Integrating Media Studies Into the STS Curriculum

A Research Paper submitted to the Department of Engineering and Society

Presented to the Faculty of the School of Engineering and Applied Science

University of Virginia • Charlottesville, Virginia

In Partial Fulfillment of the Requirements for the Degree

Bachelor of Science, School of Engineering

Connor Roos

Spring 2020

On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

Advisor

Kathryn A. Neeley, Department of Engineering and Society

Introduction

Imagine two very related fields in science having massive overlap and shared concepts, but not being taught together. From my research on Media Studies and comparing it to the STS curriculum at UVA, it is clear that these two fields need to embrace their overlap. Although both fields cover the ethics of information technologies, the overlap between them is not well covered in the curriculum for Computer Science and as we will see in this paper, any major involved in the creation of new technologies. This a major problem, as when covering the ethics of technology, the ways in which technology interacts with society cannot be fully understood without considering media. Media is integral to understanding how thoughts can propagate through society, including new technologies and more importantly, society's understanding of new technologies. Fortunately for STS, there already exists a field of study that would be useful for better understanding the role that media plays with technology, Media Studies. The prior research along with my current studies show the benefits of applying Media Studies in the STS curriculum at UVA.

In this paper, I argue that media of all forms is not well-understood by even "informed" Engineers and that this lack of understanding would subside by integrating Media Studies and STS into the curriculum. Both studies focus on the ethics and applications of technology, but from different perspectives. Notably, this is not the first time that a writer has noticed the overlaps between the two fields, such as seen by Cornelius Schubert, an STS professor at the University of Siegen: "From our experiences of working with media scholars, we felt that we were often talking about similar phenomena, albeit in different terms." (Schubert 2016) While discussing the similarities between these fields, research has often focused solely on the similarities and differences, but not on how they could be utilized in order to better understand

how modern technologies are applied. Although Media Studies is newer than STS as a field of study, neither is a fully-realized discipline yet. Together the two fields could fully encompass complex modern technologies and their effects on society, as either a more integrated STS/Media Studies, or as one new discipline. This paper focuses on the increased inclusion of Media Studies and STS into one another to achieve this goal and examples for how they could better synergize for future work in defining this new Technology discipline.

Media Studies Only	Shared By Both	STS Only
Large focus on the economics behind how media is owned and distributed, often focusing on the author's personal opinions	Morality of technologies judged based off of their effect on the consumer	Largely non-economic and non-political analysis of technologies
Analysis from the perspective of an end-user of technology	Analysis concerns the effects technology can have on a wider audience	Analysis from the perspective of designers and engineers of the technology
Socio-Technical Systems are explained for all strata of society	Relations between different technologies are described in detail	Socio-Technical Systems are left as mostly Technical but reference other strata
	Actor-Network Theory	

Figure 1: Similarities and Differences between Media Studies and STS

Why Media Studies?

The research for this STS thesis will concern the relation between STS topics and Media Studies, primarily focusing on how Media Studies is integral for understanding the application of

social media technologies. As seen in the table above, there are currently many overlaps between Media Studies and STS, with one of the largest and most important being Actor-Network theory, which is unique in that it has been fully integrated into both curricula. Despite how related the two fields are currently, there are no cross-listed courses between Media Studies and STS at UVA, despite the fact that they existed in the past. Media Studies often uses Actor Network Theory in order to explain social media. Darryl Cressman, an STS Scholar, defines this theory as: "Actor-network theory examines the mechanics of power through the construction and maintenance of networks (both human and non-human). Actors become involved in networks through the process of translation." (Cressman 2009) Social media companies like Facebook, which maps relations between users as one vast network of connections, is an application of Actor-Network Theory. Media Studies focuses on the study of these technologies from the end-user perspective, and debates the ethics behind these technologies.

Savi Vaidhyanathan, a professor in the Media Studies department at the University of Virginia, notes in his book Antisocial Media that due to Facebook's ability to control political conversations but the inability to mediate the content on its website "Facebook is just too big to govern. We are victims of its success" (Vaidhyanathan 2018a). Facebook and Google, to a lesser extent, are technology companies built around collecting data concerning their users and selling them to a massive number of advertisers that these companies do not wish to police the content. These companies are united in their use of personal data collection as the driving technology for their businesses. STS classes should focus on if these companies are using these technologies ethically. A large amount of Computer Science students would consider working for these companies as dream jobs, which shows a lack of ethical consideration towards their future careers. There exists a large amount of potential synergy between STS and Media Studies, as

they often cover similar topics with different names. My methods will be as follows: first I will then find an overlap between STS and Media Studies that addresses a gap in STS, then find what can be learned from Media Studies concerning this gap, and use where STS is currently lacking in order to build a case for increased integration.

