The Conditioning of Social Media

Abstract
As a phenomenon, digital interaction through a social network service is an extremely new one. Services such as Facebook, Instagram and Twitter have only existed for about a decade of human existence. The fundamental dynamic of human interaction has been abstracted by social media services. We are enabling these services to serve the role of mediator, moderator, monitor and facilitator of free speech, 1-to-1 human interaction and message broadcasting. What are these services conditioning us to become? In this blog post, i will explore how social network services are fundamentally different from conventional human interaction and the psychological effects of using these services.

Introduction
With the emergence of Web 2.0, along came platforms for socializing more easily, effectively and at any time of the hour. Friendships and family relations could, perhaps for the first time in history, be quantified, documented, and measured.

The Structure of Social Media Platforms
In structural terms, Facebook, Twitter and Instagram can be classified as *Social Graphs*. However, we can further divide these platforms; Facebook is an undirected graph, while Twitter and Instagram are directed graphs. This is because a friend request on Facebook must be accepted, and after the acceptation of the request, the edge between them become reciprocal. This is not the case with Twitter and Instagram. Following someone's profile does not inherently mean they will follow your profile back. Meaning every edge has a direction.

There can also be made the distinction between direct communication and non-direct communication. Direct communication, intuitively, is communication sent directly to another node, through a private channel, where they can reply directly. An example of this, would be "Direct Message", "Instant Message" or "Private Message" feature.
Non-direct communication is communication that is not directed toward a specific other node. However, they still receive the communication through a non-private channel accessible for anyone. An example of this would be "Tweeting" or broadcasting a message to all users following you through a post or livestream.

Granovetter's 1973 definition of tie strength is "a combination of the amount of time, the emotional intensity, the intimacy, and the reciprocal services which characterize the tie." (Granovetter, 1973). Translated to digital networks, more specifically social media platforms, it would be something along the lines of:

> "a combination of the level of reciprocation in communication, the amount of communication, the amount of time spent on maintaining the tie and the regularity of communication"

There are several levels of tie strength on social media platforms:

1. Reciprocal following, with only non-direct communication.
2. Non-reciprocal following, with only non-direct communication.
3. Reciprocal following, with both non-direct and direct communication.

These categories are not mutually exclusive, meaning that any node can both follow and be followed by another node, without it being reciprocal. On top of that, the same node can be in a reciprocal relationship with another node and only communicate non-directly.

There is a relative scarcity of strong ties on SMPs. In addition, the number of strong ties seem to normalize under a maximum of 10-20 for Facebook, and under 50 for Twitter. Even though any one user can have around 500 friends, or over 1000 followers, respectively.
To maintain a strong tie between nodes, a continuous investment of time and interest must be present. Meaning a regular exchange of direct communication. However, the number of strong ties a nodes can accumulate is limited by the amount hours in a day and other nodes' willingness to engage.
Twitter and Instagram enables the node to accumulate a massive amount of weak connections. This is due to the lower demands in terms of investment, time and interest. Therefore in the same 24-hour period, a node can accumulate vastly more weak ties than strong.

In addition to this, all platforms in question have implemented features accessible for every node in the network. Meaning for an arbitrary node, it has these features:

1. A network-wide keyword search.
2. A newsfeed, which is a chronological list of all non-direct communication received.
3. A list of all nodes receiving the nodes non-direct communication.
4. A list of all nodes the node receives non-direct communication from.
5. Broadcasting non-direct communication to all receiving nodes.
6. Sending direct communication to one, or several, nodes.
7. A personal profile containing information about the person managing the node

There is also the curious phenomenon of "passive engagement", which can be seen as the middle ground between the strongest and weakest tie.
Passive engagement can be described either a reciprocal non-direct communication or non-reciprocal non-direct communication. An example of the former, would be 2 people following each other, who only interact with each other in their newsfeed. An example of the latter would be a person following a public figure, and only engaging with this public figure in their newsfeed. This newsfeed is a constantly updating chronological list of all broadcasted messages. It enables an arbitrary node A to receive information about a node C through a node B, without node C being aware of the exchange.
In addition to this, there are also certain dynamics at play between the nodes.
The dynamic of homophily states that neighbors of users in a network tends to have similar properties, such as ethnicity, gender, preferences and aversions. This dynamic mirrors the sociological dynamic of a people forming bonds with people who are like oneself. This is a transitive property, meaning that if node A and node B are similar, it is highly likely that node C will be similar to both of them. This is one of the arguments for how triadic closure happens. Triadic closure is the tendency for an edge to form between node B and C, given that node A is embedded.

Naturally, the extremity of this is the formation of closed communities with a high amount linkage between densely connected nodes. This could also be called the "Echo Chamber"-effect. Since they are all relatively similar, it is highly probable that they draw the same conclusions or have the same political orientation, given the same information. And since nodes also have a tendency to seek out nodes similar to themselves, they would also align with the rest of the "echo chamber". These closed communities are very resilient to contradictory information from external sources.

