The Journal of Social Media in Society
Spring 2024, Vol. 13, No. 1, Page 199-206
thejsms.org

ESSAY

The Shifting Foundations of Current Social Media Research and Systems Thinking as a Remedy

Josh T. L. Anderson[1]* **and Natalie Brown-Devlin**[2]
[1]School of Journalism, The University of Arizona, Tucson, AZ
[2]Department of Advertising and Public Relations, The University of Texas, Austin, TX
*Corresponding Author: joshtlanderson@gmail.com, 918-813-9644, X: @SciCommForYou

The current state of social media research struggles to keep pace with a social media ecosystem that features quickly proliferating new platforms and the reinvention of existing platforms. In this perspective article, we encourage social media researchers to adopt systems thinking perspectives to cope with this reality. By thinking systemically, we hope that scholars of social media may be able to uncover complex phenomena that may help to address some of the wicked problems in social media research. We also hope that the field may benefit from scholars discussing the implications of their work in ways that relate to the systemic context of the social media platforms that they study.

Keywords: Social Media, Systems Thinking

Despite the scholarly attention paid to social media, many research gaps exist because of the great variation in the sites referred to as "social media." While these platforms share key characteristics (i.e., user participation (boyd, 2015)) that allow them to be grouped for examination, each site or service possesses unique affordances for users and prompt different user effects (Bucher & Helmond, 2017; Karahanna et al., 2018). Thus, each new site or service entails unique research effects and contexts. Additionally, social media sites are not static entities and are subject to changes that may greatly alter the theoretical implications outlined in previous research. There is perhaps no example of such abrupt change on a platform more apropos than the swath of changes to Twitter resulting from its acquisition by Elon Musk (Conger et al., 2022), including its controversial rebrand to "X" (Ivanova, 2023). Academic scholarship has been struggling to make sense of these changes to a site that was such a

popular research subject, largely because of its previously easy to access data policy (Fung, 2023). Much of this previous research may now be in question, however, because of the very different nature of its user base, moderation policy, and overarching design.

Chief among these changes were the reinstatement of accounts that many users identified as spreaders of right-wing hate speech (Duffy, 2022a) and a restructuring of Twitter's signature verification system, which now featured a "pay to play" mechanism wherein users could pay to be verified month-to-month (Duffy, 2022b). The scale of changes at X was intended to produce massive consequences for the use of the site, as Musk himself noted that the rebrand was to distance the social media site away from the microblogging niche it formerly occupied, and move it to a niche similar to a Western equivalent to WeChat, a Chinese social media platform (Milmo & Hawkins, 2023).

This example of tectonic shifts in a major social media platform that was a frequent subject of academic inquiry raises questions of how research on social media phenomena can be applied beyond the specific platform and contemporary social contexts in which it was elucidated. The study of social media is inherently complex due to the vast interacting parts that establish its many constituent ecosystems, namely: the features, affordances, infrastructure, policy, content, user bases, and broader social contexts. This complexity can quickly become a challenge when one or more of these parts changes in major ways, and the case of X suggests that there are vital threats to the applicability of research when many of these parts change in major ways over a short period of time. In this perspective, we propose that this challenge may be managed by applying a new theoretical framework: systems thinking.

What is Systems Thinking?

Systems thinking is a theoretical perspective that emphasizes studying phenomena by investigating the connections of various elements holistically, as opposed to processes of reduction (Meadows, 2008). Scholars have used systems thinking to navigate situations in which the interactions among many variables drive the overall behavior of a social system, which may be described as "complexity" (Sawyer, 2005). In addition to its applications in economics (see Stroh, 2015), systems thinking has also seen limited applications to bodies of work in sociology (e.g. Lai & Lin, 2017), organizational communication (e.g. Poole, 2014), and online communities (Foote, 2022).