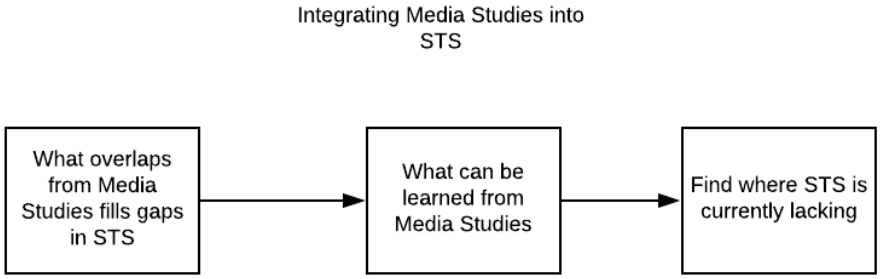

Figure 2: Three Steps of the Research

Where do STS and Media Studies Overlap?

The integration of Media Studies into STS hinges on their similarities, many of which currently exist because some researchers in one have not discovered concepts in the other. The application of the social-networking technologies on Facebook and Google is a perfect example of a technological fix for their users. Indeed, in an article Vaidhyanathan wrote for the New Yorker, he described a similar theory in Media Studies of techno-fundamentalism: "the unshakable belief that one can and must invent the next technology to fix the problem caused by the last technology" (Vaidhyanathan 2018b). Compare this with Newberry: “The fundamental difficulty with technological fixes—or shortcuts—is the inherent incompatibility between problem and solution.” (Newberry 2005) Ultimately the techno-fundamentalism of Vaidhyanathan began as a technological fix that will never be solved with new technologies because the issues at hand need to be solved using other social processes. Being able to find

where these two fields overlap is integral to the research, as the current STS curriculum does not cover the ethics of these technologies well.

Of these overlaps, the one that is the most similar between the two fields is Actor-Network Theory (ANT). ANT is so applicable in Media Studies that it has already been brought up in many different contexts. Cornelius Schubert, previously quoted in the Introduction to this research noted that “German media scholars were engaging with concepts from STS and especially with ANT.” (Badouard 2016) ANT, as stated earlier is extremely relevant to understanding social media, but also the propagation of traditional media as well. Consistently in my research, it appears that large systemic differences exist between the two fields: while STS focuses on the perspective on individual actors, Media Studies usually view the interactions of information technology and society as a whole. Schubert noted that there was another difference between STS and media studies: “the latter prefer situating their cases in a "bigger picture" of capitalism, whereas the former tend to look more closely at individual cases, and draw more modest conclusions.” (Badouard 2016) The difference between the purpose behind the two fields does make the methods for synergy more difficult, but there are still many areas in which they share topics that can be applied together.

Looking at my own research, there is a great deal of work that already comes very close to understanding how the two fields relate without outright stating that there is a relation between the two or by bringing up the other. Arthur Tatnall, an Information Systems professor at the Victoria University of Technology summed up the relation between internet technologies and ANT to be:

> Unlike action research, actor-network theory is not concerned with emancipation of the researcher or practitioner and is not focused on making us better at developing information systems. Nevertheless, an ANT analysis may provide us with the detail to understand the success or failure of a particular innovation (Tatnall 1999)

For the sake of ANT the success of a technology is only a measure of its perceived success for the engineer, not for its end-user. This contrasts to what prominent Media Studies theorist such as Victor Pickhard have used to discuss technologies in their field: “Given the postal system’s vital function, the notion that it should be self-supporting is absurd...that media the market no longer supports should be left to wither - is now commonsensical.” (Pickard, 2015) This shows two conflicting views on how to judge the merits of particular information technology and is very prevalent when comparing responses between the two fields. I believe that neither is exactly right nor wrong, but that both give good points to how a well-rounded Engineering should view technology. We often only look at the ethics of actions, and the rationale behind technologies without the nuance that these topics require. Informing Engineers to think as a user or otherwise and outside individual would make them rethink possibly controversial design choices.

What STS can learn from Media Studies

With the current research, I have discovered a large amount of overlap between STS and Media Studies. Much of this is derived from the existing research as to where the two fields overlap, however I have also derived my own conclusions based on what I know from researching the two fields. This synergy is not fully restating the prior work in uniting the fields, as my own research focused on where I found my own similarities, instead of being directed to them from the experts in STS who had researched Media Studies and vice versa.