However, they are not impervious to the phenomenon of an "information cascade".
An information cascade is the phenomenon where a person is influenced to make a decision, simply by observing a different person making a decision on the same subject. For the people affected, the possibility of a direct benefit, with instant gratification, is a more tempting alternative than abstaining to conform. This effect of influence propagates through a network

and can influence a node lying on the path of propagation into making the same decision as all the previous nodes affected. This can also be called conforming to a “trend”.

Conventional Human Interaction

Even though the essence of conventional human interaction is captured in social media platforms, it cannot capture all possible dimensions of it. The dimensions include, but are not limited to body language, smell, tactile sensation, eye-contact, sound of voice, symbolic language, physical appearance and assessment of location

Through the basic communication on a SMP, all of these dimensions, except symbolic language, is removed. The closest a node’s communication can come to conventional human interaction, is a video-call, or rather a video conference call. However, there are still dimensions of human interaction that is missing, such as smell, tactile sensation and eye contact.

In addition, all conventional human interaction can be classified as reciprocal direct communication by default. This is because it would be highly unnatural for 2 arbitrary individuals to interact with each other purely through passive engagement. It cannot be called a conversation, if the person you are talking to refuses to reciprocate the engagement.

Another important factor of conventional human interaction is the changing of physical locations and limitations of hours in the day. Conventionally, one has to move to a different physical location to meet someone for the interaction. Usually, this has time-restrictions. An example would be usually only meeting one’s coworkers in your common place of work at certain hours of the day. These restrictions are hard to ignore outside of SMPs.

Additionally,

Nonetheless, SMPs are a central part of many peoples lives. But what is the psychological effects of exposing oneself to SMPs?

Psychological Effects of Social Media Exposure

The main brunt of research on the subject of the psychological effect of social media use, has been done on Facebook and Instagram. There is little research, that I could find, that aims to measure the psychological effect of Twitter exposure.

The research differentiates between active and passive users. Active users report less satisfaction with their partners the more they posted on Facebook. Additionally, the findings also report that, the longer they were an active user, that they were more likely to notice defects in their partners and became more defensive with their partners. Also, the more friends they added to their Facebook, the more likely the respondents say they were to withdraw from their partner.

Lastly, the study found a negative correlation between the amount of hours spent with friends online and the satisfaction with intimate relationships. (Riva, Wiederhold, Cipresso, 2016)

A different study found a positive correlation between the active users psychological well-being through their online social relationship satisfaction or perceived social support. Simultaneously, they found the inverse also to be true, with a decreased psychological well-

being through their offline social relationship satisfaction. The findings also include that this effect seem to be stronger for introverts than for extroverts. (Hu, Kim, Siwek & Wilder, 2017)

Some research find that impulsivity was positively associated with active non-social use, indicating that socially anxious users tend to use Facebook more passively. (Corr, Gerson, & Plagnol, 2017)

Additionally, taking a break from Facebook and Instagram simultaneously showed no significant effect on life satisfaction. However, the measure of Positive Affect (PA) decreased for more active users, while PA increased slightly for passive users. This indicates that active users may be more dependent on Facebook to maintain social relations and building their public image. Furthermore, it showed that active users who engaged actively, posted their own content and socialized on SNS were more positive than passive users. (Hanley, Watt & Coventry, 2019)

Due to the amount of content relating to fitness, healthy lifestyle and healthy eating, adolescent women exposed to Instagram, attach great importance to these themes. However, adolescent women may not have enough prior knowledge to successfully evaluate on whether or not what they see is correct or not. (Hauswald, Mergen & Riesmeyer, 2019).
Corroborating this, a study has found that Instagram use is positively correlated with an increased risk of developing an obsession for eating healthy, called Orthorexia nervosa.

Conclusion

There is no doubt that SMPs are powerful tools to connect with friends, family or any other online community. Additionally, it's a powerful tool to stay updated on latest news.
However, given the nature of SMPs, the structure and easy accessibility of information, risks are present. There is a tendency for people to seek out other people who are like themselves, who also think the same way do. This, coupled with the fact that the occurrence of gateway nodes are not equally distributed and laws of triadic closure, poses the risk of getting stuck in an intellectual echo chamber.
The dynamic of information cascading coupled with the newsfeed feature of SMPs opens the possibility of streamlining the spread of misinformation. This can effectively brainwash active users to constantly conforming to the newest trend, even though it may be manufactured to manipulate an online community.
Taking the research data into account, it is reasonable to assume that active users are more susceptible to this risk than passive users.
Considering active users report a decrease in PA when taking a break, an increase of perceived online social relationship satisfaction and a decrease of offline perceived social relationship satisfaction; it is reminiscent of an addiction. the fact that respondents report a decreased satisfaction with their significant other after prolonged active use of Facebook, seems to corroborate this.
It is my assessment that actively engaging on SMP is inherently different from conventional interaction. It reduces your desire to interact with other people offline and reduces your ability to maintain relationships offline. Active use of SMPs induces an effect increased perceived social relationship satisfaction, which in turn encourages you to spend more time online than offline. However, it is offline that your friends and family exist.

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