellschaften* of Germany, places where

the bourgeoisie have met and served as a discursive core where public opinion was expressed and through which public sphere developed. Habermas further identifies four “institutional criteria” which are essential for the emergence of the new public sphere: (1) Disregard of status, (2) rational argument, (3) domain of common concerns, (4) inclusivity.

“(1)The first and perhaps most basic [criterion] was a kind of social intercourse that, far from presupposing the equality of status, disregarded status altogether. Of course, this was not fully realized, but the idea had an importance of its own. [...] The notion of common interest in truth or right policy thus undergirded the “bracketing” of status differences. This was in turn linked to a second crucial feature, (2) the notion that rational argument and not the identity of the speaker was supposed to carry the day institutionalized as an available claim. (3) Third, discussion within such a public presupposed the problematization of areas that until then had not been questioned. All sorts of topics [...] were opened to discussion, inasmuch as the public defined its discourse as focusing on all matters of common concern. (4) Fourth, the emerging public established itself as inclusive in principle. [...] However exclusive the public might be in any given instance, it could never close itself off entirely and become consolidate as a clique.” (Calhoun, 1999: 12-13)

Identifying the socio-economic changes to large parts of the eighteenth century population Habermas explains that “the [new] bourgeois public sphere may be conceived above all as the sphere of private people come together as a public; they soon claimed the public sphere regulated from above against the public authorities themselves, to engage them in a debate over the general rules governing relations in the basically privatized but publicly relevant sphere of commodity exchange and social labor.” (Habermas, 1989: 27)

It has to be understood that “Habermas did not mean to suggest that what made the public sphere bourgeois was simply the class composition of its members. Rather it was society that was bourgeois, and bourgeois society produced a certain form of public sphere.” (Calhoun, 1999: 7)

“In its clash with the arcane and bureaucratic practices of the absolutist state, the emergent bourgeoisie gradually replaced a public sphere in which the ruler’s power was merely represented before the people with a sphere in which state authority was publicly monitored through informed and critical discourse by the people” (Habermas, 1989: xi)

Habermas developed his ideas on the observations that new civic societies evolved during the Renaissance in Western Europe and the United States of America due to specific socio-economic and cultural circumstances. More specifically Habermas defined three elements that have been crucial to the foundation of the new bourgeois public sphere:

1. **Property.** In the beginnings of non-industrial capitalism the economic role of the bourgeoisie influenced the public sphere. The accumulation of property and the growing wealth among the educated middle class was a reason for increasing criticism against the governmental restrictions on free flow of merchants and other market dynamics. The industrialization has further strengthened conflicts, between the interests of the bourgeoisie and the ruling class, which were mostly carried out in bourgeois public sphere and brought towards a governmentally accepted solution.
2. **Bourgeois Family.** The accumulation of property and wealthy and the necessity to pass this property on to following generations lead to a reconceptualization of the family. As property owner the father used to represent the interest of his bourgeois family in public sphere, but also the sons were increasingly participating in the public sphere.
3. **Literary public sphere.** In his theory Habermas describes that the bourgeois public sphere was preceded by a literary public sphere. Such a literary public sphere have evolved due to the growing literacy rate among a wide part of the population, including women and revealed the “interiority of the self and emphasized an audience-oriented subjectivity.” (David Randall, 2008)

While the appearance of print media in the form of newspapers, journals, reading clubs, coffeehouses substituted the “representational” culture with the public sphere, the appearance of commercial mass media, had then resulted in the eventual decay of the public sphere, because it turned the critical public into a passive consumer public. It tuned the public sphere into a site of self-interested contestation for the resources of the state rather than a space for the development of a public-minded rational consensus.

Habermas has also received great attention because of his description of the degeneration of the public sphere. Calhoun summarizes: “The eighteenth-century public sphere had been constituted in the discourse of private persons but was based on a distinction between the private activities that formed them for public life and provided its motivations and that public life itself. By contrast, the sphere generated by the mass media has taken on the traits of a secondary realm of intimacy. We experience radio, film, and television communication with an immediacy far greater than that characteristic of the printed word. One of the effects of this on public discourse

is that “bracketing” personal attributes and concentrating on the rational-critical argument becomes more difficult. [...] At the same time the new public-relations industry finds it easy to engineer consent among the consumers of mass culture. Even states must address citizens as consumers when they, like private corporations or political candidates, seek to cultivate an uncommitted friendly disposition.” (Colhoun, 1999: 24-25) “By means of these transformations, the public sphere has become more an arena for advertising than a setting for rational-critical debate.” (Colhoun, 1999: 26)

As mentioned above this theories have not only been widely accepted but also criticized. One of these critics argue that the social basis for bourgeois public sphere, property and education, correlated with what the upper class is and that therefore the bourgeois public sphere is rather an upper class public sphere. Other critics regarding the exclusivity of the bourgeois public sphere, excluding poor, women, slaves, migrants where expressed, especially by special interest groups like feminists or post-colonial authors.

“The importance of the public sphere lies in its potential as a mode of societal integration. Public discourse (and what Habermas later and more generally calls communicative action) is a possible mode of coordination of human life, as are state power and market economies. But money and power are non discursive modes of coordination, as Habermas's later theory stresses; they offer no intrinsic openings to the identification of reason and will, and they suffer from tendencies toward domination and reification. State and economy are thus both crucial topics for and rivals of the democratic public sphere.” (Calhoun, 1999: 6)

3.3. Approaches to Public Opinion

3.3.1. Lippmann, Tönnies, Habermas.

Public Opinion describes the dominant opinions around certain topics of general interests or specific interest like politics, sports, economics in a society. These special interests are often from interest to partial publics which differ from the general public.

Walter Lippmann noticed 1922 in his early book *Public Opinion* that “since Public Opinion is supposed to be the prime mover in democracies, one might reasonably expect to find a vast literature. One does not find it. There are excellent books on government and parties, that is, on the machinery which in theory registers public opinions after they are formed. But on the sources from which these public opinions arise, on the processes by which they are derived there is relatively little.” (Lippmann, 1922: 253)

And also in 1922 Ferdinand Tönnies has published significant analysis on public opinion (Tönnies, 1922) in Germany. Unfortunately at that time there were little connection between American and German scholars with the effect that the theoretical approaches from Tönnies and Lippmann were not able to influence each other and the academic research around the topic of public opinion was scarce until later researchers such as Habermas, Luhmann⁸, and Noelle-Neumann⁹ were able to build on the foundations of the theoretical basis by Tönnies and Lippmann.

The concept of public opinion is closely connected to the concept of public sphere and has evolved through the social, economic, and political processes that took place during the eighteenth century which resulted in the rise of the "public" as described by Habermas. Although public opinion is older than its proper term, public opinion has always been part of the human community. Where human beings gathered in families, communities, or vicinities certain dominant opinions are present, that build a universal consensus. Through the invention of the printing press and the developments in bourgeois society, as identified by Habermas, opinion was able overcome certain geographical and social frontiers allowing for a greater and wider public. Still certain frontiers to public opinion still exist today, such as language, media ecology, or education to name a few.

⁸ Niklas Luhmann on public opinion, see chapter 3.3.2. Luhmann's Systems Theory.

⁹ Noelle-Neumann on public opinion, see chapter 3.4.1. Spiral of Silence.

According to Habermas the general public opinion is a result of democratization in modern history: “Publicity was, according to its very idea, a principle of democracy not because anyone could in principle announce, with equal opportunity, his personal inclinations, wishes, and convictions – opinions; it could only be realized in the measure that these personal opinions could evolve through the rational-critical debate of a public into public opinion” (Habermas, 1989: 219)

Public opinion in the Habermasian sense is more than the sum of all opinion of all individuals in a society. It is based on the rational-critical debate among individuals who themselves have to be interested and engaged in topics of interest to form their proper opinion.

As mentioned above critique for Habermas' theory of public opinion was expressed by various authors, although often from an ideologically fixed position. The most valuable critique came from Nikolas Luhmann, arguing from the perspective of systems theory, who over the course of decades had ongoing conversations with Habermas which were very influential for the further development of Habermas' theory. Although Luhmann's premise agrees with Habermas' he pursues the question of how and to what extent the concept and function of public opinion have changed (Hohendahl, 2001: 99).

3.3.2. Luhmann's Systems Theory.

The Systems Theory developed by Niklas Luhmann over the course of decades and various publications is an important work in the definition of society and communication. The theory focuses on three topics which are interconnected in his entire work: (1) Systems Theory as Societal Theory, (2) Communication Theory, and (3) Evolution Theory.

According to Luhmann society is the sum of all communication and systems within society. There is a great variety of different systems, like the political system, the religious system, or the economic system. Communications are the operations of systems in society, resulting that systems which do not communicate cannot operate. To further clarify this model Luhmann introduces the term environment (in German, *Umwelt*) which is everything that is not part of a specific system. (Luhmann, 1995)

Communication in a system is reduced to limited amount of information available in the

environment. This reduction of complexity is based on meaning (in German, *Sinn*). Based on this characteristics every system has developed an identity, based on what is meaningful and what not, that is constantly used in the system's communication. If a system fails to maintain its identity it breaks apart and dissolves back into the environment, a process Luhmann calls autopoiesis. Luhmann's model of systems theory stands in contrast to other models, like the differentiation between politics and society by Hegel, or a simplified "politics / economic / social system" model that is often been used.

In Luhmann's systems theory public opinion is a form of structural coupling between the two systems of politics and mass media. These systems develop collectively obligatory decisions by improving their chances of consensus. Mass media have a preference for conflicts with the result that communication about conflict usually leads to ideology. According to Luhmann mass media create the topics that politics are going to treat. Because of the amount of information that is diffused via mass media an individual observation of the environment is no longer necessary. News, announcements, and reports are observations of observers. This indirect nature of topics can have many levels.

Apart from the distortion through the mass media there is also a "technical" problem to the creation of public opinion. The state of consciousness of a great a mount of people is not transparent (i. e., it is opaque) with the result that individual opinion is often not considered during the creation of public opinion.

Based on these circumstances Luhmann reasons that the public opinion as the sum of all individual opinion of all people is not comprehensible. Public opinion is what people (and organizations) accept as public opinion and is therefore a communicative construct, which only as such can be called "reality".

3.3.3. Public Opinion in Modern Academics.

In modern academics we can find research about public opinion in various disciplines such as political sciences, marketing, economics, literature, communication sciences, and even folkloristics. At present there are three mayor notions of public opinion that can be described: (1) Sociological-analytical notion of public opinion, (2) socio-philosophical notion of public opinion, and (3) public opinion as the subject and result of opinion polls.

1. **The sociological-analytical notion of public opinion** was developed by Tönnies and understands public opinion as a “mental dimension” necessary for the cohesion of modern societies. In this notion public opinion includes not only established opinions (like scientific results) but also altering opinions (like dominant opinions in media) and even fluently altering opinions (i. e., rumors).
2. **The socio-philosophical notion of public opinion** implies the holder of public opinion to fulfill certain requirements for instance "being informed" or education. This notion evolves from the works of Habermas already mentioned above.
3. **Public opinion as the subject and result of opinion polls** has mainly been described by Childs (1965). It describes public opinion as the opinions, attitudes, and behaviors of human beings in society, based on the majority or a certain accordance. This is what Calhoun refers to as “mere opinion” (Calhoun, 1999: 17).

“What is being developed and then critiqued is a conception of public opinion as a reasoned form of access to truth. This replaces the notions of public opinion as the 'mere opinion' (or arbitrary views) of isolated individuals taken in the aggregate, the reputation that emerges in the mirror of dispersed opinions, and the opinion of the 'common' sort of people. Rather, public opinion comes to refer more positively to the views held by those who join the rational-critical debate on an issue” (Calhoun, 1999: 17).

3.4. Communication Theories Related to Public Opinion

3.4.1. The Spiral of Silence.

The Spiral of Silence (in German: *Die Theorie der Schweigespirale*) is a theory in mass communication and political sciences that was developed by the German scientist Elisabeth Noelle-Neumann in 1974. This theory is an important element in public opinion research and has been criticized thoroughly in European and American academics.

Working and researching in the field of opinion polling at the *Institut für Demoskopie Allensbach* in Germany Noelle-Neumann developed a distinct approach towards the theory of public opinion. She understands public opinion as opinions, attitudes, and behaviors that have to be articulated publicly by an individual to manage her role in society, more specifically public opinion is used to prevent the individual from becoming isolated in society. The Spiral of Silence is part of the Noelle-Neumann theory of public opinion.

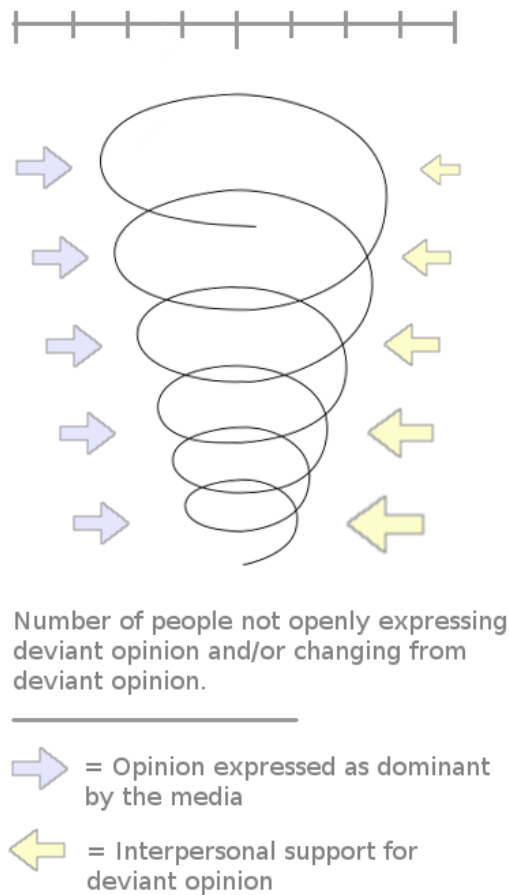
The Spiral of Silence Theory is based on five hypotheses: (1) Threat and fear of isolation, (2) quasi statistical sense, (3) willingness to publicly express opinion, (4) positive correlation between present and future, (5) the subject is of emotional character.

1. For society to remain “in order”, a **threat of isolation** is applied to its individuals with the goal to establish a consensus, or social order. Individuals who violate the consensus are being threatened with isolation. Furthermore fear of isolation is the reason why individuals adopt or refuse certain public opinions. It is the driving force that influences opinion trends and initiates the spiral of silence. People have the tendency to conform with the major opinion or at least not to stand up against it.
2. Noelle-Neumann identifies what she calls "**quasi statistical sense**" (in German: *Quasi-Statistischen Wahrnehmungsorgans*), a human sense or “an innate ability” to examine the circulation and the development of opinions in public sphere. This examination process applies to both opinion in the individuals social network as well as opinions distributed via other (mass) media. According to Noelle-Neumann people are constantly observing trends and developments on public opinion. This behavior helps an individual to estimate “how far [she] expects to expose herself publicly on a particular subject” (Noelle-Neumann, 1984: 45) and therefore reduce the risk of isolation.

3. **The willingness to publicly express opinions** varies from individual to individual depending on the perceived dispersion of certain opinions and its expected future development. If an individual feels that her opinion is on the rise or already in the majority then this person is more likely to publicly announce this opinion or show behaviors that are connected to it. On the other hand an opinion that is decreasingly accepted by society or already in the minority is less likely to be announced in public. The result is that the first opinion will become the dominant opinion in society while the second opinion will almost disappear from society, regardless of correctness or accuracy of the opinions.
4. **The positive correlation between the present and the future** explains the observation that, when an opinion is presently considered as the prevailing opinion, then it is likely to be considered equally in the future.
5. Condition for the appearance of the spiral of silence is that **the subject**, the topic of the competition between opinions, **is of emotional character**. The spiral of silence does not apply to opinions that are scientifically proven to be right or wrong. The opinion of the minority can only be declared as morally wrong, but not as rationally false.

These five hypothesis are the basis of the Spiral of Silence. Individuals who are in fear of isolation from society observe closely the public opinions expressed in their vicinity or via mass media and adjust their own behaviors, beliefs, and attitudes to the dominant opinion. This effect spreads exponentially until almost all individuals agree to the same dominant opinion or at least do not express contrary opinions in public.

Certainly there are exceptions: A vocal minority called the “hardcore” or the “avant-garde”. While the hardcore are people who have already been rejected (from society) for their beliefs, people who have nothing to lose, the avant-garde are a specific group of intellectuals, artists and reformers who express unpopular opinions as a way to clash against the conventional and show that they are ahead of the times. This vocal minority, in contrast to a silent majority, can be the key to overcome the spiral of silence. (Griffin, 2009)

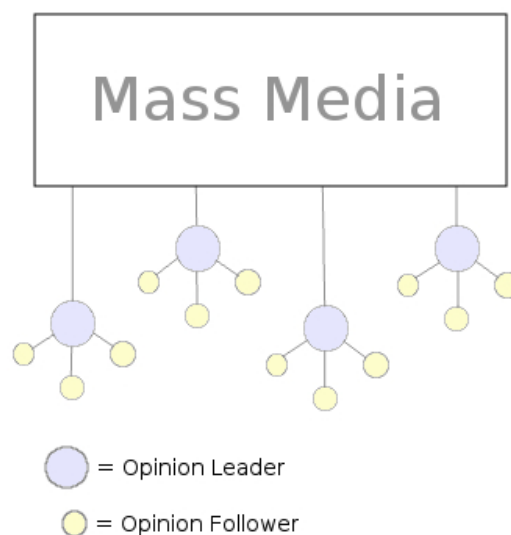


The Spiral of Silence Model.

Although the Spiral of Silence is a helpful theory to investigate public opinion it is still far from being complete. Little research has been done focusing on the cultural variations of societies. Does the spiral of silence apply the same way in a society that shows a stronger appeal to collective behavior than western societies? How differs freedom of expression and opinion and what are their effects on the spiral of silence? What are the effects of modern digital communication on the spiral of silence? If personal and mass media influence the spiral of silence what influence do social media have?

3.4.2. Two-Step Flow of Communication.

The two-step flow of communication model was first introduced by Paul Lazarsfeld et al. in 1944 (Lazarsfeld et al., 1944) and further elaborated by Elihu Katz and Lazarsfeld in 1955 (Katz, Lazarsfeld, 1955). In the first study by Lazarsfeld et al. the researchers were focusing on the process of decision-making during election processes. Against their expectations they discovered that influence on voting behavior was mainly influenced by personal and informal contacts instead of newspapers or radio. On this basis Katz and Lazarsfeld developed the two-step flow of communication.



Two-Step Flow of Communication Model.

The two-step flow of communication introduced the concept of “opinion leaders”, stating that information distributed via mass media does not have direct effects on the creation of public opinion, as it was believed in earlier times and suggested by the hypodermic needle model¹⁰. Opinion leaders hold a certain position between mass media and receiver and become a bridging element in the uni-directional flow of information in mass media. They have greater access to media, are more knowledgeable about media content and have the ability to receive, filter media content and then distribute and explain it to the so called “opinion followers”. In the times of the development of the theory opinion leaders were locally based individuals, a characteristic that need to be questioned in todays media topography.

¹⁰ The hypodermic needle model suggests that a certain message is directly received and accepted by a receiver. This model originated from the 1930s and is considered obsolete.

Furthermore opinion leadership cannot be understood as a general attribute of a specific individual. It is more a specific issue that is been reflected by certain individuals who are more knowledgeable about this topic. An opinion leader of one topic is not necessarily opinion leader of another topic. Opinion leaders seem to be equally distributed among social, economical, and educational classes and have the strongest influence on likewise individuals.

The book *Personal Influence* (Katz, Lazarsfeld, 1955) was based on a empirical study conducting 800 women and investigation their sources of information for decision making. It concluded that traditional media influence is less influential than face-to-face interaction, because of four factors: (1) Casualness, in contrast to traditional media where political topics are expected by the audience, in face-to-face communication theses topics can casually “pop-up”, giving the receiver little possibilities to adapt a defensive position. (2) Mass media is uni-directional media, whereas in personal conversation resistance from the receiver can be fought. (3) Personal contact carries trust. (4) While media can only change opinion, personal communication can trigger action, without persuading.

The two-step flow of communication model has also been very influential for the agenda setting theory which presumes that media does not tell the receiver what to think (opinion), but what to think about (topic). Although this theory was confronted with valid criticism, carefully applied it is an important model and adequate description on the influence of media on believes and behavior.

4. Social Networks

4.1. Introduction and Terminology

During the first decade of the twenty-first century the term "social network" has become widely adopted by a general public. The reason for this was the advent of social network services - websites and applications that facilitate communication among a specific group of users on the Internet and make visible the connections among them. Falsely the term social network is used as a synonym to these digital social network services. The term social network refers to non-mediated social networks that human beings develop and maintain in order to create society. social network services are a product of information technologies, traditionally a website, that enables humans to transmit the paradigm of social networks into a web environment. This misappropriation of these terms has created a lot of confusion during the discussing about these topics. But, as Barry Wellman (2001) puts it, social network services have brought social networks into people's consciousness.

Social networks are the essential structure of human society and are a product not only of one individual, but the totality of individuals in a given society. For millions of years human beings have developed around organizational patterns based on social networks, which are dynamic, ubiquitous, inevitable, and from the moment we communicate, we are in the process of shaping them. Social networks can differ in size and structure. Examples are the family, friends, neighbors, colleagues from work or a sports club. The position of an individual inside her social network can be very distinct.