The goal of systems thinking perspectives is to understand the phenomena occurring in a subject of study (the system) by holistically considering the elements that comprise the subject. A researcher practicing systems thinking might begin by designating a system of interest with reasonable boundaries to study. The researcher may next make a list of system elements (or "stocks"), which are numerically bounded quantities of an entity. Examples of elements in a social media context might include the users of a social media platform or the posts on that platform. A key step from here for most systems thinkers would be to understand how these elements interact with one another in the form of interconnections (or "flows"). Systems thinkers will often be interested in how the presence of one element (a source) affects the presence of another element (a sink). In the example of a social media platform, a relationship may be drawn from users to content, indicating that users create content.

Understanding system structure is one of the primary benefits of systems thinking as a research paradigm and why it is well adapted to addressing the problems to which it is applied. In particular, systems thinking emphasizes the importance of complexity or "emergence," referring to an instance when the introduction of more variables or interconnections can change how other parts of the system function (see Cohen & Stewart, 2000; Sawyer, 2005). To put it another way, systems are more than the sum of their parts, and visualizing the structure of a system grants insight into overall system behavior. To understand system behavior is to understand what the system does over time. A major way that system behavior can be inferred from structure is when a systems thinker is able to identify particular structural components called "feedback loops."

There are generally two types of feedback loops: negative ("balancing") and positive ("reinforcing"). Negative feedback loops tend to keep elements in check from either growing or shrinking too much because an increase in one element will cause a sequence of events that will eventually decrease the original element, or the reverse relationship for a decrease in the original element. If there is a negative feedback loop in some area of the system, a systems thinker may be able to infer that the system is time-stable in that area and may be resilient to exogenous disturbances. Negative feedback loops, however, are not necessarily immediate and may present delays that have great importance. One example of a negative feedback loop in a social media context might be the relationship of

advertisements present on the social media platform and the number of users. As social media platforms grow their user base, they often become more attractive to advertisers, however, as more advertisers produce content for the platform, the platform may in turn become less attractive to prospective users, and adoption may decrease.

Positive feedback loops, by contrast, tend to exacerbate relationships over time because an increase in one element will trigger a series of events that eventually lead to a further increase in the original element, and the opposite is true for decreases in the original element. An example of a positive feedback relationship that is well documented in social media literature is the phenomenon of emotional contagion, wherein posts that convey emotions (e.g. anger) influence users who see them to produce their own posts that convey that emotion. While positive feedback loops can have powerful consequences, it is important to understand that positive feedback loops never proceed indefinitely—they will encounter a limitation at some point as they will necessarily exhaust at least one element if allowed to proceed indefinitely.

While systems thinking as a perspective can be valuable by drawing attention to these structures and the dynamics that result from them, it is worth emphasizing that systems thinking is best thought of as a point of view to research and it is not a formal theory. Unlike a formal theory, systems thinking does not have a set of specific assumptions and its application is not necessarily falsifiable (though the proposition of structural elements may be falsifiable). The primary assumption that may exist for the application of systems thinking is that a researcher is able to conceptualize their context as a system with reasonable boundaries. The system does not need to be closed to outside influence, but there should be a reasonable boundary that allows for a useful scope of investigation. In the case of social media research, this reasonable boundary will often be a social media platform, though a researcher may be interested in sociocultural dynamics relevant to the platform that occur outside of the platform itself. In addition to the lack of specific assumptions, a systems thinking perspective will naturally make few specific predictions, except that the behavior of a system can generally be inferred from its structure. Keeping in mind that systems thinking is not a formal theory, there are still valuable insights to gleaned from its application to social media research as a perspective that is focused on complex structures and subsequent dynamics.

Proposal of Systems Thinking for Social Media Researchers

We believe that systems thinking is particularly useful in two key areas of social media work: the setting of research agendas into social media phenomena and the contextualization of implications of social media research. Researchers may benefit from a systems thinking perspective by identifying gaps in social media literature that may come in the form of distant interconnections. As scholars review the relevant work on their phenomena or environments of interest, it would be useful for them to consider how previous works may be understood together as parts of a system—and what is missing. Identifying gaps in this way may reveal interconnections that would be necessary to understand the structure and behavior of the system, but are not immediately intuitive.