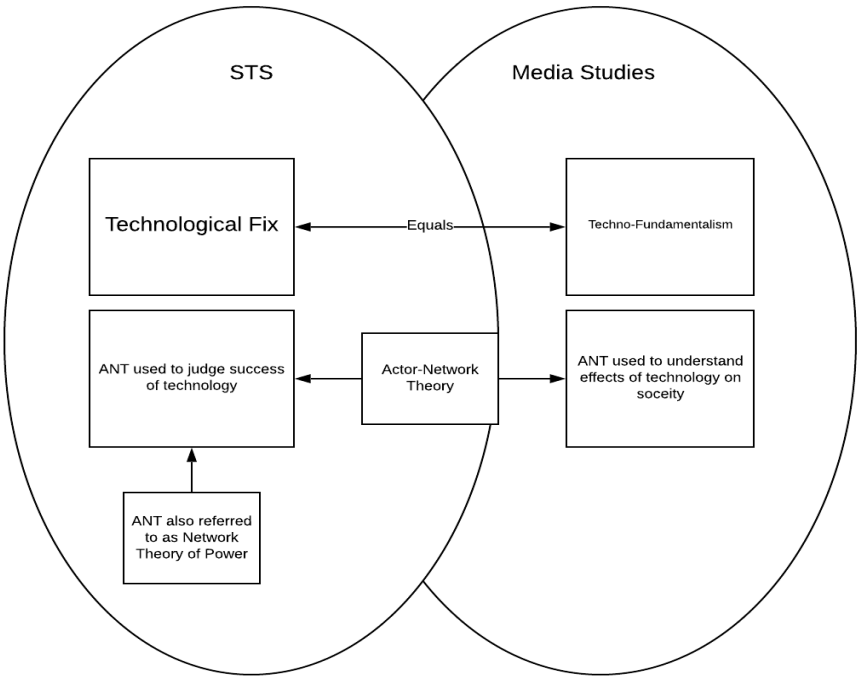

Figure 3: Venn Diagram of STS and Media Studies derived from the research

Media Studies covers the same ethical issues as STS, but from a completely nontechnical background that does not consult the Engineering process. For example, professor Vaidhyanathan discussed the Iowa caucuses in his own article, but instead of focusing on how to improve the app, he questioned the nature of why the app should exist in the first place:

> Just as we fool ourselves by thinking that an app will fix things, we fool ourselves by blaming an app. All technologies are embedded in webs of human relations. We say the app failed because the systems failed – humans failed. Humans built a system too complex to handle simple tasks. We often fool ourselves into thinking that speed and convenience are paramount values. So we maximized speed over reliability, data over truth, attention over depth. (Vaidhyanathan 2020)

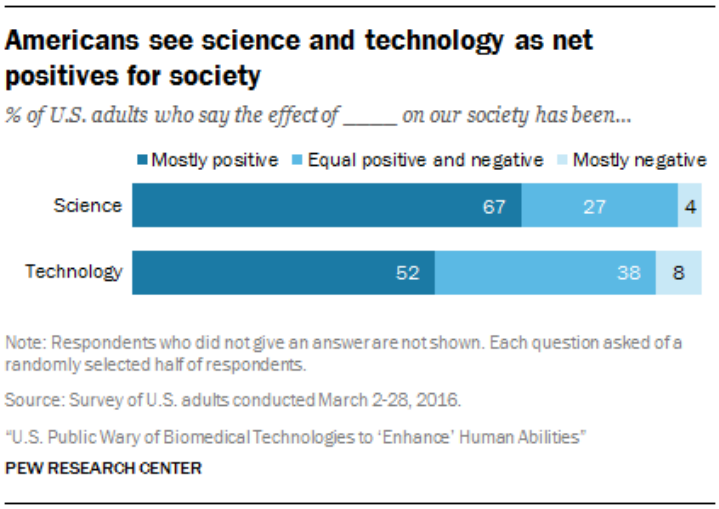

Figure 4: American Public Opinion on Science and Technology

This excerpt really covers the primary question of why we should create technology. Oftentimes STS covers the ethics of a project and how it was produced, but it does not usually come to the conclusion that a technology is not needed, which often appears in Media Studies, especially in Vaidhyanathan's work. STS is not alone with this belief that technology is mostly positive, the American public views technology the same way as seen in the figure above from the Pew Research Center (Funk 2016). Media Studies often comes to the conclusion that many media technologies can have a wholly negative effect on users specifically, which can be very important for engineers to take into account.