4.2. Definition and Description

4.2.1. Connection and Contagion.

The position of an individual inside her proper social network can be very important. Some people position themselves in a very central place having a great variety of connections with many other individuals (who also have a great variety of connections), while others have occupied a rather marginal position. Both positions have their advantages and disadvantages. Individuals that take a rather central spot in their social network have great advantages in receiving and sending information, but are more prone to infections that spread through the network.

To understand basic characteristics of social networks we must understand two fundamental aspects described by Christakis and Fowler (2010: 16): Connection and contagion.

1. **Connection** has to do with whom we are connected to. When a group is formed it becomes a network because of the connections among its members. These connections, that are crucial to social networks, can be ephemeral or lifelong, casual or intense, personal or anonymous. The totality of connections create the structure, or the topology, of our social network. Due to the dynamic nature of connections social networks are also dynamic and evolve. The complexity of connections cannot be easily overlooked and described.
2. **Contagion** is what flows across the network. Often it is information, as we speak to each other, but it can also be emotion, goods, bacteria, money, or opinion. Each contagion is transmitted according to its characteristics. While information is usually transmitted over a medium, such as speech or writing, bacteria might be transmitted via droplet infection, and money via the physical interchange of coin or bill.

Various types of connection patterns can be found among groups of individuals. A common method to organize a group of people is the bucket brigade. The bucket brigade, sometimes called human chain, is a linear chain of individuals who transport items (such as buckets of water) from one place to the other. The chain is only possible if there are enough individuals to

create a chain that spreads over the necessary distance. This method was commonly used by fireman before the invention of hand pumped fire engines, but is still applied in occasions where machines would be impractical. By applying this chain to a group of people, each individual saves energy. The alternative, each person acting individually, implies that every person has to walk with a full bucket of water from the water source to the fire and back to the water with an empty bucket to refill it. For each bucket a individual has to walk the distance between the water and the fire twice.

In the bucket brigade every person is a node and every act of passing the bucket to another node is a connection. The contagion of this network are buckets of water. This linear network of connections has the effect that each node remains in a fixed position and only has to connect to its two neighboring nodes to maintain the network. The efficiency (the amount of buckets that reach the fire within a given time) doubles, because the buckets can be transported back to the water simultaneously. By acting as a whole and creating connections between the nodes a social network is created that is more efficient than the sum of its individuals. Christakis, Fowler (2010: 9)

The bucket brigade is a linear network, where every node is connected to two other nodes. While this type of organization can be useful for fighting fires, there are also more complex forms of networks, that are useful in other situations, such as the telephone tree. If an information needs to be distributed via telephone, the bucket brigade is not very effective, because it can take a lot of time until the first person reaches the second one, the second one reaches the third one, the third one the fourth one and so forth. Using a telephone tree is much more effective. One person calls two other persons delivers the information and asks the two persons to also call two other persons themselves. Within two steps (or two degrees of separation), not only two persons would have received the information, as in the bucket brigade, but six, and one step later already fourteen nodes would have been connected. One person that receives a call and called two more persons is therefore connected to three other nodes. The amount of "individuals reached" grows exponentially using this method. A group of one hundred individuals can be reached via six steps only, while in a bucket brigade ninety-nine steps are necessary to distribute the contagion among one hundred individuals. Contagion has to be considered, when forming a social networks. Information, in contrast to buckets of water, can be copied. The telephone tree is therefore not applicable to the situation of extinguishing a fire.

A third type of network structure is the military squad. Here a group of one hundred soldiers are usually organized in ten squads of ten soldiers each. The connections established in a squad are

two-way connections. By doing so a single squad is more intra-connected in itself than inter-connected with other squads. The advantage is that the ten members on a single squad know each other very well and are able to act together as part of a greater whole.

Although the terms "group" and "network" are often used as synonyms, we have to clarify the differences. According to Wellman (2001) "a group is a special type of network: densely-knit (most people are directly connected), tightly bounded (most ties stay within the densely knit cluster), and multistranded (most ties contain many role relationships)". He further explains that "We find community in networks, not groups, although people often view the world in terms of groups, they function in networks. [...] Communities are far-flung, loosely bounded, sparsely-knit, and fragmentary. Most people operate in multiple, thinly connected, partial communities as they deal with networks of kin, neighbors, friends, workmates, and organizational ties. Rather than fitting into the same group as those around them, each person has his/her own 'personal community.'" (Wellman, 2001: 1)

The shape (also referred to as the structure or typology) of a network is another of its basic properties. In the case of a certain event, that needs organization of a group, such as a fire or the transmission of a certain piece of information it is wise to collectively utilize a certain structure to optimize the efficiency of the group. Being part of a society we usually do not actively organize our position around a specific structure, at least not consciously ("friends come and go"). The network we shape around ourselves is a mixture of uni-directional and bi-directional connections to one, two, or a whole group of people. The links we establish can be ephemeral or lifelong and the network changes from time to time, given the fact that people die, get born, or relocate. The outer parts, the surroundings, of our social network tend to change more than its core, because we have established strong ties to closer nodes (e. g. parents, sister, brother, old friends) and weaker ties to nodes that can be described as being "farther away" from the core of our social network (e. g. the bartender from our favorite bar).

4.2.2. Five Rules of Social Networks.

Christakis and Fowler (2010) have identified five rules of "life in the network": (1) We shape our network, (2) our network shapes us, (3) our friends affect us, (4) our friends' friends' friends affect us, and (5) the network has a life of its own.

1. **We shape our network.** The first rule of real life social networks is based on homophily (literally “love for the equal”). Homophily is the principle that interactions between similar people occur more often than among dissimilar people (Lazarsfeld & Merton, 1954; McPherson, et al., 2001). From supporters of a certain political party to members of a club or fans of a music band, interactions within those in-groups are more likely than with cross group interactions.

Beyond homophily we actively design the structure of our social network in three ways. We decide (1) to how many people we are connected, (2) how our family is connected to our friends, and (3) in which position of our social network we collocate (a central position with many direct connections or a rather marginal position farther away from the core).

The options of control about our own social network are limited, because we cannot choose the family we are born into, members of our social network are also born, die, or simply relocate, and the amount of personal contacts is limited (we cannot be friends with everybody). The quality of our relationships and the strength of our ties also differ strongly. We can differentiate between relationships of high transitivity and low transitivity. Relationships of high transitivity are relationship with a triangular pattern. That means, that my friend A is also a friend of my friend B. If most of my relationships have low transitivity most of my friends do not know each other. The quality of these relationships is different, although the quantity is the same. As we try to influence our proper social network, we encounter certain limitations, which lead us to the second rule.

2. **Our network shapes us.** Our social networks has continuous influence on ourselves. If a friend of mine bonds a new tie to another individual in her social network, it is possible, that my friend will introduce the third person to me. This person can then have a strong impact on my own life. We are strongly influenced not only by our networks and the decision we make to influence the structure of our network, but also by the decisions made by other direct or indirect members of our friends network. This is what is further described by the third rule.
3. **Our friends affect us.** The influence our friends have on ourselves comes mostly through copying. We copy behavior of our close friends, family, or colleagues. If we go

out for dinner with a friend that usually eats more than we normally do, we are also likely to copy this behavior and eat more ourselves. Beyond the tendency to copy friends behavior, we can see that this influence is not limited to one degree of separation only, here the fourth rule of social networks applies.

4. **Our friends' friends' friends affect us.** What is described as hyperdyadic spread is essential to this rule. Not only do our close friends (direct connection) have influence on ourselves, but also our friend's friend's friends, meaning to four degrees of separation. Certainly the influence decreases with every degree of separation, but still it is existent, even if we do not know that person. Examples for this principle are the transmission of jokes, information, or germs. A study about the contagion effects of obesity shows that “the increase in probability that a person is obese, given that a social contact is obese” is 45% at one degree of separation, 25% at two degrees of separation, and 10% at three degrees of separation (Christakis, Fowler, 2007). Meaning that if your friend's friend's friend is obese the probability that you will become obese increments by 10%. Given the nature of social networks this rule applies in multi-directional pattern, meaning that your own influence on your friend's friend's friend is equally strong.

5. **The network has a life of its own.** Certain tendencies of social networks cannot be explained looking at a given amount of nodes and connections, but can only be observed and studied from a global point of view. To study the overall dynamic of a social network has been almost impossible because of the inconceivable complexity of its structure, but modern technologies and more specifically social network services on the Internet make such observations possible.

Such global social network dynamics can be observed by taking a look at the flocks of sheep, cows, fish, or even traffic jams. One individual in such a group does not know why the whole is swimming to the right. Taking a look at the whole flock we can encounter that the reason for such a collective behavior is of defensive nature. Until today it is not fully understood from where such a collective intelligence arises.

4.2.3. Six Degrees of Separation and Three Degrees of Influence.

In the year 1969 Stanley Milgram conducted an experiment which suggested that every human being on this planet is connected through approximately six degrees of separation (Milgram, Travers, 1969). The experiment consisted of 100 letters that were addressed to a business man in Boston, but sent to 100 persons in Nebraska. The 100 persons were asked to send the letter to another person they knew and from which they thought would be more probable to know the business man. The participants were asked to count the number of steps needed to send the letter. The average separation between the 100 initial individuals and the business man from Boston was six degrees. Although this study was heavily criticized due to the fact that, although Nebraska and Boston are far away from each other (about 2500 km), they are still in the United States, other reproductions of the same experiment with a rather global dimension and via e-mail showed similar results (Dodds, et al., 2003). This theory is generally known as the “small-world problem”.

As Christakis and Fowler (2007) have shown in their study about the contagious effects of obesity, certain clusters can spread over three degrees of separations. The results of their study lead to the creation of the fourth rule of life in a network (as described above). The scholars evaluated a densely interconnected social network of 12,067 people from 1971 to 2003 that were part of the Framingham Heart Study. It was examined whether weight gain in one person was associated with weight gain in his or her friends, siblings, spouse, and neighbors. A visualization of the studies data shows a social network where groupings of obese and non-obese individuals can easily be identified. While the effect was not seen among neighbors of immediate geographic location, the spread had greater influence among persons of the same sex in comparison to those of different sex. In numbers, the result of this study was the percentage in increase of probability of contagion mentioned above of 47%, 25%, and 10% depending on one grade, two grades or three grades of separation, respectively.

Later, three possible causes were identified that create these contagious effects in social networks: (1) Induction describes the process of copying unconsciously the behavior of our close friends, Christakis coherently describes it as “I gain weight, that causes you to gain weight”, (2) Homophily, that can be described by the phrase “I form my tie to you, because you and I share the same body size.”, and (3) confounding, the effect of mistaking certain random circumstances that lead to shaping of the group. Christakis (2010) calls this one “We share a common exposure to something, like a health club, that makes us both lose weight at the same time”.

4.2.4. Limitations.

The rules and aspects identified above provide good knowledge about an individual's role in a social network, but on the other hand these rules cannot be applied directly to any social network since they are strongly reduced to only one, two, or three connections. Our social network is created by hundreds of connections of different quality, that is why we have to understand that social networks cannot be understood looking at a few connections only.

The strength of the influence that acts upon an individual whose friends' friends' friend is obese is surprisingly strong, but it is not the only influence the individual receives. If the person's best friend does a lot of sports, the influence of her close friend might outweigh the influence of obesity from her friends' friends' friend. If we compare a social network to the Atlantic ocean, the influence an individual can have on other individuals is like throwing a rock into the ocean. Theoretically the ocean level will rise with every stone, but maybe at the same time a fisherman pulls a net full of fish out of the water and causes water level to fall. And there are certainly stronger effects on the water level, such as the melting of polar caps or evaporation effects caused by the sun. This phenomenon is named Intrinsic-Decay Explanation. It means, that by the time the influence reaches another person the effect might peter out.

Another limitation is the Network-Instability Explanation, which describes the dynamic of a social network due to reformation of social ties. Examples for these reformations are, birth, death, marriage, separation and many more.

The third possible reason of the limitation is the Evolutionary-Purpose Explanation. This explanation considers the anthropological roots of human society. Having evolved in small groups human beings had a necessity to know and understand not only their close friends, but also the friends' friend and the friends' friends' friend. Everything further away was not of importance to an individual. The creation of large groups is still very recent in human evolution, our social networks have not yet adapted to these developments. (Christakis, Fowler, 2010: 26-30)

4.3. Dunbar's Number

In his 1993 study Robin Dunbar took a look at relationships between the cortical size (the outer part of the brain, that is involved in higher functions such as spatial reasoning, conscious thought, and language, among others) in relationship to the total brain size, and the group size and language of humans. Dunbar developed an equation to calculate an average group size that a human being is able to overlook. The result was 147.8, with a rather wide range of possible variation from 100.2 to 231.1. These cognitive limitations of stable social relationships have come to be known as Dunbar's number (Dunbar, 1993).

Other equations based on alternative indices of neocortical size have shown similar results such as the Jerison's Extra Neocortical Neurons Index (107.6 - 189.1) or the absolute neocortical volume (248.6). Even other scholars (Mc Carty, Killworth, Bernard et al., 2000) that have also identified a coherent group number have come to results, that were not necessarily inside Dunbar's 100 to 231 range, but close (231 as a median, 290 as a maximum).

The average number of 147.8 is suggested to be a cognitive limit to the amount of people with whom an individual can maintain stable social relationships by personal contact. Social relationships are meant to be the case when “every member knows every other member, knows whether they are friendly or hostile, and knows the relationship among them.”(Christakis, Fowler, 2010).

Dunbar took a close look on existing hunter-gatherer groupings, due to the idea that “our brain size has its origins in the later stages of human evolution some 250,000 years ago [...], we may assume that our current brain size reflects the kind of groups then prevalent and not those now found among technologically advanced cultures”. He found out that three social groupings could be identified: “overnight camps”, “band/village”, and “tribe”. The mean size of these groups were 38, 148, and 1,155 people, respectively. The size of a band/village fit right into the results of Dunbar's calculations. Investigating further, Dunbar identified more examples of successful groupings that had a size of 100 to 230 people if not close to 150, such as fighting units in armies (usually 150) or the basic unit in the Roman army (120).

The example of a fundamentalist group called Schmiedleut Hutterites from North Dakota showed that this society prefers to split up into two groups rather than exceed a limit of 150 group members. According to Dunbar, “when the number of individuals is much larger than this,

it becomes difficult to control their behavior by means of peer pressure alone. [...] Rather than create a police force, they prefer to split the community.”

In another study from 1991 Dunbar shows that the time used for the act of grooming among primates is linear to the group size. Meaning that maintaining social relationships requires grooming, and that the bigger the group is, the more its members have to groom each other. The result is that the time required for grooming in a group of the size described by Dunbar's Number is 42 % of the total daily time budget (Dunbar, 1991). Because of these results Dunbar develops the hypothesis that language may have evolved to actively substitute a large amount of grooming and therefore facilitate the organization in larger groups.

4.4. Network Value

Since the advent of telecommunication and broadcast media, scholars from around the world studied the economies of mediated networks. To identify the value of a certain network was an important issue and part of monetization strategies. Network laws can be used as guidelines to determine the value of certain networks. Although an important aspect has always been the direct economic value of the network, other values such as diffusion, dynamic, or potency of the network are becoming increasingly important recently as they may lead to possible indirect monetization strategies. Although most of these laws have been invented with the concept of electronic networks in mind, it is also absolutely necessary to understand them for the study of non-mediated social networks.

An early law of the economics of computer-mediated networks is called Sarnoff's law. This law was drafted in the early twentieth century by David Sarnoff, a pioneer of commercial US-American radio and television. During the advent of mass-media Sarnoff described, that the value of a broadcast network is proportional to the amount of its users. The more users, the higher the value. The proportion between user and value grows linearly as with every new user the value of the network increases by 1.

Another law that has become important especially in the field of modern networks is known as Metcalfe's law. It was first described by Robert M. Metcalfe, the inventor of the Ethernet, in 1980 in relation to "compatible communication devices" (Simeonov, 2006), such as fax machines or telephones, and later revised with regard to "people" or user (Hendler, Golbeck, 2008). The law depicts that the value of a telecommunications network is proportionate to the square of the number of connected users of the system. The value of networks can be calculated from the amount of nodes (e. g., users, computers, or fax machines). Nodes in a network are interconnected, that means that every node has a direct connection to every other node. The total number of connections of a single node is $n-1$, because it cannot connect to itself. The value of such a network grows to the square of the number of nodes (n^2). A network that consists of 10 nodes has the value 10^2 or 100. If two networks each consisting of 10 nodes with the value 100 are joined the result is not 200, but 20^2 or 400.

The simplified conclusion of Metcalfe's law is that while the cost of a networks grow linearly, bigger networks have a proportionately greater value than smaller ones or "connecting two networks creates far more value than the sum of their values as independent networks"

(Rheingold, 2002:59). This is a good reason why the Internet is most effective when universally applied and even in business management this law can be applied when two companies merge to one. This law is most famously applied to the page rank algorithm by Brin and Page (1998), where pages are ranked based on the amount of links that point to them. This algorithm is the basis of the well-known search engine Google.

A third law that was developed to calculate the value of networks is Reed's law. Reed argues that when users are given the opportunity to create social groups within a network the value grows even faster than what is originally described by Metcalfe's law (Reed, 2001). These Group Forming Networks, as Reed coins them, grow by the value of two to the power of the number of nodes (2^n). When the value of a network of 10 nodes according to Metcalfe's law is 100, it would be 2^{10} or 1024 according to Reed's law. What this means is that when the nodes of a network are human beings, instead of documents or servers, and they can form sub-groups inside the network, the value of this network is significantly greater.

It is important to say that these laws have not been overall accepted. Especially Reed's law seem to be quite controversial, considering that the social network service Facebook would have a value of about $1^{955\ 000\ 000}$ (as of June 2012). What does that mean? Brisco et. al (2006) suggests that not all connections are of equal value and propose a proper formula $O(n \log n)$ to calculate network value. In 2009 Beckstrom developed the New Network Valuation Model, which defines that “the value of a network equals the net value added to each user’s transactions conducted through that network, valued from the perspective of each user, and summed for all”. Beckstrom believes that the earlier approaches by Reed and Metcalfe wrongly focused on the architecture or structure of a network, but that instead we have to calculate a net value which evolves from using the network. According to Beckstrom this model applies to any network: “social networks, electronic networks, support groups, and even the Internet as a whole”

In this model the net value differs for every single user. Beckstrom provides the example of an individual buying a book. If the book costs € 26,- in a real world book store, but only € 16,- on the Internet than the net value of this single transaction is € 10,-. Other factors that are important to calculate the final value are the benefit of using either the network or the bookstore over the other and the time elapsed to complete the buying and delivery process. The total net value of all transactions of a single user define the networks value for this single user and the sum of all users transactions net value define the total value of the network. Similar to the other laws the value of the network increases as more users join, as they bring more possible transactions to the network.

Although the underlying formula of these laws and models differ quite significantly, the result is often the similar: In a theoretic approach, where resources are not limited the value of the networks grows with the amount of its users. This effect is also known as Network Effect. On the other hand, this process of rapid increase of network value can turn back. This is then called the Inverse Network Effect.

5. Computer Mediated Social Networks

5.1. Introduction and Terminology

During the first decade of the new millennium the terms "Web 2.0", "social media", and "social networks" have become universally adopted by professionals, media and a general public to describe the new emerging paradigms of websites. Due to the fast development of these websites there used to be little consensus about the exact meaning of these terms. Intentions to provide a clear definition struggled with the invention of every new website that implemented these paradigms, but implemented additional functionality.

This dynamic and quick evolution resulted in a situation where these terms have been excessively misused by many people depending on their intention. Marketeers utilized the term Web 2.0 because it falsely implied a new version of the World Wide Web. It quickly became a buzzword and was picked up the media. Web 2.0 described pretty much everything that was new on the World Wide Web, but the idea behind it. Although the term is known to a very large amount of people, only few really understand what it means.

Still there is no unique definition, but many efforts have been made to resolve the confusion and provide a clear picture about the scope and the limitations of these concepts. This chapter will provide the theoretical basis for the paradigm of Web 2.0 and social network services with the goal to understand the fundamental distinctions and analogies of these new concepts.

But Web 2.0 is not the only term that is frequently misused: "Digital social networks", "digital network sites", or "social networking sites" are often equally misused when referring to social network services, i. e. web services that have specialized on the providing a social network environment (Web of Contacts). A reason for this is its recent appearance and lack of definition. Until recently it was not possible to fully understand and identify all of the essential aspects of these sites, which resulted in a great divergence about the appropriate vocabulary. Most scholars, like Boyd (2010), have preferred the use of "social network site" over terms. I will suggest that this is not correct and that the term "social network service" fits best.

The term "site" describes that this social network is happening in digital environment, in the World Wide Web, on a website. This distinction is important, since many people use the term "social network" falsely to refer to these digital social networks, but while the term "social network" refers to the real life social networks that human beings establish and maintain in order

to create society (e. g. family, friends, neighbors, colleagues), the term “social network site” refers to a product of information technologies, traditionally a website.