We would also encourage social media researchers to adopt systems thinking perspectives in the ways that they discuss the implications of their research. We envision this as a researcher discussing the ways that the systemic structure of a social media platform could have influenced how their phenomenon of interest played out. Scholars engaging in systems thinking in this way would be able to speak to more than that which they can immediately observe on the social media platform(s) of interest; they could additionally speak to how social media platforms with similar (or different) traits may function. Through this process, researchers would provide their work with some durability regarding the fickle nature of social media. While different platforms may rise and fall in prominence, or may radically shift their rules, research based in systemic theories may still have value because it can move beyond description of phenomena and begin to explain why social media platforms behaved in the ways that they did and how it may be different for other platforms.

This should be interpreted as an argument for technological determinism, however, and it should be heavily emphasized that the technological traits of a social media platform can only tell us so much about its function, but much is determined also by the social dynamics at play within its user base (De la Cruz Paragas & Lin, 2016). An elegant feature of systems thinking that is useful in this regard is that a platform's social dynamics (e.g. the typical ways that a social media platform is used that differ from the way that it was designed) may be considered in a similar way to its technological affordances (e.g., designed elements). Social media researchers taking such a systems

thinking perspective to describe the implications of their work would do well to think of these social dynamics holistically alongside dynamics that are derived from the technological affordances of a social media platform.

As noted above, a researcher should not expect that the application of a systems thinking perspective will provide for falsifiable predictions to their research. Despite what systems thinking lacks as a formal theory, it can make up for with the value of holism in a researcher's perspective of their research. As long as a system can be conceptualized and its existence can be reasonably argued, which will be the case for virtually any proprietary social media platform, a researcher can consider it as a system, and critically evaluate how the existing knowledge of a system can reveal its structure and dynamics. This kind of perspective may be applied to a diverse range of methodologies in communication research.

In quantitative inquiry, researchers may use a systems thinking perspective to deeply consider the contextual reality of their proximal models. These scholars employing a systems thinking perspective would consider how the affordances of their platforms of interest may contribute to their findings, and may discuss how these findings may be different on a platform with distinct affordances (or how a change in affordance may impact the applicability of their findings). Systems thinking perspectives may help these scholars to consider boundary conditions to their models which, in the form of interacting variables, are often the foundations of theory building in quantitative social science (Holbert & Park, 2020). For qualitative scholars, systems thinking perspectives may be more useful in providing sensitizing concepts to their work, which help scholars to make sense of qualitative data (see Tracy, 2019, chapter 2). Qualitative scholars attempting to infer systemic structure from their data, would benefit from knowledge of archetypical structural elements (e.g. feedback loops) to understand both the structure of the system for which they have collected data and how that structure can result in observable behavior.

Critical scholars of social media may find particular value in systems thinking perspectives, as research with a systems thinking perspective engages in critique at its core. Critical inquiry about social media may develop from proposals of a systemic structure of a social media platform, and discussions about the normative implications for

the system. There may be rich veins of inquiry from discussions of the normative implications of specific social media affordances, given their systemic positioning. Overall, we argue that scholars of social media across a wide swath of methodologies may benefit from taking a systems thinking perspective to their work.

Social media research occupies much space in communication research. However, current, platform-specific work lacks a unifying lens, producing research that describes sets of disconnected social processes in a landscape where new platforms may quickly proliferate and established platforms may reinvent themselves. In order to bring further clarity to the literature, we encourage researchers to apply systems thinking in the setting of research agendas and the descriptions of implications of social media research, and we describe the form that this perspective may take in a variety of different research methodologies. While systems thinking is not itself a formal theory, it may prove valuable to these scholars as a holistic perspective to thinking about their work. Researchers employing such a systems thinking perspective may be better able to navigate the complexity of intersecting social phenomena to find high-impact lines of inquiry to better understand social media phenomena. Additionally, by discussing the implications of their research into social media phenomena in the context of the technological and social dynamics that set the context for those phenomena, social media scholarship as a whole would be better suited to adapt to the quickly changing landscape of the networked world.

References

boyd, d. (2015). Social media: A phenomenon to be analyzed. *Social Media+ Society, 1*(1), 2056305115580148.

Bucher, T., & Helmond, A. (2017). The affordances of social media platforms. The SAGE Handbook of Social Media, 233–253.

Cohen, J., & Stewart, I. (2000). The collapse of chaos: Discovering simplicity in a complex world. Penguin UK.

Conger, K., Isaac, M., Mac, R., & Hsu, T. (2022, November 11). Two weeks of chaos: Inside Elon Musk's takeover of Twitter. *The New York Times.* https://www.nytimes.com/2022/11/11/technology/elon-musk-twitter-takeover.html

De la Cruz Paragas, F., & Lin, T. T. (2016). Organizing and reframing technological determinism. *New Media & Society, 18*(8), 1528–1546. https://doi.org/10.1177/1461444814562156

Duffy, C. (2022, December 8). The mass unbanning of suspended Twitter users is underway | CNN Business. CNN. https://www.cnn.com/2022/12/08/tech/twitter-unbanned-users-returning/index.html

Duffy, C. (2022, December 12). Twitter relaunches option to pay for blue check marks | CNN Business. CNN. https://www.cnn.com/2022/12/12/tech/twitter-verification-relaunch/index.html

Holbert, R. L., & Park, E. (2020). Conceptualizing, Organizing, and Positing Moderation in Communication Research. Communication Theory, 30(3), 227–246. https://doi.org/10.1093/ct/qtz006

Fung, B. (2023, April 5). Academic researchers blast Twitter's data paywall as "outrageously expensive". CNN. https://www.cnn.com/2023/04/05/tech/academic-researchers-blast-twitter-paywall/index.html

Foote, J. (2022). A Systems Approach to Studying Online Communities. Media and Communication, 10(2), 29–40.

Ivanova, I. (2023, July 31). Twitter is now X. Here's what that means. CBS News. https://www.cbsnews.com/news/twitter-rebrand-x-name-change-elon-musk-what-it-means/

Karahanna, E., Xu, S. X., Xu, Y., & Zhang, N. (2018). The Needs–Affordances–Features perspective for the use of social media. *MIS Quarterly, 42*(3), 737–756. https://doi.org/10.25300/MISQ/2018/11492

Lai, C.-H., & Lin, S. H. (2017). Systems theory. In C.R. Scott, J. R. Barker, T. Kuhn, J. Keyton, P. K. Turner, & L. K. Lewis (Eds.), The International Encyclopedia of Organizational Communication (pp. 1–18). Wiley.

Meadows, D. H. (2008). *Thinking in systems: A primer.* Chelsea Green Publishing.

Milmo, D., & Hawkins, A. (2023, July 29). 'The everything app': Why Elon Musk wants X to be a WeChat for the West. *The Guardian.* https://www.theguardian.com/media/2023/jul/29/elon-musk-wechat-twitter-rebranding-everything-app-for-west

Poole, M. S. (2014). Systems theory. In L. Putnam & D. Mumby (Eds.), The SAGE Handbook of Organizational Communication: Advances in Theory, Research, and Methods (pp. 49–74). SAGE.

Sawyer, R. K. (2005). Social emergence: Societies as complex systems. Cambridge University Press.

Stroh, D. P. (2015). Systems Thinking For Social Change: A Practical Guide to Solving Complex Problems, Avoiding Unintended Consequences, and Achieving Lasting Results. Chelsea Green Publishing.

Tracy, S. J. (2019). Qualitative Research Methods: Collecting Evidence, Crafting Analysis, Communicating Impact. John Wiley & Sons.

Funding and Acknowledgements

The authors declare no funding sources or conflicts of interest.

Online Connections

Josh T. L. Anderson: @SciCommForYou (X)