In these chapters I will use the concept of social network sites as described by Boyd (2010) but I will apply one single change: I will use the term “social network services” for what Boyd denominated “social network sites”, because I believe that these sites have grown out of their website-based environment and expand via applications, because of technological innovations like the smart phones and mobile broadband Internet. Not only can these services be used on a great variety of devices, such as mobile phones, photo cameras, televisions etc., they also expand into the analog world, for example by using analog (printed) code, such as QR-Codes. The greater the technological diversity becomes the less accurate it is to define them through a single technology, such as “sites” or websites or XML code, but the more important it becomes to emphasize the socio-economic role, which is a cross-platform service based on information technology.

In this chapter I will first provide the basis for the concept of Web 2.0, describing various definitions that shaped the understanding of this term. By explaining the confusion that derives from this term, I will try to develop a clear picture about it, its scope, and its margins.

5.2. Web 2.0

The so called dot-com bubble¹¹ marked a turning point in the development of the World Wide Web. Many companies from the so called "new economy" failed to cope with the expectations of their investors and went bankrupt. Many people thought the Internet was over-hyped, but in the eyes of Tim O'Reilly this bubble appeared to be a feature of a technological revolution (O'Reilly, 2005). O'Reilly and MediaLive International coined the term Web 2.0 during a brainstorming session in 2004. They thought that "far from having crashed, the web was more important than ever, with exciting new applications and sites popping up with surprising regularity"(O'Reilly, 2005).

O'Reilly claimed that the dot-com collapse marked a turning point for the Internet and that a new term needs to be found to describe this paradigm. Paul Graham wrote in a 2005 article on his website that, "I don't think there was any deliberate plan to suggest there was a new version of the web. They just wanted to make the point that the web mattered again. It was a kind of semantic deficit spending: they knew new things were coming, and the "2.0" referred to whatever those might turn out to be" (Graham, 2005).

Although the "2.0" falsely suggests a new version of the World Wide Web over the previous "1.0"¹², as known from version management in software development, it rather represents changes in the "way in which software-developers and end users utilize the World Wide Web" (Kaplan, Haenlein, 2010: 60-61). Web 2.0 was the term which best described the new era in the history of the web, but was misleading as it did not only refer to technological evolution. To further develop and manifest this idea the Web 2.0 Conference was created. The first Web 2.0 Conference was held in 2004 and was an intention to level out the "huge amount of disagreement about what Web 2.0 means" (O'Reilly, 2005). On the conference website it said:

"In recent years, the web has emerged as a platform in its own right, and the web's leading businesses have gained extraordinary success by leveraging this development in their own business practices. While the first wave of the web was closely tied to the browser, the second

11 The dot-com bubble was a speculative bubble around 1995 to 2000 where stock markets saw an rapid rise due to the Internet sector which had its highest point on March 10th. The most famous example of an completely over-hyped company was the website www.pets.com. Many other companies have failed or lost most of their value during the upcoming months. In the aftermath of the dot-com bubble many uncompetitive companies have been liquidated. The companies that survived the dot-com bubble were able to strengthen their market position on the long term, for instance, eBay, Amazon.com and Google.

12 Curiously the concept of Web 1.0 was coined after the invention of the term Web 2.0, describing everything pre-Web 2.0

wave extends applications across the web and enables a new generation of services and business opportunities. Web 2.0 is a new conference with the theme of The Web as Platform.” (O'Reilly Media, MediaLive International, 2004).

"The Web as Platform" had become the leading paradigm in the early years of Web 2.0. Tim O'Reilly himself tried to clarify the unseizable nature of this term with his famous essay “What Is Web 2.0”. In this essay he describes what distinct Web 2.0 applications from Web 1.0 websites by naming seven principles, (1) The Web As Platform, (2) Harnessing Collective Intelligence, (3) Data is the Next Intel Inside, (4) End of the Software Release Cycle, (5) Lightweight Programming Models, (6) Software Above the Level of a Single Device, and finally (7) Rich User Experience.

Six of the seven principles identified by Tim O'Reilly were based on technological advancements and developments in the business of software development and distribution. Only one principle “Harnessing Collective Intelligence” focused on what Web 2.0 meant for the users, addressing the concepts of Wisdom of the Crowds or User Generated Content. But according to O'Reilly the creation of content was not enough to characterize Web 2.0. He considered RSS, permalinks and *trackback*¹³ technologies equally crucial in the sense that they enable network effects in digital communication. He argues that the next generation of web services was based on the invention of new technologies. Databases¹⁴, Ajax¹⁵, and new scripting languages such as Perl, Python and Ruby changed the way websites could be designed. They implicated a transition from websites to web applications and from products to services, as described by O'Reilly using the example of Google:

“Google, by contrast [to Netscape, as a Web 1.0 product], began its life as a native web application, never sold or packaged, but delivered as a service, with customers paying, directly or indirectly, for the use of that service. None of the trappings of the old software industry are present. No scheduled software releases, just continuous improvement. No licensing or sale, just usage.”

O'Reilly always focused on technologies and not so much on the social phenomena underlying Web 2.0 (Hendler, Golbeck, 2008). Maybe it was because of this techno-centric definition from

13 *RSS*, *permalinks*, and *trackbacks* are different functionalities that enhance the integration of blogs into the web environment. RSS is a subscription feature and trackbacks in combination with permalinks facilitate cross-referencing of website content. These featured significantly enriched the webs user experience at that time.

14 *Databases* are organized collections of digital data.

15 *Ajax* (Asynchronous JavaScript and XML) is a group of web development techniques that enhances the user experience of websites. Instead of loading the whole web page Ajax allows for loading (or reloading) specific areas of the web page resulting in more dynamic websites.

O'Reilly or the syntax of this short flamboyant buzz-word, that the term Web 2.0 has been misused by many, especially media and marketeers. The result of this misuse was that the term gained a proper momentum and the unclear definition did not necessarily satisfy everyone. For the software industry it might have been useful, but to community managers, sociologists, or marketers this concept was deficient.

The famous technology guru Paul Graham, who attended the early Web 2.0 Conferences, wrote an early essay that described his proper definition of the term Web 2.0. According to Graham there are three major principles that underline this concept: (1) Ajax, (2) Democracy, and (3) Don't Maltreat Users.

About the importance of new technologies such as Ajax Graham says: "As you read this, a whole new generation of software is being written to take advantage of Ajax. There has not been such a wave of new applications since microcomputers first appeared." (Graham, 2005), but while Ajax refers to the new underlining technologies that O'Reilly himself has describes comprehensively, the principle of Democracy was a new thought.

Graham argues that in Web 2.0 "amateurs can surpass professionals, when they have the right kind of system to channel their efforts" (Graham, 2005) and he further explains that the sheer amount of content in combination with sophisticated filters will create better, cheaper, and democratically distributed content. About the advantages of these new possibilities over the traditional publishing methods, where editors "damp" bad content from writers, Graham writes "[...] But the pool of writers [in Web 2.0] is very, very large. If it is large enough, the lack of damping means the best writing online should surpass the best in print. And now that the web has evolved mechanisms for selecting good stuff, the web wins net. Selection beats damping, for the same reason market economies beat centrally planned ones" (Graham, 2005).

The third element of Grahams definition of Web 2.0 is called "Don't Maltreat Users" and refers to the new role that users resumes in Web 2.0 applications. In Web 1.0 users were often "abused" by the design of the websites, the unpractical registration processes and the vast amount of advertisement they had to tolerate in order to consume the content of the website. According to Graham a mental shift in the relationship of the web user and the web service provider is the basis of this third important element of Web 2.0.

Considering all three principles, Google was, at that time, the company that best represented the new concept and was used as a showcase for Web 2.0: "Google was a pioneer in all three components of Web 2.0: their core business sounds crushingly hip when described in Web 2.0

terms, "Don't maltreat users" is a subset of "Don't be evil," and of course Google set off the whole Ajax boom with Google Maps." (Graham, 2005)

Since then many extensive and emotional debates have been fought about this topic, while Web 2.0 was developing further and showing a clearer picture of itself with every new web application or web service that launched. Still today it is difficult to find an authoritative single-sentence definition of the term Web 2.0. When Kaplan and Haenlein (2010) speak of Web 2.0 as a ideological and technological foundation of Social Media they balance the technological dimension, as early identified by O'Reilly, with the ideological dimension of this term. While technology is about AJAX, RSS, Databases etc., the ideology of Web 2.0 is about the user, the network, and the service.

5.2.1. The User.

5.2.1.1. User-Centrism

Over the years it became clear that the user plays a significant role in Web 2.0. Google's products such as Google Search and Google Maps, once coined the archetypal Web 2.0 services, are not necessarily considered to be Web 2.0 anymore, since they lack one very important element: user-centricism.

In Web 2.0, users continuously modify applications and content in a participatory and collaborative fashion (Kaplan, Haenlein, 2010: 61), this is called User-Generated Content (UGC). Web 2.0 websites often only provide an architecture and structure, while its users provide the content. Famous examples are YouTube, the video sharing platform, where users can register and upload video clips or the collaborative encyclopedia Wikipedia. These services provide a rudimentary framework which grows and develops through of user-generated content.

Related to the concept of user-generated content is the concept of Wisdom of the Crowd.

Wisdom of the crowd refers to the process of bringing together and taking into account the collective opinion of a group instead of the professional opinion of a single expert. This new concept was most famously seen in the competition between traditional printed encyclopedias with a limited professional staff and the digital encyclopedia Wikipedia where thousands of amateur editors participate in the editing of this encyclopedia. Wisdom of the crowd is based on

the democratic treatment of user-generated content.

Three requirements have to be fulfilled to consider content as user-generated: (1) content needs to be publicly accessible through a website or to a selected group of users via a social network service, (2) it needs to show a certain amount of creativity, and (3) it needs to be non-professional. And although user-generated content is not new, still it is “fundamentally different from what was observed in the early 1980s”, because of its modern technological, economic, and social drivers. (Kaplan, Haenlein, 2010: 61)

To some extent this is what Graham meant with democracy being an essential principle of Web 2.0. Although he clearly separated the role of the user and the concept of democracy one could argue that the users are at the base of democratic web design. He writes: “The most dramatic example of Web 2.0 democracy is not in the selection of ideas, but their production” (Graham, 2005). If the production is user-generated, then this is where Web 2.0 democracy is based. Website developers are committed to offer basic structures for democratic communication otherwise they will not be able to develop a user base. They will not be Web 2.0.

The new role of the active user has led to the revivification of another old concept and the creation of even other more specific concepts that try to denominate the importance of it. The concept of Prosumers (Toffler, 1981), which describes the increasing blurring of the role of the Consumer and the Producer, has experienced a renaissance in the discussions about Web 2.0. Together with the technical advancements in digital photography and videography every amateur can easily produce and cheaply distribute her work via Web 2.0 applications, a fact that during the pre-digital camera and pre-Web 2.0 era was a privilege of professional producers only.

User-Centered Design has become the leitmotiv of modern product design. When in classic design users often had to adapt themselves to the product, the underlying idea of user-centered design is that designers have to foresee how their product will be used and depending on this the design has to be adapted to the needs of the user. Furthermore the end users acceptance of the design has to be tested, documented and eventually approved sometimes on a daily basis.

Although this design philosophy did not only arise from information technologies, it is there where its tremendous possibilities can be applied most comprehensively. Still, user-centered design is a growing paradigm in many other industries such as the automotive industry, architecture, public infrastructure, and design in general.

While the concept of user-centered design focuses on the individual user, there are other concepts that try to grasp a collective of all users. The concept of Smart Mobs, developed by

Howard Rheingold, describes that a crowd behaves more efficiently or intelligent when information technologies facilitate the creation of connections among the crowds individuals. Not only new and quantitatively more connections are created due to information technologies, but also the most rudimentary connection type, geographical proximity, is being augmented in quality and speed of information transfer. Rheingold gives the example of street protests by the anti-globalization movements or the 2006 student protests in Chile (Rheingold, 2002).

It is important to understand that the term smart mob does not intent to be either positive nor negative. Considering western democratic values many smart mobs are considered to be positive such as the 2009 Iran election protests or the Arab Spring of 2011, but on the other hand there are other events negatively blamed on smart mobs, such as growth in underage marriage in Indonesia, higher divorce rates, or the 2011 England Riots.

Another concept that has strong similarities to smart mobs is the concept of Intercreativity, coined by Tim Berners-Lee, the inventor of the World Wide Web (Berners-Lee, 1999). Following the idea of interactivity, Berners-Lee created the term intercreativity to refer to the potential of collaboration offered to prosumers through web technologies. The concept of intercreativity refers rather to the potential of collaborative product production rather than mobilization of protest movements like the concept of smart mobs does.

Professionalizing the idea of intercreativity we get what O'Reilly calls the concept of an Architecture Of Participation (O'Reilly, 2004). This concept is used by software-developers to describe the ideological architecture of a Web 2.0 service. The service is designed in a way that it encourages participation by the users to get involved in the creation of a professional product, based on user-generated content.

Whether we take a look at an individual or a group, the new role of users in web environment is an essential element of Web 2.0. It spreads from sporadic to professional participation, from design to production, and from online to offline. But users do not only create, filter, or distribute content, they also shape the network they use by creating personal links between human beings where in Web 1.0 only links between documents existed. Whether user-generated content, wisdom of the crowd, prosumers, user-centered design, smart mobs, intercreativity, or architecture of participation many of the developed concepts from the Web 2.0 era are interchangeable in their most basis assumption that the user is at the heart of those paradigms.

5.2.1.2. Self-Disclosure and Self-Awareness in Computer-Mediated Communication

Important behaviors in human communication for the purpose of creating identity are self-disclosure and self-presentation. Self-disclosure is defined as the "act of revealing personal information to others" (Archer, 1980, p. 183) or "the conscious or unconscious revelation of personal information (e. g. thoughts, feelings, likes, dislikes) that is consistent with the image one would like to give" (Kaplan, Haenlein, 2010, 62).

In his work "The Presentation of Self in Everyday Life" Erving Goffman (1959) suggests that because people are concerned about how they are perceived by others they have adopted specific roles which they play in life. According to this theory people are actors as they adopt behaviors with the goal to construct a favorable public image of themselves. These forms of role playing and ways of defining a public image of self are managed through verbal and non-verbal cues that humans provide during face-to-face communication. The way we create our roles can be a conscious or an unconscious process, depending on various factors like private and public self-awareness, distraction, social relationships, and education (Joinson, 2001).

In computer-mediated communication the conditions under which conversation is happening are different from face-to-face communication. Instead of being able to communicate with verbal and non-verbal cues, such as gestures and mimics, computer-mediated communication is usually characterized by an absence of visual and audible contact between the communicators. Instead the impressions that can be created using computer-mediated communication are text-based. The cues that can be created are limited to the language, typography, and chronemic information (Walther & Parks, 2002). Digital video conferencing, as an exception, is computer-mediated communication, but has similar mechanisms like face-to-face or telephone-mediated communication.

5.2.1.3. Hyperpersonal Perspective

Most of the early studies about text-based computer-mediated communication have focused on the limitations compared to face-to-face communication. Walther (1996) created the hyperpersonal computer-mediated communication model which posits that users "take advantage of the interface and channel characteristics that computer-mediated communication offers in a

dynamic fashion in order to enhance their relational outcomes"(Walther, 2007: 2540). This model concentrated on the technical affordances of the medium and not on the limitations compared to another medium. Using this approach Walther (2007) was able to identify four mechanisms of self-presentation unique to computer-mediated communication:

1. **Computer-mediated communication is editable.** The possibility to edit the content before sending it is an essential aspect to this type of communication. Features for editing are sophisticated even in simple software applications, such as instant messaging clients. The process of editing is more dynamic and faster than in traditional writing with pencil and paper and does not exist in face-to-face communication.
2. **Greater tolerance to response times.** In computer-mediated communication there is greater flexibility about the communication flow. Answers can be given with delay without causing a certain awkwardness. This gives the sender almost unlimited time for composing and editing.
3. **Physical isolation between sender and receiver.** In computer-mediated communication the sender has a greater amount of control about the leaking of unwanted cues, while in face-to-face communication the unconscious leakage of cues is a present phenomena because of the complex task of acting.
4. **Reallocation of cognitive resources.** While face-to-face communication requires a continuous attention and reaction to the communicators symbolic and physical expressions via nonverbal code systems, these actions become allocated to a single expressive vehicle in computer-mediated communication. A receiver only has to be attentive when the message is been received and can therefore have one or more other conversations at the same time.

Although these mechanisms prevail that text-based computer-mediated communication are not necessarily limited but can even augment communication by its unique characteristics, Walther (2007) posits that this hyperpersonal perspective has less to say about the specific social contexts or target partners among whom these dynamics should occur.

Studies show that significantly more self-disclosure happens in computer-mediated

communication than in face-to-face communication (Joinson, 2001). Additionally Joinson proved that the presence of a video picture in computer-mediated communication lead to lower levels of self-disclosure. Reasons for this are not thoroughly described yet, but Joinson assumes that the concerns about self-presentation are heightened through an "increase in public self-awareness and accountability concerns" (Joinson, 2001: 184).

A third study by Joinson (2001) discovers a relation between private self-awareness and public self-awareness. Participants of the study provided a large amount of self-disclosure when they were communicating in a conversation that was held in a setting which encouraged high private self-awareness and low public self-awareness or low private self-awareness and high public self-awareness. Contrasting levels of awareness, either public or private, led to higher amounts of self-disclosure. On the other hand equal levels of awareness, again public or private, led to lower amounts of self-disclosure. The highest amount of self-disclosure was encountered in conversations where the communicator had high levels of private self-awareness and low levels of public self-awareness. The lowest amount of self-disclosure was encountered in conversations where the communicator had high levels of private and public self-awareness.

These studies were conducted comparing various communication settings in face-to-face and computer-mediated communications. But the same principles can apply to face-to-face communication only. People are likely to provide different amounts of self-disclosure in a public discourse compared with an intimate conversation with their friends. In text-based computer-mediated communication the amount of public and private self-awareness depends highly on the affordances of the website. The design of the website can be a key for the amount of self-disclosure a user is willing to provide.

5.2.1.4. Identities in digital communities

"Identity" as we know it today derives mainly from the work of the psychologist Erik Erikson in the 1950s. The term Identity is used as an umbrella term throughout science. In psychology it usually defines the process of empathizing with another human being and, in doing so, defining individuality and/or group affiliations. Social psychology tries to investigate the issues of how an individual reacts to the social environment.

Identity is shown through markers, such as fashion, behavior, or language. Markers create certain

boundaries, that define the extent of the identification of an individual. These markers are not always universally understood and can be confusing to outsiders. The boundaries established by an individual serve as being either inclusive or exclusive.

In social anthropology two approaches to identity are mainly considered. Firstly, a primordialist approach, which takes the sense of self and belonging to a collective group as a fixed fact. It is defined by criteria such as biological characteristics or ancestry. And secondly, identity based on the idea of formulating one or many political choices of certain characteristics that are flexible and can be embraced further, dropped, or transformed and thereby question the idea that identity is naturally given.

5.2.1.4.1. Identity in Web 1.0.

Identity in digital environments is present since the early days of computers. A simple login function that is used to provide or deny access to a computer or a web community is based on usernames. Although a simple username is very limited in its capacity to reveal identity it is still able to provide some information. Usernames, or nicknames, are usually short (five to ten characters), consist of upper- and lowercase letters and numbers, and cannot include letter spacing. Many usernames transfer a certain image of its user (Sk8rBoy, xxxsweet_girlxxx, WebSurfer, cool_guy_17), some nicknames are chosen from fictional characters or animals (rambo123, trillian_jedi, polarbear88), others are just an adaption of real names (mike12345, smith1975, katty_style). Whether a username is a pseudonym or a short version of the real name, it still provides a space for self-disclosure. Most usernames reveal at least the sex of its holder.

Basically there are three types of identity management in online communities: Anonymous, pseudonymous or real identity based. Although one might argue that there is no real anonymity in computer-mediated communication, we can discover something like limited anonymity. This limited anonymity can happen in web forums or chats when a user chooses a username that does not reveal any information, either true or false, about her persona (e.g. "xUm61a1"). The administrator of this forum might be able to identify the IP address¹⁶ and eventually an email address of a user, but to the broad public this user can remain anonymous. As described above, a user can reveal information about herself through language, typography and chronemic

¹⁶ IP addresses (Internet Protocol addresses) are assigned to every device (computer, mobile phone, server) that is connected to the Internet. By design they are indispensable for the Internet to function.

information, that is why a user gradually loses anonymity with every communication bit.

Some communities allow or encourage the use of pseudonyms. By doing so they provide a free conversation environment for their users that is not restricted to the limitations of anonymous identities. This form of digital identity reminds of the principles of role-playing in analog conversations described by Goffmann (1959). The third type of digital identity is the management of users based on their real identity. In these systems users are encouraged or even obligated to provide a real identity.

One of the early examples of real name based communities is the Internet discussion system Usenet, which was invented in 1980. In Usenet the users have agreed upon the informal rule to use real names. This informal rule implied that articles posted under a real name were valued higher by other members of the newsgroup, whereas articles, posted under pseudonyms, might face the risk of being ignored. These mechanisms of control guaranteed a certain quality of discussion.

But there were also exceptions. With the expansion of the Usenet and the amplification of topics (in the beginning most conversation was based on technical and academic topics) ranging to more daily conversations such as nutrition, sports, pets, or sexual content. The usage of nicknames became generally accepted in certain cases. A newsgroup focusing on a delicate topic such as cancer would not have asked its users to post their real names. Allowing pseudonymity was an advantage to the conversation. It even allowed a conversation that would not have been possible otherwise.

Back then the vivid conversations on Usenet had already shown that online communication can be both enriched and limited by the use of either real names or nicknames. These concepts have not changed with the evolution of the Internet. In fact with commercialization and universal adoption online conversation has increased in high and low quality content. Advantages and disadvantages of either real identity or pseudonymity in computer-mediated communication can be described by three factors: Accountability, Social Conventions, and denomination.

5.2.1.4.1.1. Advantages and Disadvantages of Real Identity and Pseudonymity in Computer-mediated Communication

Using real names in online communication increases the accountability of the user. The user has to “stand up” for what she says and guarantees the correctness of the content with her proper name. This is a similar principle to the patterns in offline society. In offline communication it is common to value someones credibility by physical appearance or academic title. There is a difference between “somebody said, that tobacco fosters lung cancer” and “my doctor said, that tobacco fosters lung cancer”. The accountability of an individual depends on many social factors. In a simple online environment, such as the early newsgroups in Usenet, users were limited to their name and the content of their postings. Modern web services have advanced measurements for the creation of accountability.

With users being able to only identify themselves through a name (real or fake) the social conventions of a discussion are different to offline communication. This has led to an huge amount of flaming (insulting) or spam (unsolicited bulk messages), especially in pseudonymity-based conversations. There is usually less flaming and spamming in environments where the users use real identities. The loss of social conventions, however, can also be very useful for certain individuals struggling to be socially accepted in real life. A shy personality can be hidden behind a pseudonym and encourage a different openness than in face-to-face conversation.

The last factor that distinguished the advantages of both concepts is the possibility of denominational conflicts. The possibility that we know two people with the same name is given, especially when they have a rather common name like Steven Smith. In real life we can distinguish two Steven Smiths by using physical attributes, such as the height or age, “Steven, the tall one” or “the old Steven Smith”, or attributes referring to their relationship to us or others like “my neighbor Steven” or “Steven, Helen's brother”. Unfortunately this is not possible in a Web 1.0 environment. Steven Smith will struggle to use his real name throughout various online networks.

Considering these factors we can understand that the advantages of one concept are the disadvantages of the other and vice versa. The advantage of increased accountability for using real names is the disadvantage of decreased accountability for using nicknames.

	Advantages	Disadvantages
Real Identity	<ul style="list-style-type: none"> • Being more trustworthy • Less moderation is needed due to a certain netiquette. • Offline/Online social graph can be synchronized. 	<ul style="list-style-type: none"> • Being accountable, being an easy target • Cannot use an alternative identity, real life social conventions apply equally. • Denominational conflict with users who have the same name
Pseudonymity	<ul style="list-style-type: none"> • Not being accountable, not being an easy target • Using an alternative identity to overcome social conventions • Use a similar identity over several Networks 	<ul style="list-style-type: none"> • Being less trustworthy • More moderation is necessary due to open and straight-forward (sometimes offensive) conversation. • The offline social graph differs strongly from the online social graph.

Creating and managing an identity in Web 1.0 is a one-dimensional process. The user has to create her identity by simply writing and therefore naming her personal data, affections, or beliefs. In Web 2.0 this process becomes more dynamic as it becomes more multi-dimensional. In Web 2.0 identity is not only defined by the user herself, but also by the relationships that the user creates with others and therefore by other users.

5.2.1.4.2. Identity in Web 2.0.

Web 2.0 offered more sophisticated tools to create and manage digital identity. User profiles, the creation and management of relationships with other users, and the public display of these relationships were the basis of a new generation of digital identities (Boyd, 2008). This new and advanced form of digital identity is often titled Identity 2.0. A great part of identity 2.0 is defined

by online interaction.

Despite the new dynamic of digital identity, identity 2.0 can still be pseudonymous, real names, or a mixture of both. Most of the early social network services did not encourage their members to use real identities. Some services had even specialized in enabling their users to create very complex pseudonymous identities. Famous examples of such Web 2.0 services are the massively multi-player online role-playing game World of Warcraft or the online world Second Life. These services did not try to form networks that resemble real life social networks, but create new relationships between users that did not know each other in real life.

Friendster is one of the first broadly successful social network services. Launched in 2002 Friendster tried to compete with online dating services, such as match.com, but also encouraged users to join the site, even if they were not in search of a partner. The difference to earlier social network services was that Friendster tried to connect users that knew each other in the real world, too. The unexpected growth of Friendster led to a couple of problems. Besides technical difficulties Friendster encountered issues with the concept of the service. Due to its focus as a dating platform many users got disturbed when they discovered their boss or colleagues on the network. As a result of this many users chose nicknames upon registration, despite the particular vision of Friendster's founder Jonathan Abrams to make Friendster a real name identity based service (Kirkpatrick, 2010: 75).

Friendster was the first social network that dealt with a large crowd of users. They tried to establish a real name based network, but the lack of trust from the user side was not conform with this intention. Once the company sanctioned its users for misbehaving against the terms of service users started opposing the network trying to apply their own rules. When these movements were counter-attacked by the network in the form of deletion of thousands of fake profiles, users left the network. The case Friendster is especially interesting, because it demonstrated for the first time that with the ability to organize themselves, users seemed to be demanding some simple democratic rights to participate in the development of the social network service.

While Friendster failed to introduce a real name based service, MySpace succeeded in providing a service that allowed its users to be whoever they wanted to. On MySpace everything is allowed. MySpace was happy to receive ex-Friendster users and allowed its own members to mess around with the website's source code to create more individual profiles. A real name concept was not congruent with this pseudonymous "everyone-is-a-pop-star"-like approach to

user identity.

The first service that has successfully accomplished to establish a real name based social network service on a great scale was Facebook. They succeeded to establish a significant trust between the user and the service to create a real identity based social network (Carlson, 2010). Thefacebook was launched in February 2004 by its founders Mark Zuckerberg, Eduardo Saverin, Dustin Moskovitz, and Chris Hughes.

By design Thefacebook was based on real names, because, when it launched, only students with a Harvard University e-mail address were able to register an account. The Harvard email address itself already contained the first name, initial, and the last name. The first users perceived Thefacebook as a digital version of a student registry book which was handed to them at the beginning of the academic year (colloquially called “facebook”). This created a private, elite, and familiar environment, that hardly anybody distrusted.

There were many advantages about the use of real names in the early Facebook. Students could look up other students on the network and figure out which classes they took and how their class mates were called. Being very limited in functionality Thefacebook (as it was named until September 20, 2005) was only used to browse through the directory and look up information about real life social contacts made on campus, in class, or at parties. Since this was already a highly valuable function, most of the early users were eager to provide personal information.

When Thefacebook launched its service at other universities in the Boston area, people felt that it would lose its elite character, so Mark Zuckerberg created separated networks inside Thefacebook. In the beginning a student from one university could not browse the directory of another university. This way Harvard students did not get in touch with students from other universities.

As more and more universities were connected to Thefacebook, users also wanted to connect to old high school friends studying at other universities. So the network introduced the possibility for inter-university connection building. The way it was done was essential. Due to the concept of having separated networks inside Thefacebook a student, as a default, only received information about what is happening inside her network (being their university), but additionally she was able to browse through the profiles of every Facebook user.

This characteristic was crucial, because the users did not have the feeling that their profiles were being exposed to an unfamiliar crowd, but at the same time, were able to look up other students. The trust towards the service was preserved and the network grew even faster. With the opening

to high-school students the approach and implementation of sub-networks was the same. University students feared to see high-school “kids” all over Thefacebook, but in reality they did not even notice them if they did not actively look them up.

Throughout its bottom-up growth out of a personal trustworthy closed circle of users and up to the aperture of Facebook to the general public, the service succeeded in maintaining the trust and loyalty of its users and even establish the same relationship with its new users. That is the major reason why the real name based concept is still working for Facebook. According the a study from TRUSTe and the Ponemon Institute, Facebook was the tenth most trusted company in the United States in the year 2009 (Eldon, 2009).

With the growing success and world-wide adoption of Facebook by a wide public the original mechanisms of creating friendships encountered similar limitations as Friendster's approach. Facebook members connected with people that had very different relationships in real life. Relationship to parents, bosses, or teachers on Facebook could only be established using the Friendship model. Facebook was not able, and even did not want to, allow more complex relationship types at first. Mark Zuckerberg believed in the idea of an horizontal communication flow (Kirkpatrick, 2010: 202). In his opinion online relationship have same weights, independently from the role of the users in real life.

This approach did not prove to be sufficiently functional as the network grew in size and more people with more complex relationships to each other registered. Since then Facebook and other social network services that have been developed are constantly introducing more advanced features for identity and relationship management, such as friends lists or circles. But the adoption of these feature among social network service users is not universal. Many less web savvy users do not use them, due to a lack of knowledge or high amounts of organization. While offline social relationships are often defined by design, for instance birth, marriage, or neighborhood, these relationship definitions have to be selected actively by each user of digital social network. This leads to the question if a digital social network can be as complex as analog social networks are.

Although identity management in Web 2.0 is becoming more and more sophisticated, yet it is still far from the complexity of analog identity management. If it is not possible to accumulate the same complexity of relationships and identity as in real life social networks by the user, will there be other elements that could do this task automatically, such as algorithms?

And another issue arises from modern digital identity management. Users are struggling to keep up with their digital socialization and identities, because they are different from one social network services to another one and they cannot be transferred. Facebook is the first social network service with almost universal adoption. Digital identities and relationships are managed by a monopolistic company. Yet in October of 2012 there is still no challenging alternative to the Facebook system. This produces a great amount of concern regarding the freedom of digital identities. The evolution of identity 2.0 is still an ongoing process and will depend on economic, ideological, and political decisions.

5.2.1.4.2.1. Seven Laws of Identity

Because of the new dynamics and issues regarding identity 2.0, as described above, Kim Cameron has developed the Seven Laws of Identity to “define a unifying identity metasystem that can offer the Internet the identity layer it so obviously requires”(Cameron, 2005). The goal of this project is to develop a formal understanding of the dynamics causing digital identity systems to succeed or fail in various contexts.

1. **User control and consent.** Technical identity systems must only reveal information identifying a user with her consent.
2. **Minimal disclosure for a constrained use.** The solution which discloses the least amount of identifying information and best limits its use is the most stable long term solution.
3. **Justifiable parties.** Digital identity systems must be designed the way that disclosure of information is limited to individuals who have a necessary and justifiable place in a given identity relationship.
4. **Directed identity.** A universal identity system must support both “omni-directional” identifiers for use by public entities and “uni-directional” identifiers for use by private entities, thus facilitating discovery while preventing unnecessary release of correlation handles.

5. **Pluralism of operators and technologies.** A universal identity system must channel and enable the inter-working of multiple identity technologies run by multiple identity provider.
6. **Human integration.** The universal identity meta system must define the human user to be a component of the distributed system integrated through unambiguous human-machine communication mechanisms offering protection against identity attacks.
7. **Consistent experience across contexts.** The unifying identity meta system must guarantee its users a simple, consistent experience while enabling separation of contexts through multiple operators and technologies.

A modern Web 2.0 user has to consider the implications of identity to adopt and understand which concept works well in which digital communication environment. But also software developers and designer have to understand the importance of identity and create features that are in accordance with these laws. Yet non of the big private commercial social network services has implemented them.

5.2.2. The Service.

Another important element of Web 2.0 are the products. The products of modern Web 2.0 companies are mostly services. Of course services were around in Web 1.0, too, but the service has developed as a central concept in modern Web 2.0 applications. Service in Web 1.0 usually is a digitized version of offline services.

The difference can be explained comprehensively using the example of e-commerce, like a classic Web 1.0 e-commerce website, where shopping processes and procedures resemble known procedure from real life. The website usually provides a catalog of products with certain descriptions and pictures. We can add these products to a shopping cart. When finished we click through the payment procedures and pay the products that we have put into our shopping cart earlier, which are then send to us via mail. This is a classic paper catalog ordering procedure combined with the comprehensible concept of a shopping cart, as known from supermarkets.

In a Web 2.0 shopping experience the products presented to the user depend on social networks. One of the most famous features is the recommendation feature known from Amazon.com¹⁷. Depending on the users previous buying decisions the website provides individual recommendation to the user on what she could also be interested in buying. These recommendations are based on the behavior of other users who also bought the same product. Amazon.com correctly assumes that similar buying habits are the cause of similar consumer interests. The more a user buys on Amazon.com the more extensive is the user profile and the more accurate are the recommendations Amazon.com can provide.

Additionally Amazon.com provides the feature to voluntarily create a public, semi-public, or private user profile which holds additional information such as the full name, interests, hobbies, etc. and which allow to connect with other users through relationships. The creation of such a detailed user network is useful to Amazon.com to better understand their clients' choices. But the establishment of a social network service is not the most important goal to Amazon.com. The core service Amazon.com is providing is a better buying experience to the user, whether the users want to connect to other customers or not. Also it would be dangerous to force every user into creating an obligatory profile, because many would simply stop using the service.

eBay¹⁸ the online auction and shopping website also tries to provide the best shopping experience for a user, but this is not its core service. The core service of eBay is to bring together seller and buyer based on social interest, buying patterns, and search queries. eBay does not offer any proper products over its website, they just provide the marketplace which is based on user-generated content, social networks, and sophisticated databases. Both Amazon.com and eBay still have the shopping cart feature, but their shopping experience has become Web 2.0 because of the social implications and consumer patterns that are used to enhance the service.

Other examples of new types of services can be discovered taking a look at specialized social network services. These are social networks that try to aggregate a certain mass of users, which then connect with each other and form social networks. But instead on focusing on the social networks itself these websites provide a specific core service. Users who do not have a user account usually have none or limited access.

Famous examples are the photo-sharing web service Flickr¹⁹ or the video-sharing web service YouTube²⁰. These two services provide a digital environment were users can provide and

17 <http://www.amazon.com>

18 <http://www.ebay.com>

19 <http://www.flickr.com>

20 <http://www.youtube.com>

consume audio-visual content. A visitor who is not registered for one of these websites is only able to consume the content. A registered users can upload content, create a social network around her profile and interact with other users and the service in many ways. These websites entirely exist of user-generated content. They provide social network features for their members, but their core service is the creations and maintenance of a digital sharing environment.

Other famous web services that operate with similar strategies are last.fm²¹ (music) Couchsurfing²² (hospitality exchange), Flattr²³/Kiva²⁴ (micro finance), Twitter²⁵ (micro-blogging), World of Warcraft²⁶ (massively multiplayer online role-playing game), Blogger²⁷ (blog-publishing) and many more. All of these products are designed on top of the principles of social networks. They encourage their users to connect with each other, create interest groups, communicate, and further define individual social networks which are the basis of the service they provide.

This approach to social network services is called the Credence Model or Trust Model of social networking. The basic assumption of this model is that a user gives credence or trusts another users selection of content. Instead of considering a suggestion from a digital sales agent or an algorithm the credence model offers suggestions from related users from the personal social network. The Credence Model, which facilitates the sharing of digital content based on trust relationships, in one genre of social network services, while the other important genre is called Web of Contacts Model²⁸ and is based on the facilitation of relationships.

5.2.2.1. Services and Software Development

Another trend about Web 2.0 can be seen in the changes happening to the traditional software release cycle. While classic IT products were being upgraded ever two to three years, modern Web 2.0 services are often updated on an hourly basis. The concepts of “Release Early/Release Often” and “Perpetual Beta”²⁹ have become essential to distribution strategies as they allow a

21 <http://www.last.fm>

22 <http://www.couchsurfing.org>

23 <http://www.flattr.com>

24 <http://www.kiva.org>

25 <http://www.twitter.com>

26 <http://www.warcraft.com>

27 <http://www.blogger.com>

28 *Web of Contacts*, see chapter 5.2.3.2. SNS - Social Network Services

29 *Perpetual Beta* software is for an indefinite often extended period of time at the beta development stage,

more dynamic software development cycle. Because of this changes, an important competency of software developers has become daily operations. Instead of writing programs over a certain time period and releasing the finished product in one step, Web 2.0 software developers have to update and maintain their services and products continuously. This continuous development paradigm has made real time monitoring of user behavior a necessary task.

Often the web services do not only function on a single system, as it was known from the PC software market, but they have to be accessible on a great variety of systems and devices such as mobile phones, televisions, or digital cameras. The paradigm of interoperability has become an indispensable concept to connect many users via a great variety of devices and to provide an inter-operable, stable, and consistent service.

All these implications result in a new generation of digital services that have become highly dynamic, intelligent, and widely accessible providing a richer real time experience.

meaning that new features can be added anytime although the product is already distributed.

5.2.3. The (Social) Network.

The third very essential part of Web 2.0 is the social network itself. What differs from traditional computer networks and what makes the social network “social” is the fact that the nodes that are connected here are not computers, but human beings.

5.2.3.1. Social Graph

A graph in mathematics is an abstract representation of the relationship between certain entities. It is often used to visualize a complex matter, that otherwise would be difficult to grasp. The entities are often called vertices or nodes while the connection between them is called edge, lines, or ties. Social graphs, as in their traditional meaning, have long been an important tool for researchers to understand and communicate the issues they work on. A person usually has one unique social graph (except when the person is living a double life) containing of various connection with very different characteristics.

In the context of digital social networks the concept of Social Graph has become very popular to describe its new implications. A common definition is “the global mapping of everybody and how they're related” (Fitzpatrick, 2007). Today, in digital communication, we can encounter a great variety of disperse social graphs (even for the same individual), most of unknown quality and many of them inside walled gardens³⁰.

Since the introduction of the term Social Graph by Mark Zuckerberg at the Facebook f8 Event in May 2007, the term was extensively used to describe the digital social network. Its primary meaning today refers to the digital equivalent of real world social networks, meaning a digital representation of an individual and her relations to other individuals.

According to Zuckerberg Social Graph is the basis of the Facebook network. Zuckerberg defines it as “the network of real connections through which people communicate and share information” (Zuckerberg, 2007), but while Zuckerberg's vision is to establish a proprietary, centralized, and close source social graph, Brad Fitzpatrick and others describe a concept of an non-profit and open source social graph which is owned by nobody and everybody at the same

³⁰ *Walled Garden*, see chapter 6.4.3.1. Walled gardens and terms of service

time (Fitzpatrick, 2007). These and other intentions to create a free social graph standard have not yet been very successful in the sense of universal adoption.³¹

Facebook's Social Graph concept is the dominating form that can be found on the Internet (Wilson, 2003) and for marketers and developers almost the only form to distribute their products. Besides Facebook another big web company has introduced proprietary software standardize social graphs, Google with its Social Graph API (released 2008). Whether one of the them or a different, maybe free, and open standard will be established in the future depends on conceptual, technical, political, economical, and educational decisions.

5.2.3.2. Social Network Services – Definition and Classification

During the last couple of years important work has been done defining the topic of Social Network Services. And although there is hardly any one-sentence definition of what social network services are there are academic papers that describe the nature of this topic well enough to understand its broad scope.

Danah Boyd has been most fundamental in defining and describing this topic. She introduces the term “social network site” and justifies her use of the term “network” over the term “networking” by arguing that “networking” emphasizes on the initiation of relationships, but this activity is not essential to most of these sites. According to Boyd “networking” is not the primary practice of the users and therefore it is not what differentiates social network sites from others.

In the article “Social Network Sites: Definition, History, Scholarship” Boyd defines social network sites as “web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. The nature and nomenclature of these connections may vary from site to site”. While most sites support the maintenance of preexisting social networks, others facilitate the connection between strangers based on shared interests, political view, or activities (Boyd, 2008). The combination of these three elements is the basis of the so called Web of Contacts model of social networking in contrast to the Credence model described above.

Many services in the 90s already included some of these characteristics, SixDegrees.com was

³¹ *Open Social Graph*, see chapter 6.3.2. Social Infrastructure.

the first one to combine all three of them making it the first social network service. A second wave of social networking services happened in 2001 where various services were founded and adopted by a technology savvy early adopter audience. The most important ones were Ryze, Tribe.net, LinkedIn, and Friendster. While Ryze and LinkedIn were focused on a business audience, Tribe.net and Friendster focused on personal networking. Friendster was the first social network service that was a mainstream success (and failed horribly).

From the year 2003 the web experienced an exponential growth of social network services. Hi5, Couchsurfing, OpenBC (later Xing), Orkut, and Facebook were invented. In 2005 YouTube went online and in 2006 the micro-blogging platform Twitter launched its service.

Similar to earlier approaches of Web of Contacts and the Credence Model Boyd distinguishes social network service by the intention of the user. This way she identifies three basic social network service genres, (1) content-oriented, (2) service-oriented, and (3) network-oriented. No single service is focused on one of these orientations only, but we can detect specialization on either one of them. As mentioned earlier, when a service is specialized in the distribution of (user-generated) content, such as YouTube (video clips), Flickr (photos), or Last.fm (Music), these services have social network functions included in their architecture, but the main principle is the management and distribution of content.

Others have specialized on a specific service, such as intermediation of accommodation (Couchsurfing), digital marketplaces (eBay), news and micro-blogs (Twitter), gaming (World of Warcraft), or even voluntary compensation of intellectual property³² (Flatlr), while the third type of social network services focuses specifically on the creation of the social network to provide the most “complete” and “valuable” network. Websites such as Facebook, Friendster or Tuenti compete to provide such a network to its users.

These efforts are often undermined by monetization strategies, which mainly include advertisement. One might argue that these services sell the service of advertisements and can therefore be considered to be service-oriented as well. For the following argumentation it is useful though to stick to the introduced concept of the three genres.

5.2.3.3. Model A - Networked Publics

Danah Boyd understands social network services as a genre of “networked publics”. Networked publics are “publics that are restructured by network technologies. As such, they are simultaneously (1) the space constructed through networked technologies and (2) the imagined collective that emerges as a result of the intersections of people, technology, and practice” (Boyd, 2010). This concept is very helpful when studying social network services as it describes the similarities between networked publics and other publics such as gather for social, cultural, and civic purposes and furthermore emphasizes the distinct properties and new dynamics introduced to such publics. The design of the interface with which these networked publics are accessed by the user have influence in the way people engage with these environments. Boyd clearly states that “Networked publics are not just publics networked together, but they are publics that have been transformed by networked media, its properties, and its potential” (Boyd 2010: 42)

Boyd identifies four features that play a “salient role in constructing social network sites as networked publics” (Boyd, 2010: 43): Profiles, Friends lists, public commenting tools, and stream-based updates:

1. **Profiles** are a central element to social network services. They can be private, semi-public, or public, depending on the users decision and on the design of the service. The creation of a profile is an act of creating oneself in digital environment (Boyd, 2006), where many essential decisions have to be made, such as: Who am I? What defines me? How do I want to be seen? Besides a place for identification there is often a great amount of conversation happening on profiles. Depending on the design of the service the profile can be separated from the communication stream or both elements can be merged with the result that a profile does not only represent the persons affections and characteristics, but also its engagement with the network. The great complexity of defining identification, directly via information about oneself and indirectly through the communication with others, makes it difficult to have full control over self-presentation, even if the service offers features to restrict ones visibility.
2. **Friends lists** define our individual digital social network. Connections to other members of the social network service can either be uni-directional or bi-directional. To establish

an uni-directional connection person A “follows” person B, but person B must not follow person A. To establish a bi-directional connection person A sends a “friendship request” to person B who can accept or decline this request. If the request is accepted both are equally connected to each other. This type of connection is often named a “friendship”, even if both persons have a different relationship in the real world. This issue may create conflicts between the user and her social network especially when close and intimate friends have the same digital relationship as parents, teachers, or co-worker. In such a horizontal network structure “the listing of Friends is both political and social” (Boyd, 2010: 44).

Some people argue that in digital social networks the complexity and variety of our real life social connections will flatten out. Especially Facebook founder Mark Zuckerberg believes in this idea of a horizontal communication flow (Kirkpatrick, 2010: 202), which is often connected by its critics to the new paradigm of “post-privacy” (Heller, 2008). In an attempt to recreate a rather vertical approach some social network services nowadays offer more elaborated features to define the users relationships. Usually a user can create lists or “circles” of relationship types, such as “good friends” or “work”, which can then be applied to certain restrictions to how content is distributed to them. Although these functions seem essential to develop a more suitable social network it is likely that a great variety of users might not adopt them, because of the complexity to apply them to every single relationship. The way we form social relationships in real life is often an unconscious behavior. The process of adding or removing friends on a social network service, on the other hand, is grounded on conscious decisions. Therefore will the digital social network never resemble accurately our analog digital network, nor will the diversity of relationship be as versatile as in real life.

Of course, it could be possible to overcome this deficiency if relationship management would be conducted by algorithms in the future. These algorithms would automatically define a relationship depending on the behavior and the social network of each user. But it is still early to predict if digital social networks will be rather horizontal or vertical in the future or if we remain the managers of our social relationships.

3. **Tools for public communication** are integrated features to social network services. These tools offer the user the possibility to share information semi-publicly and are

distributed to the social network. Even when an information is addressed to a specific user, it is still visible to others that are part of either users network. Although many of the conversation held in this manner is rather irrelevant to most third party users, it has two important side-effects: it is a form of social grooming, and it shows publicly (and therefore strengthens) the relationship between the two interlocutors. By creating a stream of public conversation each member contributes to the creation of a digital public. Reading her news stream a user gets a sense of her individualized digital public in which she moves (Boyd, 2010: 45).

4. **Stream-based updates** are the platform for public and semi-public information sharing. The presentation of these updates is based on the reverse chronological content order that have proven to be effective in blogging and micro-blogging. This paradigm breaks with the classic model of a web page (like a paper page just in digital form). Instead, content is more and more consumed through dynamic real time streams.

Profiles, Friends lists, tools for public communication and stream-based updates are the four essential features of social network services. These can be found regardless if we look at services from the Web of Contacts model or services based on the Credence model. These four features help the user to engage in and define individualized networked publics which can be very similar or very distinct to real world publics, depending on the intention of the user. Apart from these characteristics networked publics offer new qualities over analog publics. These qualities are named structural affordances.

5.2.3.3.1. Structural Affordances of Networked Publics.

Structural Affordances of Networked Publics are the unique characteristics to networked publics compared to analog publics. Comparing the properties of bits, as in digital communication, with the properties of atoms, as in the analog real world Boyd (2010) identifies four key affordances of bit-based content in networked publics:

1. **Persistence** refers to the process of recording and archiving of data as soon as it is created. Data, hence digital communication, is theoretically permanent.

2. **Replicability** describes the property that data can be copied without loss of information. The copy is exactly the same as the original and it becomes impossible to distinguish the two from one another.
3. **Scalability** is the property of cheap massive distribution of data. While in mass media only a few companies can afford to distribute their content to large audiences and over great distances in networked media this can be done for little or close to no cost. Every users can be a broadcaster.
4. **Searchability** in networked publics describes the fact that every information is searchable. In a networked public were people, things, and many more can be searched it is more convenient to utilize a search engine than to search “manually”, by scrolling through lists of content.

The results of these affordances are that in networked publics we encounter certain dynamics which transform publics. These dynamics are invisible audiences, collapsed contexts, and a blurring between public and private. Although these results are certainly visible today it remains open to know how great their impact will be in the future. New features such as advanced relationship management decrease the amount of blurring between public and private.

5.2.3.4. Model B - Hyperconnected

Another approach that tries to identify the differences between offline social networks and (online) social graph is presented in the book “Connected” by Nicholas Christakis and James Fowler (Christakis, Fowler, 2010). After having thoroughly described what social networks mean to human society and how every individual human being shapes and is shaped by its proper social network, the researchers provide a comparison of technological driven social networks and try to identify differences and similarities to analog social networking. In the chapter “Hyperconnected” they explain that “the Internet makes possible new social forms that are radical modifications of existing types of social-network interactions in four ways:

1. **Enormity**, a vast increase in the scale of our networks and the number of people who might be reached to join them.
2. **Communality**, a broadening of the scale by which we can share information and contribute to collective efforts.
3. **Specificity**, an impressive increase in the particularity of the ties we can form.
4. **Virtuality**, the ability to assume virtual identities (Christakis, Fowler, 2010: 274).

In a study about the closeness of relationships in the social network service Facebook Christakis and Fowler studied how many “picture friends” (i. e. people close enough that they tagged the student in their pictures) on average the undergraduate students of an unnamed U.S. university have. The result was 6.6 friends on average could be considered “close friends”. In fact, the results from this study showed how similar in size the digital social graph is compared to the offline social network of an individual. The average number of total friends a Facebook user has is 110, a number not far from Dunbar's Number, which specifies an average maximum of nodes or “friends” in our social network as 147. Christakis and Fowler conclude that: “Online networks therefore do not appear to expand the number of people with whom we feel truly close, nor do they necessarily enhance our relationships within our core groups. We are still bound by our primate tendencies and abilities” (Christakis, Fowler, 2010: 275).

Yet, the dynamic of online social networks is different to offline social networks. We tend to accumulate new friends but not to cut relationships to others. This behavior will sooner or later lead to a social network of different **Enormity**. In such a network the quality of our connections differs, as the medium strongly influences the nature of the interaction - short updates in contrast to profound conversations. Additionally we might maintain an online relationship to a certain person with whom we do not want to be related to in real life.

The term **Communality** refers to the possibilities of forming decentralized interest groups. These groups in offline society are often centralized, meaning that a certain entity (a person or a committee) is in charge of the organization of the group. This organization in digital environment can be decentralized and more democratic. As an example Christakis and Fowler mention the Wikipedia, which can become attacked by vandalism and therefore be incorrect, but the totality of all users editing the content of this free online collaborative Encyclopedia provide an overall

accuracy that compares with the Encyclopedia Britannica (Giles, 2005).

The new possibilities that the Internet provides to encounter likewise is what is described as **Specificity**. A person with a very rare illness has a greater chance to find another person who has the same illness. Here the person can learn from the others persons experience or simply find a consolidating discussion partner. And also for the search of potential sexual or romantic partnerships Specificity is very helpful. But Specificity of online communication can be both positive or negative. To give a negative example, radical or extremist persons will find likewise thinking partners online, allowing them to further act out their dangerous affections.

Virtuality offers users of the Internet new possibilities to define their identity. While some users like to present themselves with their real world identification in certain environments³², other users prefer fake identities, or a mixture of both depending on the digital environment they communicate in. This way people can form their desired identity independent from the real physical appearance of their body.

As with every new communication technology new ways of interacting have been created and sometimes old ways have be substituted. When writing gave people the possibility to stay in contact over great distances, the telephone provided the possibility of real time communication over great distances, on the other hand both technologies have lost the quality of face-to-face communication. With the invention of the Internet and more specifically the creation of digital social networks the cocktail of relationships which make up social network changes in many ways.

32 To present oneself using a real name is a common practice in many social network services such as Facebook or Google+. These services actually have the policy that their users must provide their real names.

6. Social Media

6.1. Introduction

The term social media is widely used, not only by professionals and scholars, but also by the general public. The definition of this term can be quite different whether we seek the definition of a marketer, a scientist, or a regular social media user. Therefore we can encounter certain misuses of the term.

In this chapter I will try to provide an extensive understanding about the basic elements of social media. I will start with a theoretic approach on the definition and the classification of social media, continue to investigate the technology behind social media and its effects on the medium itself until lastly I will show how social media is structured and which elements have influence on this.

6.2. Theory

6.2.1. Definition.

One of the most comprehensive essays written about social media is "Users of the world, unite! The challenges and opportunities of Social Media" (Kaplan, Haenlein, 2010). The authors do not only succeed in providing a clear definition of what social media are (and are not), they have also developed a classification of social media genres.

The first decade of social software and services on the Internet was characterized by uncertainties about the phenomenon itself similar to the confusion about the term Web 2.0, as described above. It comes as no surprise that a clear definition of social media was not developed earlier.

Considering the evolution from the Arpanet, the Internet, the World Wide Web, the commercialization of the web to the bursting of the dot-com bubble in 2001 Kaplan and Haenlein proclaim that "the current trend toward social media can be seen as an evolution back to the Internet's roots, since it re-transforms the World Wide Web to what it was initially created

for: a platform to facilitate information exchange between users" (Kaplan, Haenlein, 2010: 60).

Kaplan and Haenlein denominate that the first website that can be considered a modern social media service, was Open Diary³³, a service that allowed the creation of public, semi-public, or private texts which could be shared within a community. Open Diary was the prototype of today's blogging services. The term "webblog" and one year later the "blog" were invented around the discussions about the success of Open Diary. The publishing capabilities in combination with the upcoming of more sophisticated social communities via social network services "coined the term Social Media and contributed to the prominence it has today" (Kaplan, Haenlein, 2010: 60).

"Social Media is a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User-Generated Content" (Kaplan, Haenlein, 2010: 61).

In order to provide this formal definition of social media it requires "drawing a line to two related concepts that are frequently named in conjunction with it: Web 2.0 and User-Generated Content" (Kaplan, Haenlein, 2010: 60): Web 2.0³⁴, as described in earlier chapters, is considered to be the platform of the evolution of social media. User-generated content³⁵ "can be seen as the sum of all ways in which people make use of Social Media"(Kaplan, Haenlein, 2010: 61).

As an alternative it might be useful to use a more general definition that is reduced to the concepts of technology and humans: Social Media is human communication mediated through social software.

6.2.2. User Generated Content.

The term user-generated content (UGC) became popular in 2005, but the concept is known from the 1980s. It describes the various forms of media content that are created and published by end-users. The Organization for Economic Cooperation and Development (OECD, 2007) names three basic requirements of user-generated content:

1. **The content must be made publicly available**, for instance on a publicly accessible website or on a social network service accessible to a selected group of people. E-mail and instant messaging are therefore excluded by definition.

33 <http://www.opendiary.com>

34 See also chapter 5.2. Web 2.0

35 See also chapter 6.2.2. User-Generated Content

2. **The content creation must involve some creative effort.** Copying professional content and publishing it on another website is not considered to be user-generated content. This point is difficult to define and may depend from case to case.
3. **The content must be created outside of professional routines and practices.** User-generated content does not have an institutional or a commercial market context. Motivation for the creation of user-generated content includes "connecting with peers, achieving a certain level of fame, notoriety, or prestige, and the desire to express oneself" (OECD, 2007: 8).

As mentioned above user-generated content has been available prior to 2005 and Web 2.0 but the "the combination of technological drivers (i. e., increased broadband availability and hardware capacity), economic drivers (i. e., increased availability of tools for the creation of user-generated content), and social drivers (i. e., rise of a generation of "digital natives" or "screenagers"³⁶) make user-generated content nowadays fundamentally different from what was observed in the early 1980s" (Kaplan, Haenlein, 2010: 61).

6.2.3. Classification of Social Media.

Kaplan and Haenlein identified and described six types of social media. (1) collaborative projects, (2) blogs and micro-blogs , (3) content communities, (4) social network services, (5) virtual game worlds, (6) and virtual social worlds:

1. **Collaborative Projects** are probably the most democratic creation of user-generated content. Their purpose is to provide a platform where users easily create, organize, and edit content. The multitude of users and the sum of all users input lead to a very extensive collection of knowledge. The technology which most of these platforms use is called a wiki. The most famous example of such a collaborative project is the free online encyclopedia Wikipedia.

36 *Digital natives/Screenager* are younger age groups with substantial technical knowledge and willingness to engage online

2. **Blogs and Micro-blogs.** Blogs are the predecessors of social media. Blogs are special websites that specify on the creation of articles or “posts”, that are displayed in reverse chronological order. Because of its design origins most blogs are text based, but more and more different approaches can be encountered today that include audio, video, and photos. Blogs are platforms for user-generated content like modern social networks, still they lack social networking functionality.

Micro-blogs are a sub-genre of weblogs limited to a defined margin of characters. Twitter was the company that invented the concept of writing 140 character public status updates, based on the length of an SMS combined with the reverse chronological displaying order known from blogs. Twitter also included social networking functionality in the design of its platform enabling uni-directional relationships.

3. **Content Communities.** Although content communities have all the characteristics that a social network service has, they are still a different genre due to the intention of the user. In a content community, like YouTube for videos or Flickr for photos, the users main goal is to consume and share content. The social network only facilitates this goal but is not the center of attention.
4. **Social Network Services.** Communities where the social network itself is the core functionality are called social network services. These services, such as Facebook, Identi.ca, or Orkut, offer its users a variety of features which facilitate self-presentation, networking, and public and private communication.
5. **Virtual Game Worlds.** "Virtual worlds are platforms that replicate a three-dimensional environment in which users can appear in the form of personalized avatars and interact with each other as they would in real life. In this sense, virtual worlds are probably the ultimate manifestation of Social Media, as they provide the highest level of social presence and media richness of all applications discussed thus far." (Kaplan, Haenlein, 2010: 64)
6. **Virtual Social Worlds.** Virtual Social Worlds have similar characteristics as Virtual Game Worlds with the difference that the user has more freedom to develop her character and is not bound to game mechanics.

These six definitions were developed based on two elements: social presence³⁷/media richness³⁸ and self-disclosure³⁹. The classification of the six social media types are shown in the following table:

Classification of Social Media Types by Kaplan and Haenlein (2010)		Social Presence / Media Richness		
		Low	Medium	High
Self-Presentation/ Self Disclosure	High	Blogs	Social Network Services	Virtual Social Worlds
	Low	Collaborative Projects	Content Communities	Virtual Game Worlds

Although this classification stands in competition with the classifications of Web 2.0 technologies described in earlier chapters, it is very useful, because it is the first comprehensive attempt that focuses on the medium and not so much on the technology. Still this approach has some limitations which need to be overcome in the future to further understand what social media is. One of these limitations is the non-observance of personal identities within these digital environments. The often ambivalent coexistence of anonymity, pseudonymity and real identities are not considered by Kaplan and Haenlein. Certainly, this could add another axis to the diagram above.

6.2.4. Building Blocks of Social Media.

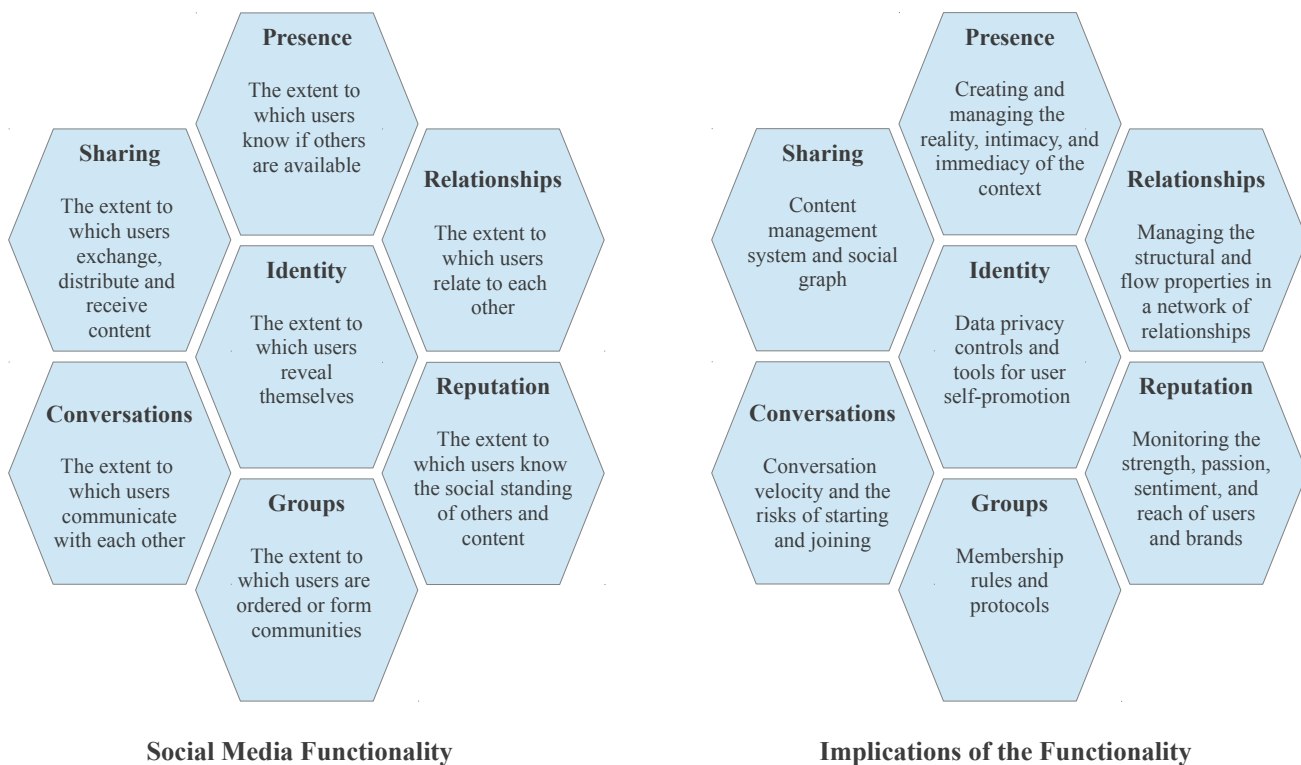
With a focus on providing orientation for corporations Kietzmann et al. (2011) have developed a useful framework which depicts an alternative, but very specific definition of social media. This framework can even be used to provide an alternative classification to the Haenlein/Kaplan (2010) approach described above.

The basic definition Kietzmann et al. (2011) provide differs in the selection of the terms from the definition Haenlein/Kaplan: "Social media employ mobile and web-based technologies to create highly interactive platforms via which individuals and communities share, co-create, discuss, and modify user-generated content" (Kietzmann et al., 2011: 241).

³⁷ For Social Presence Theory see chapter 2.3.1. Media Choice Theory

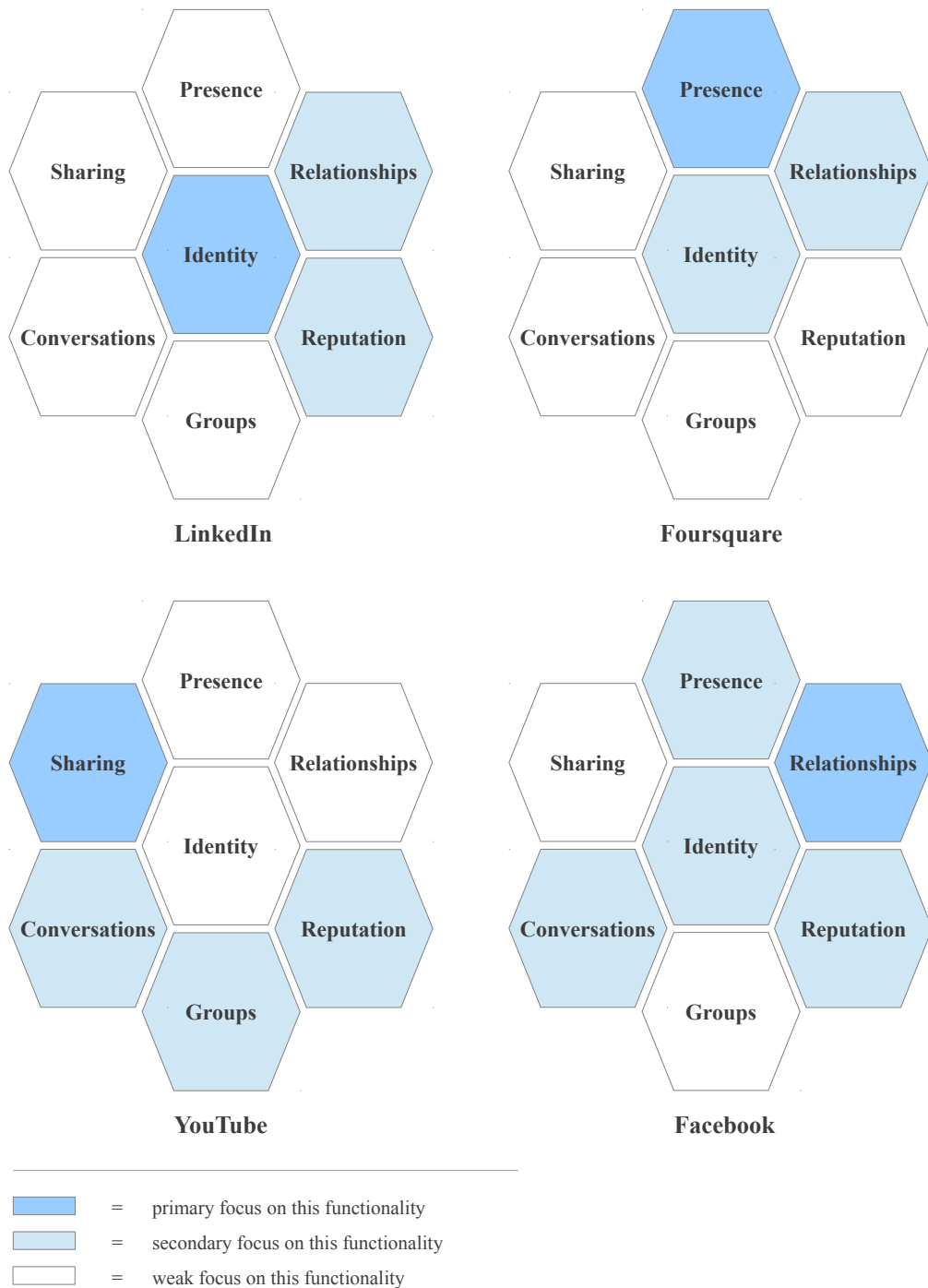
³⁸ For Media Richness Theory see chapter 2.3.1. Media Choice Theory

³⁹ For Self-Disclosure see chapter 5.2.1.2. Self-disclosure and Self-awareness in computer-mediated communication



Honeycomb of the seven building blocks as developed by Kietzmann et al. (2011)

The framework consists of seven "functional building blocks": Identity, Conversations, Sharing, Presence, Relationships, Reputation, and Groups. These blocks are depicted as a honeycomb and according to Kietzmann et al. (2011) they "allow us to unpack and examine (1) a specific facet of social media user experience, and (2) its implications for firms. These building blocks are neither mutually exclusive, nor do they all have to be present in a social media activity. They are constructs that allow us to make sense of how different levels of social media functionality can be configured." It is important to understand that "none of today's major social media sites focus solely on just one block" (Kietzmann et al, 2011: 249), they rather focus on three or four building blocks, but include the functionality of all seven.



Contrasting the functionalities of different sites (Kietzmann et al, 2011: 248)

As an example YouTube focuses primarily on Sharing, secondary on Conversations, Groups, and Reputation, but does not focus much on Identity, Relationships, and Presence. On the other hand the social network service Facebook focuses primary on Relationships, secondary on Identity, Reputation, Presence, and Conversations, and less on Groups and Sharing.

6.2.5. Social Media in Comparison to Industrial Media.

To get a better understanding it is useful to compare social media with industrial media, this way the main differences between the two become clear.

Industrial media is characterized by relatively high cost of production and distribution of content. This directly affects its content. The content has to be of interest to a rather large and generalized audience. It is economically unsustainable to create content for a small specific fraction of the audience. Most of these media are state owned or private or a mixture of the two. Certainly there is a stronger economic pressure on privately owned media than on public media.

In addition to that, the barriers of producing industrial media can be quite high for an individual. The amount of people who produce industrial media is limited to the rules of the market. It can take years of study and work to reach a position where an individual has influence on the production process or the selection of content.

In contrast to that social media is inexpensive and accessible. This enables many users to become a producer and a consumer at the same time, hence a prosumer⁴⁰. Apart from that social media are not only a information distribution oriented medium like industrial media, but they are also a direct interpersonal communication medium, since they provide sophisticated feedback channels. Social media is not only a competitor to industrial media but also the telephone, e-mail, websites, mouth-to-mouth communication, and any other medium.

To be precise, we can identify five properties that differentiate industrial media from social media:

1. **Reach.** Both social media and industrial media are scalable and can have global reach. The difference is the underlying network. While industrial media is based on a centralized, hierarchical, corporate structure, social media is rather decentralized, less hierarchical, and more democratic with respect to its producers and consumers.
2. **Accessibility.** As mentioned above, the accessibility of industrial media is much lower than of social media.
3. **Usability.** The production of industrial media requires professional training. While the

⁴⁰ *Prosumer*, see chapter 5.2.1.1. User-Centrism

production of social media requires only basic education standards like reading, writing, taking photos, and video.

4. **Immediacy.** Traditional industrial media is less immediate than social media, because of the more complex production process. But there are exceptions, for instance the live coverage of a sports event. By design social media is instantaneous, but it is not always consumed that way.
5. **Permanence.** Industrial media, once produced, cannot be changed or altered, while social media is always in a process of alternation.

Apart from being a direct competition to industrial media, social media have more facets. Their potential to form communities is a completely different aspect which cannot be compared to industrial media. To understand social media, we have to understand the technical basis on which it is created.

6.3. Social Media Technology.

6.3.1. Social Software.

Like any other web technology and maybe the Internet itself social media are the result of their underlying software design. Social media are a human creation. Their design was developed on the basis of human compromises and technical possibilities. The way we encounter social media today is the result of years of development, policing, economic and cultural factors, and personal preferences.

As described earlier, Social Media is human communication mediated through social software⁴¹. The way communication is mediated depends on the specific social media software. But social software is difficult to grasp as one specific software in the first place. To understand what social software is, it is useful to compare it with other software.

Social software is theoretically classless⁴². Communities formed around social media are characterized by "bottom-up" processes, in contrast to the less vibrant collectives formed around software with "top-down" paradigms, where users' roles are determined by an external authority and circumscribed by rigidly conceived software mechanisms (such as access rights). Even through small differences in policies, the same software can produce radically different social outcomes.

Stowe Boyd (2005) has developed the most comprehensible model of what social software is. Instead on focusing the definition on specific features, like as "facilitates human communication" (which would also apply to e-mail), he rather names a certain mixture of features that have to be supported by software to be called social software.

1. **Support for conversational interaction between individuals or groups.** This basically describes the entirety of all communication types: One-to-one, one-to-many, many-to-many, many-to-one, synchronously, asynchronously.
2. **Support for social feedback.** The ability to rate others and their communication bits.
3. **Support for social networks.** The ability to form social networks.

41 See chapter 6.2.1. Definition

42 See chapter 6.4.1. Democratization of Communication

Especially the first argument is very helpful to understand what social software is about. According to Stewe Boyd the entirety of all communication forms is what makes software social. In this sense communities can be formed not only by one single software, but by the combination of many: e-mail and instant messaging (one-to-one), web pages and blogs (one-to-many), and wikis (many-to-many).

This paradigm promotes the idea that social software is not one specific software that facilitates social communication, but the totality of all software which facilitate social communication, provide a feedback channel, and promoted networking. In this sense it might become necessary to think of the “Social Layer” or the “Social Protocol” of the Internet.

6.3.2. Social Infrastructure.

The greatest limitation to the social layer paradigm is the commercial environment in which most social media takes place. In contrast to the early Internet when commercial interests were scarce and software-developers best chance to reach users was to make software open and free to use, social media arose in times where the Internet's economy was quite established yet. In order to finance the necessary infrastructure many developers decided to write closed propriety software in order to finance their product. Venture Capitalists (VCs) played a significant role in this process by investing in social software projects. Additionally the importance of APIs⁴³ to social software and the restrictive distribution of such interfaces have since characterized the environment where social media are happening.

Social software, social protocols, and APIs are part of the social infrastructure. Social infrastructure is a more general term that describes a class of services which allow software developers to integrate social functionalities. Such functionalities include the login to an already existent social network, for instance to Facebook via its Graph API.

Graph API is Facebook's proprietary API which facilitate developers a consistent view of the Facebook's Social Graph, representing objects (people, photos, events) and connections (friends, family, acquaintances). What Graph API is for Facebook, “Social Layer” (as a product name) is for Google. Every mayor social network service has their own social graph and provides APIs

⁴³ API: Application programming interface is a software interface that enables other third party software to connect to it. APIs enable inter-software communication.

for developers to build applications on top of them. No industry standard has been developed yet, because of this and the dominance of Facebook its Graph API is the most implemented.

APIs facilitate the connection to third party software. They cannot connect directly to other APIs, meaning that ones personal social network cannot easily be transferred to another social network service. Social network services are not inter-operable. In comparison to e-mail, which can be sent and received no matter which e-mail provider is used, in social networking this is not possible. A Facebook user cannot send a direct message to a Google+ user and vice-versa. The reason for this lack of inter-operability are economic strategies of the for-profit social network service providers which currently dominate the markets and define the rules.

To overcome this centralized and closed mono-culture of social infrastructure, various concepts have been developed. The most famous are Diaspora⁴⁴ or DSNP⁴⁵, two different approaches which unfortunately did not have any reasonable success yet. Each of these concepts intends to overcome the dominance of closed centralized and proprietary protocol standards and introduce a decentralized open social standard, similar to the way HTTP⁴⁶ is the open standard protocol for the World Wide Web.

But the development of decentralized social infrastructure is not the biggest challenge for developers. To overcome the market dominance of social network service providers it is necessary to trigger the network effect for the alternative software to gain a critical mass of users and to trigger the inverse network effect on the established networks. Furthermore policy making and lobbying is needed to overcome the mono-culture on a political level.

Another alternative would be that proprietary social network services will open up their infrastructure. This possibility seems unlikely (in 2012) since the value of such services derives directly from the data of their users (a value that is almost impossible to define and calculate). Opening up would equal bankruptcy. But given Facebook's bad performance at the stock market and the still unanswered issue of monetization of social networks it has not been proven yet that the proprietary social network model will persist.

44 *Diaspora* is based on the idea, that every social network user is the server of her own data. It creates a decentralized social network where the users keep control over their data.

45 *DSNP*: Distributed Social Networking Protocol is another approach to develop a decentralized and open social network protocol.

46 *HTTP*: Hypertext Transfer Protocol is the foundation of data transfer for the World Wide Web.

6.3.3. Social Media Product Design.

The result of social media communication depends greatly on the design of social media products. Just comparing the two most popular social media services Facebook and Twitter with each other, we immediately discover great difference in communication. Not only has the underlying social network a different typography and is based on different relationships but the way the users communicate with each other is very different.

As mentioned earlier comments on Twitter are limited to a length of 140 characters. This limitation has historical reasons and derives from the character limitation of SMS. Still, nowadays this limitation has remained to be very popular. With the enormous amounts of information and content the user sees herself confronted with everyday, attention for the single bit of information decreases. The limitation to 140 characters forces Twitter users to “make it short”.

Apart from being less intrusive this behavior also forces Twitter users to think about the wording and the necessity of their next tweet. Following a Twitter user who writes about topics that are insignificant or uninteresting is ineffective and deteriorates the personal social media experience. But also quantitatively is Twitter communication sensitive. The service becomes unusable if other users flood the personal time line with too many tweets.

Facebook's communication culture is quite different. Quantitatively and qualitatively bad comments are easier to ignore, filter, or hide and are less deteriorating to ones personal social media experience. On Facebook, with all its secondary features (e. g. photo and video sharing) text comments are less in the focus of the user. Annoying comments from a specific user can be hidden without the necessity to break up the relationship. The comments might be annoying but other social media activity from that user might still be of interest to me. While the act of unfollowing a user is very common on Twitter, unfriending on Facebook is rather the exception.

Another example of the difference in communication culture include the way users semi-publicly direct-message each other. On Facebook it is very usual that a one-to-one conversation is being interfered by a third users. The layout and of the discussion dialog facilitates this. On Twitter this behavior is rather unusual because it quickly becomes confusing.

Twitter has developed a proper communication culture that is in competition with, but cannot directly be compared to other social media services. Facebook's product design has also created a unique communication culture (although it is copied by many other services), one that is strongly

focused on real life relationships and the presentation of those. When investigating social network services the design of the product and its effect on the social medium need to be considered.

These are just two very brief examples of how social media communication and social networking is affected by product design. The topic is much more complex and difficult to grasp. In my opinion the significance of product design and its effects on social media communication is often underestimated.

6.4. Structure and Manipulation

6.4.1. Democratization of Communication.

“The World Wide Web is power to the people with a vengeance, we might say, since – unlike the rather passive medium television – its interactive character presents ordinary citizens with the possibility of exercising an unprecedented influence on the social and political events that determine their circumstances and prospects.” (Graham, 1999, p. 37)

Not only social media fosters a process of democratization of communication. The Internet itself and the possibility to communicate through computer mediated channels over distance has started the process. During the pre-Internet era communication was limited to certain forms. Either via one-to-many industrial mass media communication or via one-to-one individual media such as the telephone. Because of the cost of distribution the possibility to communicate to a great amount of people was available to a small elite only. But even then the individual media producer was limited in her freedom of expression by external factors such as the market situation and the ideologies of her superior and the company⁴⁷.

Another limitation to communication which Internet has overcome is the inflexibility of space and time. To take a call and to watch the TV news meant to be at a specific place on a specific time - some media were a little bit more flexible, like newspapers which by design are mobile - but it was the invention of the mobile phone that broke up the “space” paradigm for the telephone. The only medium that was more flexible with time and space was the letter. Still it had another disadvantage, the lack of immediacy. The invention of e-mail and later its mobile equivalent the SMS created previously impossible ways of overcoming the space and time issue of communication while at the same time facilitating immediate communication.

Apart from overcoming time and space, the Internet, e-mail, and the SMS have created even more advantages over traditional media channels: Cheap one-to-many media channels. With e-mail it was suddenly possible to communicate with a great amount of people without extra cost or effort. As a result mailing lists and news groups evolved very quickly and provided alternative one-to-many information channels to the user.

The above quote from Gordan Graham was drawn from his book “The Internet: A Philosophical Inquiry”. It was written in 1999! In the evolution of the Internet thirteen years are various

⁴⁷ See chapter 6.2.5. Social Media in Comparison to Industrial Media

generations of innovation. In 1999 there were no Facebook, no Twitter, no social media, no smart-phones, no Google and it was yet clear that the Internet's tendency to empower the people was inevitable.

Social media in comparison to e-mail newsgroups and mailing lists are not entirely new. Social Media share similar characteristics with e-mail, but they are much more effective. Social media are very immediate, overcome time and space, easy to use, and cheap. Furthermore the underlying social network and the transparent reputation system create a unique medium of communication, that is more sophisticated than any other medium before. The results are that social media leverage communication inequalities and give power to the people by facilitating democratic communication structures.

6.4.1.1. Social Authority

Social authority is a term that derives from marketing. In the past public relations and marketing departments were narrating a company's public communication and influencing its perception through classical marketing techniques like press releases or advertisement. These departments were able to generate and lead public discussion regarding their product or company.

Social media, with its democratization effect of communication, have changed this. A public relations department is no longer capable of leading the public discussion about the company. Via social media channels consumers are talking about commercial products and companies and they can reach a significant amount of listeners. Together with industrial media losing its status quo over information spread, traditional authorities such as the state or companies have also lost it. New authorities have appeared, social authorities.

Social media authority is held by the entity with the greatest reach. This can be an organization, a company, but it can also be an individual. Usually the reason for the spread of a specific message is the reputation of the social media producer, but often it is the message itself that gains social authority with no connection to any specific author.

Examples of Social Authority of the Social Media Producer:

Barack Obama used social media for his 2008/2009 presidential campaign. His campaign is a leading example of how politicians can use their social authority to trigger social media

communication. In the case of the tweet underneath the message itself is not very important. By posting “Yes we can.” he enables other Twitter users to show support with him as a candidate.

Barack Obama: 17.314 Retweets, 1.798 Favorites,⁴⁸



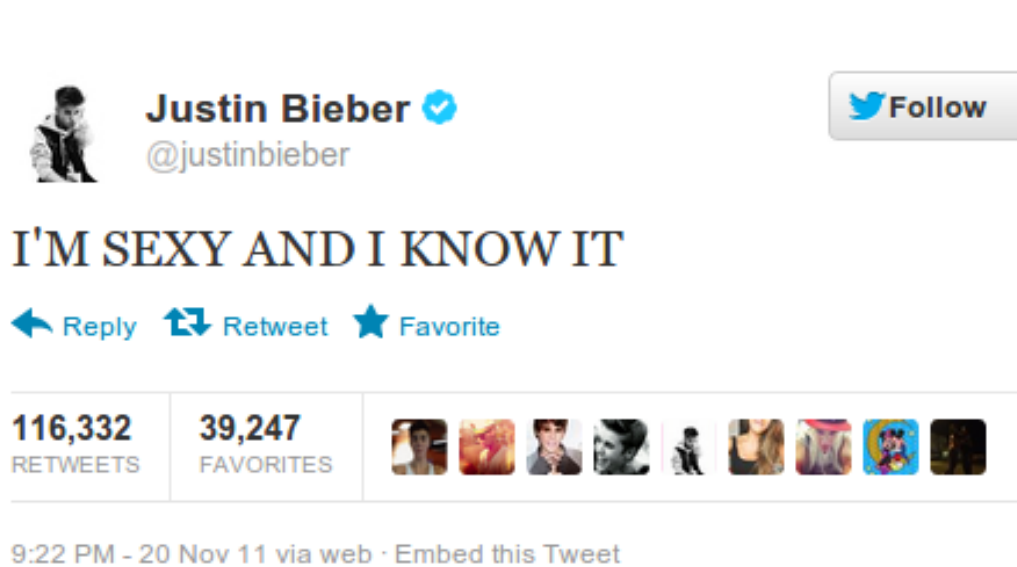
Barack Obama uses his social authority to distribute a simple message via Twitter.

Justin Biebers Twitter account is another example of social authority of pop stars. By writing this message Bieber gives his followers the opportunity to enrich themselves with a tiny bit of pop star fame. Apart from politicians and pop stars social authorities (as persons) are usually cultural, religious, or other public leaders. These authorities function as opinion leaders the same way as described by the two-step flow of communication theory⁴⁹.

⁴⁸ <http://twitter.com/BarackObama/status/10852146480>




⁴⁹ See chapter 3.4.2. Two-Step Flow of Communication

Justin Bieber: 116.332 Retweets, 39.247 Favorites,⁵⁰



Justin Bieber 
@justinbieber

I'M SEXY AND I KNOW IT

 Reply  Retweet  Favorite

116,332
RETWEETS

39,247
FAVORITES

9:22 PM - 20 Nov 11 via web · Embed this Tweet

Justin Bieber referring to the song from another band with the title "I'm sexy and I know it"

Examples of Social Authority of the Message:

Sohaib Athar was not knowing the importance of the events he reported on May 1st 2011. He turned out to be the first person to publicly report on the killing of Osama Bin Laden. In his case it was not necessarily his person but the message which gained social authority within hours. The author of the message was secondary. Mainstream news picked up the story that night, since then Sohaib Athar has gained some social authority reaching 68.364 followers (as of August 2012).

⁵⁰ <http://twitter.com/justinbieber/status/138487470818988032>

Sohaib Athar: 3.428 Retweets, 2.396 Favorites,⁵¹

The image shows a screenshot of a tweet from Sohaib Athar (@ReallyVirtual). The tweet text reads: "Uh oh, now I'm the guy who liveblogged the Osama raid without knowing it." Below the text are icons for Reply, Retweet, and Favorite. The tweet has 7,307 retweets and 2,116 favorites. A row of ten small profile pictures of users who interacted with the tweet is shown below the statistics. At the bottom, it says "9:41 PM - 1 May 11 via TweetDeck · Embed this Tweet".

Sohaib Athar: Conscious reflection on his earlier tweet.

But the case of Sohaib Athar is also a good use case of citizen media⁵². Although Athar is not a professional journalist, he certainly behaved as one, by detecting an unusual event and published it via social media. During the night he continuously kept reporting on the issue, translating other tweets into English and commenting on the happenings. By doing so he rightly adapted to journalistic practices like filtering, classifying, and evaluating news. A couple of hours later he writes:

⁵¹ <http://twitter.com/ReallyVirtual/status/64780730286358528>

⁵² See chapter 6.4.1.2. Citizen Media

Sohaib Athar: 7.307 Retweets, 2.116 Favorites,⁵³



The screenshot shows a tweet from Sohaib Athar (@ReallyVirtual). The tweet text is "Helicopter hovering above Abbottabad at 1AM (is a rare event)." Below the text are interaction icons for Reply, Retweet, and Favorite. The tweet has 3,428 retweets and 2,396 favorites. A row of user avatars is visible below the statistics. At the bottom, it says "12:58 PM - 1 May 11 via TweetDeck · Embed this Tweet".

Sohaib Athar is unknowingly reporting on the killing of Osama Bin Laden.

The great example of Sohaib Athar also describes another phenomenon that is connected to the social authority of messages (or news): Mainstream news media cannot keep up with the velocity of social media news spread anymore. As a result of this the role of main stream news media is changing from a focus on reporting to filtering, aggregating, contextualizing and interpreting news that have already been reported via social media.

A last example how the news becomes disconnected from traditional authorities is the publication of the discovery of ice on mars. Although the twitter account @MarsPhoenix certainly is a social authority in the scientific world, the message itself is of much broader importance. The proportion of retweets and favorites is very interesting in the case of this tweet. All of the examples above have a significantly higher rate of retweets than favorites while here it is the other way around.

The news was quickly picked up by mainstream media but the initial reporting was done by somebody else: An anonymous scientist at NASA.

⁵³ <http://twitter.com/ReallyVirtual/status/64912440353234944>

MarsPhoenix: 25 Retweets, 693 Favorites,⁵⁴



MarsPhoenix reporting on the discovery of ice on mars

It is not only difficult for mainstream news media to adopt to the structural changes of information flow that social media enable. For companies, political parties, and organizations it was (and still is) very difficult to adapt to these new paradigms. Many public relations departments have made big mistakes by insisting on their social authority and underestimating the social authority of users.

Companies that have adopted to these new paradigms try to become involved in the communication rather than dominating it. Only so they can prevent themselves from unintended social media *shit storms*⁵⁵. Since it is impossible to maintain authority over communication, modern public relations need to be engaged with and be in constant contact to the users. The conceptional approach of a social media strategy depends on the product and the target group of a company.

Although no single entity can be the one dominating social authority anymore, there are higher and lower levels of social authority. An active blogger who writes about a special topic, who is involved on all of the mayor social media platforms, who gets invited to speak about her topic on conference and who has a significant user base following her activities, has certainly more social

⁵⁴ <http://twitter.com/MarsPhoenix/status/839088619>

⁵⁵ *Shit storm*: The phenomenon of a massive public outrage often triggered through social media. This term is especially famous in the German language.

authority than a regular teenager who mainly communicates with her friends on Facebook. Social authority shows strong similarities to reputation.

How social authority affects social media conversation has been researched by Wu et al. (2011). The researchers found out that roughly 50% of URLs consumed on Twitter are generated by just 20.000 elite users.

6.4.1.2. Citizen Media

Citizen Media are media that are strongly connected with the topic of social media founded on citizenship in a society. Although citizen media were already existent before the advent of social media, it is only through social media that citizen media have become a significant part of today's media environment. On a fundamental level social media and especially citizen media have great influence on collective decision making and the formation of opinion. They make up for the deficiencies of representative democracy at a more fundamental level. (Graham, 1999: 78)

Citizen media is grounded in the media produced by non-professional or semi-professional individuals. Citizen media content is often (but not exclusively) based on local topics in a specific society. This content does not necessarily find its way into industrial media since it is not of general interest and therefore economically unsustainable. The technological advancements and the decreasing cost of audio visual equipment in combination with the Internet and social media have favored the rise of this new form of journalism where special interest topics have found a new platform.

But it is not only semi-professional journalists who produce citizen media. As camera phones, smart phones and video cameras with Internet accessibility become ubiquitous every citizen becomes a potential producer of citizen media, even if it is only for a short time. Many examples of this phenomenon could be seen lately: Citizens who film a certain event, share it via social media, and become producers of citizen media for a moment⁵⁶. Producing citizen media is not equal to producing citizen journalism. Many of the citizen media producers merely report the story and do not contextualize and interpret it.

56 See the example Sohaib Athar in chapter 6.4.1.1.

6.4.2. Political Construction and Manipulation.

6.4.2.2. Internet Censorship by Government

Censorship is a topic that has always been strongly connected to human communication. Of course, censorship is very complex and comes in very different forms. Sometimes it is illegal, sometimes it is not. Sometimes it is accepted, sometimes it is not. Sometimes it is precisely regulated, sometimes it is difficult to define. Censorship can be seen as something necessary or as something dangerous. It greatly depends on the specific jurisdiction and social and political circumstances as well as the ideological beliefs of the society where censorship is applied.

The OpenNet Initiative⁵⁷ has been researching on the topic of censorship on the Internet and is continuously updating their data to provide current reports on which countries filter the Internet. It has identified four approaches to Internet filtering:

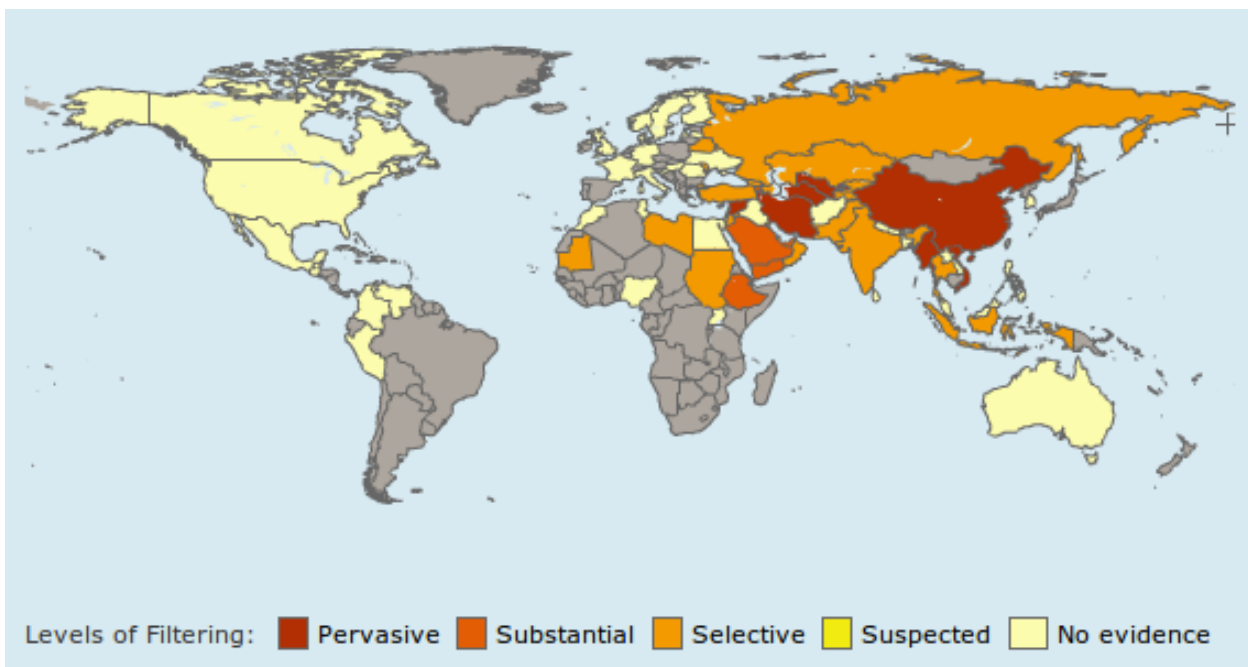
1. **Technical Blocking.** This technique is used to block users access to specific websites, through blocking of IP addresses, DNS⁵⁸ tampering, and URL blocking⁵⁹. This method is usually used when a website is beyond reach of local authorities, i. e. on a server in a different country.
2. **Search Result Removals:** This approach is used to remove specific sites from the listings of search engines. The result is that the website becomes very difficult to find when the user does not know its exact URL.
3. **Take-Down:** When a website is within the reach of local authorities it can be forced to be taken down by its administrator. Often a legal threat is enough to convince administrators or hosts to take it down.
4. **Induced Self-Censorship:** The threat of legal consequences, the promotion of social norms, or intimidation can favor self-censorship by the user. All of these techniques have been used, whereas the act of intimidation is rather present in authoritarian states.

⁵⁷ <http://www.opennet.net/>

⁵⁸ *DNS* (Domain Name System) is often referred to as the "telephone book" of the Internet. It provides a register of IP addresses that are referenced to domain names (e. g. www.mywebsite.com)

⁵⁹ The blocking of specific URLs (Uniform Resource Locator).

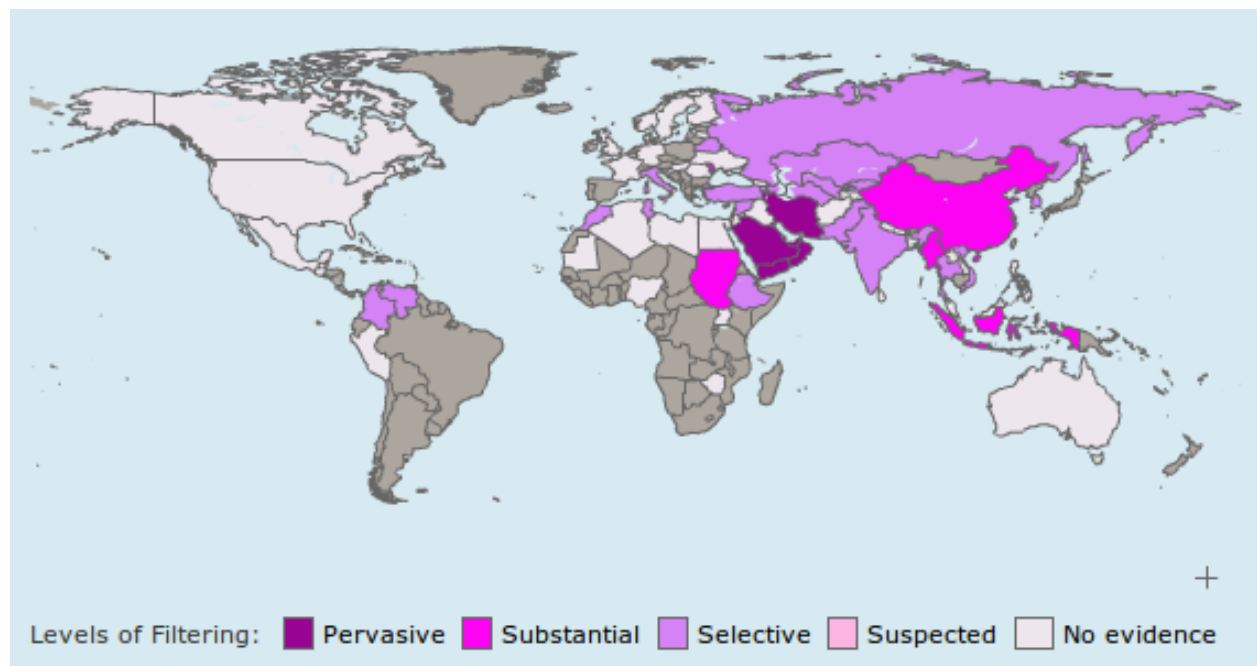
The maps created by the OpenNet Initiative visualize which countries filter which type of content on the Internet. The OpenNet Initiative was able to differentiate between political content (government, human rights, freedom of expression, etc.), social content (sexuality, drug and alcohol, etc.), conflict and security (content that is related to armed conflicts, border disputes, separatist movements, etc.), and Internet tools (web services that provide Internet hosting, e-mail, search, translation, etc.)⁶⁰. For some countries no valuable data could be applied, these countries are displayed in gray, which does not mean, that they are free of Internet filtering. The filtering of political content is visualized by the following graphic:



Filtering of political content on the Internet by country.

60 <http://map.opennet.net/filtering-IT.html>

The filtering of social content is visualized by the following graphic:



Filtering of social content on the Internet by country.

The other two maps that relate to filtering because of conflict/security issues and the application of filtering software (not included in this chapter) resemble almost the same picture:

The countries which most heavily filter the Internet are located in East Asia, Central Asia, Middle East, North Africa. The country that has established the most sophisticated means of Internet filtering is clearly China. China's Internet is often called "the great Chinese firewall"⁶¹, a very complex system of juridical, technological, and administrative structures that not only block web content, but also monitor precisely the Internet usage of individuals. Experts often distinguish between "the Internet" and "the Chinese Internet" (Anti, 2012) and other countries especially authoritarian states such as Saudi-Arabia, Burma, Bahrain, North Korea, and Syria are catching up.

Iran is another example of strict Internet regulation through government. It is developing a national Intranet, an internal network under state control. The Iranian regime still denies that this infrastructure is supposed to replace the World Wide Web in the future, but it certainly enables them to do so if necessary. Especially the Iranian and the Chinese approach to regulation have greater consequences. They result in a fragmentation of the Internet, which endangers the concept of "the one Internet". Maybe in the future we will distinguish between various nets with

⁶¹ Based on "the Chinese Wall" and the "firewall" a software that is designed to prevent unauthorized and unwanted communication between computer networks.

different characteristics (more or less freedom, more or less surveillance, more or less data velocity, more or less international).

On the other hand many of the western countries filter Internet content, too. In France and Germany, for instance, content related to Nazism or Holocaust denial is frequently blocked, despite the decision of the Court of Justice of the European Union that Internet filtering is a violation of freedom of information⁶². In fact France and Australia are the first western countries that were classified by Reporters Without Borders in their Internet Enemies Report 2012 as “under surveillance”. In the case of France the report reads:

“The government has taken the exact opposite course from the one laid out in recent court rulings and international recommendations that condemn filtering and cut off Internet access, and has done so in a context of increased pressure on journalists to reveal sources. ”

Certainly the severity of Internet filtering is very different between authoritarian and democratic regimes and the situation of Internet filtering in Germany can hardly be compared to the sophisticated Internet regulation infrastructure that China has developed. Still, the increasing amount of Internet filtering throughout all countries and societies is a global trend. It just depends on the ideology and the believe system of the single society whether this trend is proactive, progressive, or aggressive. Virtually every government in the world is in some way implementing censorship or at least thinking about it. (Kampfner, 2012)

The facts described above stand in heavy contrast to a global public opinion poll conducted by BBC World Service in 2010 among 27.973 adult citizens from 26 countries, which concluded that four out of five people (that use the Internet) regard Internet access as a fundamental right and 53% of Internet users agreed that “the Internet should never be regulated by any level of government anywhere” (BBC World Service, 2010).

Especially Western governments see themselves confronted with two opposing issues; the protection of the population and the maintenance of citizens liberties. Protection measures on the Internet are often interfering with users liberties. The global fear of terrorism in the aftermath of the terror attacks from September 11th 2001 has resulted in more concrete plans of filtering and surveillance. Apart from the threat of terrorism and cybercrime the problematic of child pornography and intellectual property are often (falsely) utilized to justify laws which cut on personal liberties.

“The demarcation between free expression and data and identify privacy on the one hand, and

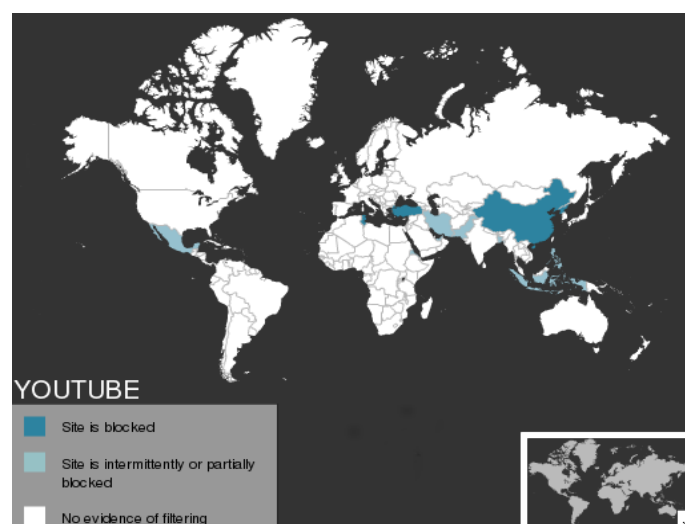
62 <http://en.rsf.org/european-union-eu-court-says-internet-filtering-28-11-2011,41472.html>

the state's right to security on the other, is continually debated and recalibrated, partly due to technological advances.” (Kamptner, 2012)

While some countries have little Internet censorship, other countries go as far as to limit the access of information such as news and suppress discussion among citizens. The issue of Internet censorship has a parallel development to the development of the Internet itself. The topic is so complex that it can only be treated very cursorily at this point. Certainly, Internet Censorship is not a static phenomena, it is evolving, rising and/or falling, depending on politics, societies and jurisdictions all over the world.

6.4.2.3. Censorship of Social Media

Apart from filtering the Internet itself social media have become a target to censorship recently. As described above social media is a sophisticated tool to organize protest. In recent years many situations have occurred where social media played an essential role in the organization of social movements mostly of oppositional character. The election campaign of Barack Obama, the green movement in Iran, and the revolutions in Tunisia and Egypt were only the most spectacular examples of social medias ability to become an alternative oppositional media channel.



Visualization of countries that block or limit the access to YouTube.

The blocking of social media sites is already a common practice for many regimes. Especially since the successful organization of Egypt's youth via social media, with the result of massive

demonstrations on the streets of Cairo which led to the fall of Hosni Mubarak, many authoritarian regimes are massively investing in social media filtering software and infrastructure.

But it is not only the filtering itself, that has become a serious threat to social media. Often social media sites are being monitored by special police forces to identify possible protesters or anti-government activists (Paganini, 2011). This poses a new threat to these activists.

When Hosni Mubarak shut down the Internet for four days in January of 2011 it was not the solution to his problem. People became even more angry about his dictatorship, that they even more so went to the street. Other regimes have already learned from this mistake. Syria instead of shutting down the whole web simply slowed down the connection to a level where bandwidth-heavy services like YouTube became unusable (Macleod, 2011). The people did not immediately know that Syrian government was responsible for the Internet slowdown so they opposed less.

Reporters Without Borders issues a yearly publication of a list of countries that are being classified as “Enemies of the Internet” or “Under Surveillance”. The latest report reads: “[...] released in March 2011 at the climax of the Arab Spring, highlighted the fact that the Internet and social networks have been conclusively established as tools for protest, campaigning and circulating information, and as vehicles for freedom. In the months that followed, repressive regimes responded with tougher measures to what they regarded as unacceptable attempts to “destabilize” their authority. In 2011, netizens were at the heart of the political changes in the Arab world and elsewhere. They tried to resist the imposition of a news and information blackout but paid a high price. [...]”

The report further claims: “Repressive regimes have learned the lesson. Keeping the media at bay, intimidating witnesses and blocking access to a few news websites are not enough to ensure the success of a news blackout. A much more effective way is to seal off the area concerned to prevent unwanted witness from entering and any digital content from leaving, and to cut off communications by blocking SMS messaging and by shutting down Internet access and mobile phone services in a temporary or targeted manner. [...]”



Visualization of countries that block or limit the access to Facebook.

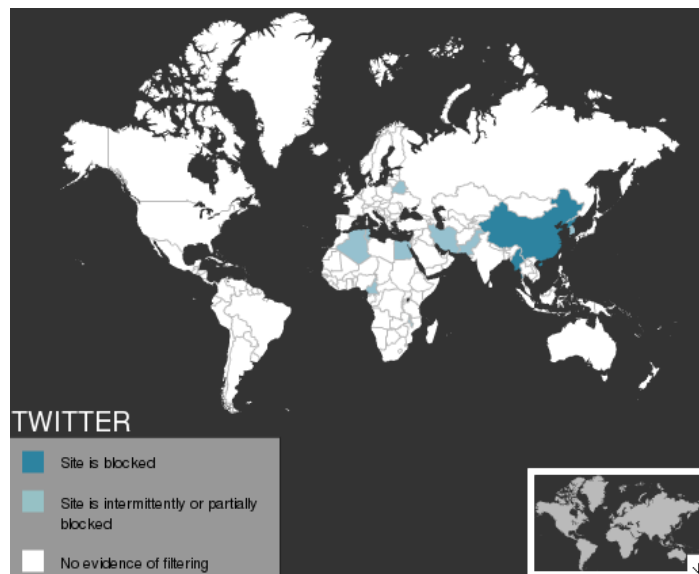
As a result of the successful uprisings in the Arab world authoritarian regimes have started to upgrade their Internet regulation means. About the impact of the Arab Spring the report states that:

“As soon as the uprisings in Tunisia and Egypt got under way, most regimes that censor the Internet quickly reinforced online content filtering in a bid to head off any possibility of similar unrest spreading to their own countries. Some regimes have adopted filtering as standard tool of governance, one that strengthens their hold on power. Live-streaming sites and social networks are often the most affected.” (Reporters Without Borders, 2012)

In this sense, the success of social media and its ability to give power to the people has increased the “necessity” for authoritarian regimes to invest in Internet regulation and surveillance. The result is more regulation and surveillance.

In a working paper from August 2011 the Scholars Casili and Tubaro have actually proven that the regulation of social media results in more violence on the streets:

“[...] the decision to “regulate”, filter or censor social media in situations of unrest changes the pattern of civil protest and ultimately results in higher levels of violence. [...] The systemic optimum, represented by complete absence of censorship, not only corresponds to lower levels of violence over time, but allows for significant periods of social peace after each outburst. ” (Casili, Tubaro, 2011)



Visualization of countries that block or limit the access to Twitter.

Certainly the arms race between the people and the governments have evolved to a new level. Governments are catching up by buying expertise and monitoring software (Paganini, 2012). It is still very early to predict the future of this development since new software and infrastructure is being deployed almost daily. Software to monitor and filter, but also software to overcome filtering and to anonymize. The development goes even further, as we can discover intentions of building alternative “Internets”.

The regulation of the Internet on the one hand and the intentions to overcome regulations have great impact on the topology and technology of the Internet as we know it. These events are a strong driver for technological change and the freedom of the Internet itself. Neither the Internet nor the social media that run on top of it will remain unaffected by these processes.

6.4.3. Private construction and manipulation.

6.4.3.1. Walled gardens and terms of service

Apart from governments private entities have always tried to regulate some of the Internet in order to improve their market position. One of the early big players on the Internet was America Online (AOL). Its strategy was a software that provided its users useful services like weather forecast, chat clients, and online shopping, while at the same time it was hiding most parts of the Internet from the user. This concept of a so called walled garden was created through the necessity to install the AOL software in order to get Internet access.

For private for-profit companies to create a walled garden has certain advantages. Security, profit making, offering a more stable and “better” service are just some of them. Especially since the maintenance of servers can become very costly and a financing model where the user directly pays for the service can be very risky the economic argument might be the strongest reason for establishing a walled garden.

Still, AOL belongs to an old generation of Internet companies and has not succeeded in remaining an important player on the Internet. Nowadays it is another generation of companies that create walled gardens. Companies that have mostly been born in the aftermath of the dot-com bubble or even later in the emergence of the Web 2.0. Famous examples are Facebook, Amazon.com, and eBay.

While AOL used a software to control the way users used the Internet, it was still possible and legal to circumvent its walled garden. The new generation of Internet companies usually forces its users to agree to a specific set of rules, the terms of service, that if violated could lead to the exclusion of the user. These terms of service are usually so extensive and complex that a regular user hardly ever reads and/or understands them. The paradigm, where the design of the product dictates the way of using it, is often referred to as “Code is Law”. The terms of the service are compared to laws of a country.

Facebook, for instance, forces their users to identify themselves with their real first and last name⁶³. Since many users are using pseudonyms on Facebook they are actually risking extradition from the social network service, because of the violation of Facebook's terms of service. In a society where eighty or ninety percent of the youth actively use Facebook everyday

63 Also chapter 5.2.1.4.2. Identity in Web 2.0.

the consequences of such an extradition are at least significant.

Another company, Apple, has build a whole environment of proprietary soft- and hardware that can only be used when obeying to Apples terms of service. Google, Amazon.com, Microsoft, and Twitter (and many others) also develop products that are increasingly closed and/or restricted through terms of service.

These companies force their proper rules upon users and even third party companies. By doing so their terms of service often compete with the jurisdiction of national law. Photos of nudity have been taken down in the past even when they were posted by professional entities like a renowned newspapers. In Facebook's terms of service it states that:

“You will not post content that: is hate speech, threatening, or pornographic; incites violence; or contains nudity or graphic or gratuitous violence.”⁶⁴

This vague formulation leaves room for speculation and flexibility a reason why the application of this rule is up to the decision of Facebook's employees. At no point in the document are “pornography” or “nudity” clearly defined and at no point in the document Facebook defines its handling of freedom of speech, the freedom of the press, or the freedom of art.

Facebook's rights to freely apply the terms of service are manifested in the following rule:

“All of our rights and obligations under this statement are freely assignable by us in connection with a merger, acquisition, or sale of assets, or by operation of law or otherwise.”⁶⁵

As for-profit social media companies offer a medium for communication, which underlies the specific rules of that company, it is very questionable if the paradigm of the public sphere⁶⁶ is adaptable to this type of communication environment. Maybe it is useful to talk of a “access restricted semi-public sphere”. Yosem Eduardo Companys summarizes this well by claiming:

“You can say anything you want over social media owned by a for-profit firm, as long as this “speech” doesn’t conflict with the profit motive of the firm.”⁶⁷

Certainly the foundation of social media on private for-profit companies is not necessarily the only way social media could exist. It is thinkable that in the future an open standard for social media will establish as the basic protocol of all social structures on the web. Researchers and developers world wide are working on alternative open projects and in the last years more and

64 Statement of Rights and Responsibilities: 3. Safety, Rule 7, from <https://www.facebook.com/legal/terms>

65 Statement of Rights and Responsibilities: 19. Other, Rule 7, from <https://www.facebook.com/legal/terms>

66 See chapter 3.2. Public Sphere

67 http://liberationtech.tumblr.com/post/28442687690/how-cooperatives-could-fix-social-medias-net?utm_source=twitterfeed&utm_medium=twitter

more alternatives have arisen. Still, none of them could achieve the necessary network effect to be able to compete with the established corporations.

6.4.3.2. Regulation through law

The regulation of the Internet through law, so called cyberlaw, used to be a secondary topic of the legal landscape. In recent years this topic has received increasing attention not only from alternative media, but also from mainstream media. Cyberlaw became the center of news covering with detailed information about the latest legal developments.

On national and international level many countries already had their eye-opening Internet regulation debate. In Spain it was about the *Ley Sinde*⁶⁸, in France about HADOPI⁶⁹, and in Germany about *Zensursula*⁷⁰ (just to name a few). While the *Ley Sinde* (with some hesitation) and the HADOPI law were approved by the respective national governments, the *Zensursula* idea was rejected, due to the massive outcry of Internet activists. In Germany this was the moment when *Netzpolitik* (net politics) developed as a proper genre in politics.

The examples show how Internet regulation through law is done on a national level. Non of these laws have been invented by the politicians who promoted them, but they have derived from private entities who influences these politicians through means of lobbying even beyond national frontiers.

In the case of the *Ley Sinde* Spanish politics were lobbied directly from the United States Embassy in Madrid to introduce more sophisticated laws to prevent copyright infringement. These information have become public through the famous leakage of US embassy cables by the website Wikileaks in November 2010⁷¹. It also were diplomacy cables that proved that the initiative of the US embassy in Madrid was greatly lobbied by the American content industry and Hollywood. In this case the American content industry has successfully lobbied regulation laws

68 *Ley Sinde* is a law that discriminates hyper links by holding Internet users responsible for the content of the links they share.

69 *HADOPI* is a law that is based on the three strikes model, meaning that users are warned 3 times when caught for copyright infringement. After the third strike users will be excluded from Internet use.

70 *Zensursula* was an attempt to regulate the Internet with stop signs based on the idea to hinder child pornography, but discriminated great parts of the Internet and would have introduced a complex regulation mechanism.

71 "Cable sobre la ayuda de EE UU en materia de Copyright", Cable about the help of USA in copyright matters, from http://www.elpais.com/articulo/espana/Cable/ayuda/EE/UU/materia/Copyright/elpepuesp/20101203elpepunac_45/Tes

for the Internet in another country.

Similar attempts of Internet regulation happen on international level. The most recent and famous examples are SOPA (Stop Online Piracy Act) and ACTA (Anti-Counterfeiting Trade Agreement). Two laws that have been designed to find national and international consensus about the treatment of intellectual property. Promoting the goal of controlling illegal piracy of goods and intellectual property these laws were often going much further allowing for a wide regulation of Internet content. Just like Facebook's terms of service these laws were deliberately formulated imprecisely and openly. SOPA and ACTA were rejected through parliaments, because of the heavy protests of activists, organizations, and Internet users, but other similar laws called IPRED, CETA, CISPA, TPP, IPRED 2 are already on their way.

6.4.4. Individual Construction and Manipulation.

As we have discovered in previous chapters the individual social media user has great influence in the creation and maintenance of her social network. In social media the same logic applies as in social networking⁷². Group forming capabilities of social software enable the individual user to connect to a greater collective of similar nodes in the network. Social media are the communicative tools through which these communities are defined.

Social movements have benefited from the evolution of social media. During the last couple of year we have seen many digital and real world movements being organized through social media. Some examples have already been mentioned earlier (e. g. Arab Spring, against the international laws ACTA, SOPA and PIPA, and during the Iranian protests), but those were only the most famous examples. On smaller scale the user is confronted with community forming processes everyday. Between vacation photos and friends comments the users encounters more and more political messages and “social micro movements”.

Micro movements can be as political as “against the excessive consumption of meat”, “against the weapon industry”, or “for the amnesty of a political Russian art collective”, but they can also be of pop culture character, such as “Modern Family is the best” or “Chuck Norris can divide by zero”. Many of these statements are used to enhance the digital presentation of the individual user, they cannot automatically be considered as activism, but allow a more sophisticated picture

⁷² See chapter 5.2.3. The (Social) Network

of the users identification.

But is it not a long way from showing sympathy to certain political statements and becoming involved in the issue, at least from a technical point of view. Joining a Facebook group is just one click away. Becoming engaged in this group is possible to anyone who has the motivation to do so. Personal barriers might limit a users engagement but technical barriers are very low in social media.

Of course, digital communities are not only the result of social media, but they have been around since the invention of the Internet, but it is social media that gives access to communities to a wide range of general Internet users. The simple use of social media applications have allowed many non-tech savvy individuals to become engaged.

A community can be defined as a group or a society of interacting human beings that share a common value or believe. The strength of the community is relative to the amount of individuals involved, the strength of their believes, and the quality of their interaction. Social media can facilitate all of these three factors:

1. **Social media can enhance group size**, through its community building potential.
2. **Social media can enhance the quality of interaction**, through more sophisticated means of communication.
3. **Social media can enhance the strength of believe**, by pooling consistent opinions.

In this sense, social media create new publics and have influence on the structure of all public and private human communication.

Hence the communicative power that can evolve from these processes, abuse of social media is growing. Astroturfing for instance is advocacy to support political, organizational, or corporate agendas giving the impression of a social media micro movement. Here, powerful entities appear as grassroots movements from the user to achieve certain goals. But even on a small scale the individual social media user can have some effect on opinion building inside her personal social network.

The intentional influencing of public opinion is called social engineering. Social Media environments have become a key source for social engineering:

"Social Engineering is the art of exploiting the weakest link of information security systems: the people who are using them. Victims are deceived in order to release information or perform a malicious action on behalf of the attacker." (Huber, et al.)

But it is not only human activity that strongly effects the structure of social media. Software bots are developed to influence social media conversation.

6.4.5. Technical Construction and Manipulation.

Bots, also known as Web Robots or Internet Bots, are software that is used to do simple and repetitive tasks to substitute human labor. The most widespread use of bots is in website spidering or website crawling where these programs crawl and index websites to create a map of the Internet. This technique is famously used by Google to maintain the index of their search service.

There is a growing number of bot types that can be encountered nowadays. Apart from web crawling, bots have been widely used as spambots to distribute spam e-mail or even as chatterbots. Chatterbots are bots which are specialized on simulating human conversation, mainly in a chat room or instant messaging environment. They intent to fool human users into thinking that the program is a human being. This behavior is also known as the Turing test⁷³ of chatterbots.

Chatterbots in the commercial environment can have the purpose to offer an alternative source of product support where human support labor is limited or simply to automatically distribute information, such as weather forecasts or traffic information. The output of a chatterbot, text or voice, depends on the design of the software and the budget of the development. Although these bots often succeed in reading, interpreting, and responding to human input, the technical backend of the software is often rather simple.

The most common technique is to scan the input text for keywords and compare them to a database of possible answers which include these keywords. The answers with the highest compliance is then returned to the user. This is a reason why chatterbots can be easily identified through their often unnatural way of responding and their incapacity to develop elaborated conversation, i. e. they fail the Turing test.

⁷³ *Turing Test* is a test of a machines ability to exhibit intelligent behaviour.

6.4.5.1. Social Media Bots

With the appearance of social media the chatterbots have developed further. The tremendous amount of publicly available human conversation especially created by the users of Twitter but also by other social network services have given software engineers new possibilities to enhance the quality of chatterbots. These new generations of Internet bots are called socialbots. They mark a new step in the evolution of such software.

Tim Hwang describes this new generation as the following: "What's rarer online and what our social bots are trying to do is focus on a much slower and deeper type of connection with people. They're interested in affecting the way people talk to it and, and talk to one another." (Hwang, 2011)

The most accurate definition of socialbots comes from Boshmaf: "An automation software that controls an account on a particular OSN (Online Social Network), and has the ability to perform basic activities such as posting a message and sending a connection request. What makes a socialbot different from self-declared bots (e.g., Twitter bots that post up-to-date weather forecasts) and spambots is that it is designed to be stealthy, that is, it is able to pass itself off as a human being." (Boshmaf, et al., 2011)

Three main intentions of social media bots can be identified:

1. **To influence the typology of social networks.** "The vision of this technology is to enable operators to actively mold and shape the social topology of human networks online to produce desired outcomes" (Nanis, Pearce, Hwang, 2011). Social bots make use of the same software functionalities as human users do. They are able to establish new and break up with old uni-directional (follow/unfollow) and bi-directional (friending/unfriending) connections of their personal network. They are also able to distinguish between direct conversation with a specific individual or public conversation and they are able to reference to other sources via website links or retweets. Depending on the design these bots can either accumulate a large user group or specify a very narrow but clearly defined social network.
2. **To spread (mis-)information and propaganda.** Spreading information is part of the core definition of social media. Social bots therefore always have the intention of

spreading (mis-)information or even propaganda. In its most radical form social bots can be used to massively overload the conversation around a certain hashtag trying to pollute and undermine the "real" conversation.

Examples of this behavior have been detected regarding pro-Kremlin tweets related to the events of voting irregularities in Russia (Krebs, 2011), during the Syrian Protests (Qtiesh, 2011), against the Israeli company Ahava (York, 2011), and during Tibetan protests (Krebs, 2012)

3. **To steal personal information.** Personal information have become a highly valuable good since social networks require real names. Because of the nature of digital information (machine readability) it has become possible to develop large scale and personal advertising campaigns based on the quantity of personal data.

In a study researchers have succeeded to pull of 250 gigabyte of personal data from Facebook within eight weeks using socialbots (Boshmaf, et al., 2011).

Social media bots are still in a very early phase of development. It is only a matter of time until these programs become so sophisticated that they cannot be distinguished from human behavior anymore.

Conclusions and Investigation.

1. Digital Communication:

Digital communication is based on the invention of various technologies during the second half of the twentieth century. Among many important milestones the transistor computer (1947/48), the personal computer (1957), the ARPAnet (1969), the Microprocessor (1971), and the World Wide Web (1990), have played an important role in this development. It was due to the invention of the Internet that digital communication could be used as an alternative communication channel. In the beginning most digital communication was text-based, but it was only a matter of time until audio and pictures were used.

Digital communication channels in the early years have been restricted to an elite, tech-savvy, and economically strong user group. It was through the exponential decrease of technologies cost and the invention of easy-to-use technology, like the World Wide Web, that enabled universal access. Yet full universal access is not achieved especially in countries and societies that lack economic strength and education, but the amount of people having access to digital communication is growing rapidly. More than 30% of the worlds population have access to the Internet. The growth rate between 2000 and 2011 was 528.1%⁷⁴.

Digital communication have both similar and different characteristics as “classic” human communication (this term is certainly difficult to define, since communication is result of technology, like language or painting). Digital communication can now be any type of communication, that was earlier enabled through specific technologies, like the telephone, the printing press, or the television. Digital communication unites all the characteristics of earlier communication forms into one medium. Digital communication can be one-to-one, one-to-many, many-to-one, many-to-many. Digital communication is bi-directional, or even multi-directional, allowing for one or many feedback channels.

These characteristics have an effect of democratization of communication. Theoretically every participant in digital communication has the same power to communicate. As the cost of digital communication stays the same regardless of the amount of communication, the cost of the single communication bit is decreasing over time, becoming eventually 0. This favors digital communication channels over many classic communication channels, like the telephone.

74 <http://www.newmediatrendwatch.com/world-overview/34-world-usage-patterns-and-demographics>

Digital communication can be very distinct and it is up to the communicator to decide whether she chooses to communicate rather immediately or indirectly, intrusively or unintrusively, anonymous, pseudonymous, or based on the “real” identity. Additionally the users is able to consciously define the amount of self-disclosure and or self-presentation.

Communication is used to develop identity. In digital communication identity building is based on different tools, such as a nickname, a profile picture, and in general through the content of ones communication and behavior. In such an environment reputation is based on different aspects than in physical space (e. g. knowledge instead of beauty). Therefore different individuals are able to gain communicative and social power.

Apart from these characteristics, that already have been part of one or the other communication channel before, there are four properties to digital communication that are unique: Persistence, Searchability, Scalability, and Replicability. These properties have great influence on how and why communication is happening, but there have not been any significant studies on their long-term impact on communication.

2. Social Media:

Social Media is human communication mediated through social software. Social software have the characteristic that they facilitate the creation of social networks in digital environment. The creation of a digital social network has similar positive effects on an individual as the social network from offline society. Networks are a form of organization that increases the effectivity of the individual and the whole network. An individual defines its place in a social network through conscious and unconscious decisions but the position is also result of factors that cannot be influenced by the individual. Different positions in the network have different advantages and disadvantages.

Various approaches to the study of network sizes have resulted in an average maximum social network size of around 147. Another theory suggests that technology (in this case speech) have enabled greater social network sizes in human evolution, because it provided more sophisticated means of social grooming. If this is true, one might also suggest that the maximum size of social networks could increase because of more sophisticated means of relationship management of social media services. Certainly digital social networks overcome specific limitations from analog social networks (e. g. geographical separation) but they are also introduce new limitations

(e. g. impossibility of unconscious valuation of relationships). These aspects have not been fully described and/or investigated yet.

Many of the characteristics of social media communication are not different to what was already available through computer-mediated communication without sophisticated social media, as described above, but the difference is that social media theoretically makes these new communication channels universally accessible. The new accessibility to communication tools is grounded on the invention of the Web 2.0. Although Web 2.0 is usually defined through the combination of specific technological functionality, there are really three key aspects that best describe the nature of this so called new version of the World Wide Web: The user, the service, and the network.

Nowadays Social Media and Web 2.0 are better understood than in recent years and it now seems as if these phenomena are not so much a technological advancement, but rather a paradigm shift. A shift from a digital environment that merely transfers learned concepts from the offline to the digital form, to a digital environment that utilizes its own characteristics and properties to evolve into a more advanced form (e. g. information web pages vs. information streams).

3. Public Opinion:

Opinion building is strongly connected to the process of shaping human society. Social communication, social networks, and reputation play a key role in this process. Certain individuals play specific roles in opinion building. We can distinguish between opinion leaders and opinion followers. Opinion is a result of cultural, political, ideological, and social believes and desires.

Public Opinion is the aggregate of dominant opinions within a society, communicated in public sphere. The exact state of Public Opinion is difficult to identify, because the individual opinion of all people in society is not transparent. Therefore Public Opinion is subjective and affected by dynamics that distort the objectivity of it. The Spiral of Silence, for instance, is a phenomena that has great influence on Public Opinion, but derives from every individual's desire to improve their role in society.

More and more social communication is happening through social media today. The communication and reputation on social media channels have different characteristics than offline. The way opinions are formed must therefore have different characteristics. Modern

digital technology has created greater access to high quality and low quality information and opinion. Opinion leaders are still very important in the digital environment, but they can come in different forms. If the Spiral of Silence affects the creation of Public Opinion the same way it does in offline societies is not known yet. In digital social networks the individuals opinion theoretically becomes transparent, eventually enabling a factual aggregation of opinions and a new concept of public opinion.

Four powers have great influence on digital communication of the individual and opinion building processes online: corporations, government, social norms, and code.

Investigation.

The possibility for a mayor part of human societies to communicate and interact in digital environment has only be around for 15 to 20 years. The effects of this new communication cannot be fully understand yet, although important advancements have been done in recent years.

Yet certain tendencies are visible that can be used to created new hypotheses for the matter of investigation. During the thesis I have come across various aspects that have not been fully investigated yet. These aspects are the following:

- **Product Design:** how does product design affect social media communication. Social media is often seen as one very specific product, like Facebook or Twitter. But the design of each social media product has great influence on the communication culture that develops from it. Here investigation is needed to clarify how social media product design effects society.
- **Message flow.** It is not fully understood how social media messages flow. Looking at a specific social media environment (Twitter) one must investigate why and how some messages gain different momentum and spread differently through the network. Which part of the network are more vulnerable or resistant to message spread? What is the significance of retweets, favorites, and the proportion between those two? How do global network dynamics influence the spread of a single message?

- **Authority and Reputation**, are an important tool for administration of human (and animal) society. As digital communication has influence on self-presentation it has also strong influence on authority and reputation. How have authority and reputation changed because of digital communication?
- **Persistence, Searchability, Scalability, and Replicability**. The impact of these four new properties of digital communication needs to be investigated.
- **Topology and size of social networks**. Which effects will the digital tools for social network management, i. e. social network services, have on the topology and size of social networks? What effects derive from the conscious relationship management in social network services in comparison to unconscious decisions in life?
- **Habermas' ideal speech situation applied to social media**. Is the speech situation in digital environment more or less ideal? Could the speech situation in digital environment be improved? Through means of technology?
- **Public Opinion**. Is it possible that social media in combination with social networks make transparent the sum of all individual opinions, allow the creation of a new concept of Public Opinion, one that is based on objectivity and factual analysis?

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