I also noticed that there is a great deal of unintentionally similar theories between Media Studies and STS, with one of the most cited being the *Network Theory of Power* by Manuel Castells of The University of Southern California. Castells, in his landmark paper notes that: "Each type of society has a specific form of exercising power and counterpower. It should not surprise us that in the network society, social power is primarily exercised by and through networks. The question is, though, which kind of networks? And how do they operate in the making of power." (Castells 2011) This theory is notably similar to the already covered Actor-

Network Theory, however with the added caveat that Information Technology is viewed as always being a force for control. This is interesting, as it focuses on how the estates of society: government, corporations, clergy, journalists use the networks in society as a means to control the actions of others. Interestingly, this theory is very useful for viewing the networks of ANT theory, as it implies that the different interactions between actors in ANT can be considered attempts to influence and control the behavior of others in Information Technologies. In fact, another Media Studies Professor, Tristan Thielmann of the University of Siegen has stated that: "Actor-Network Theory proves to be an Actor-Media-Theory. ANT does not allow for "non-media" … and thus turns out to be a "not-not-media theory." (Theilmann 2013) Interestingly enough, this implies that in some way, all networks in ANT are a media of some sort, which allows them any technology and its respective Actor-Network to be viewed under the lens of media.

When studying how Media Studies could be applied in STS, I discovered that some Media Studies professors have begun to implement STS theories into their curricula. Christina Dunbar-Hester, a professor of Communication and Journalism of USC (formerly a professor at Rutgers) published the article Beyond McLuhan: Your New Media Studies Syllabus. In the article she advocates using Social Construction of Technology and Actor Network Theory, while focusing on the fact that the former "left out a crucial element: users." (Dunbar-Hester 2010) Overall her argument focuses on how they should focus on technology from the user perspective, which is one of the primary differences in how technology is utilized in Media Studies in comparison to STS. She is not the only professor to apply STS in their research, Markus Spöhrer of the University of Konstanz, who concludes his argument about the future of Media Studies by proposing that Media Studies be expanded to include technological studies, including those

beyond just Computer Science. Although his book has an official translation, I did not find it sufficient for this paper and wrote my own:

> Thus, the place of media or mediators is not restricted to those combinations or cultural artifacts that conventionally have been attributed to the function or label "media," such as film, images, literature, television or other means of communication. The Actor-Network Theory approach uncovers media and media studies combinations that have been blind spots (or "black boxes") of conventional Media Studies focuses. Recent ANT research identifies media and media studies processes in such contexts as transportation, smartphone apps in relation to their users, practices of enabling or disabling blindness, participation in Cochlear implant communities, artificial intelligence, and geographic information (Spöhrer 2016)

The research shows how often the overlap between STS and Media Studies is both intentionally and unintentionally referenced in both fields. Both fields cover the interwoven networks between the different actors in society and how almost anything can be referenced as a media of some sort. This includes the engineering fields outside of software engineering as all of them produce or consume some form of media in either the development or release of a product. One of Spöhrer's other observations is extremely important for the integration of Media Studies into STS. namely that "'Media Studies' can neither be reduced to a single standardized theoretical or methodological context, nor to an internationally unified field of research." (Spöhrer 2016) For the discussion regarding how Media Studies is to be applied in STS it should be noted that every university does Media Studies rather differently, and that for the scope of this research, it makes sense to work with what we know, which in this case is UVA's Media Studies department. If any

integration between Media Studies and STS will occur, it will need to begin at a smaller scale, such as at one university, and I believe UVA is uniquely positioned to be able to accomplish this.

Conclusion

This is not unlike STS, where all technologies are studied and the relations between individuals are drawn out, such as in Actor-Network Theory. An understanding of how information technologies can help shape society is very useful for understanding how any technology can be a powerful influence. Every technology ever invented has had a social impact and a media impact, and ignoring these effects would make it more difficult to understand and plan new technologies. If we as engineers do not understand what effect our technologies will have from a social and media perspective, we will never fully understand the projects that we are working on, or how what we work on can help or harm society. This could be applied by integrating these departments at Universities to lead to more dialog between future engineers and media studies theorists during their time in college. Integration would not mean forcing students to learn different concepts or theories, as they are already shared between the two fields. Engineering students would instead find themselves in courses with non-engineers to better understand the consequences of the technologies that they develop, without having to fully-immerse them in the current Media Studies curriculum. This would benefit not only the engineers, but the various Media Studies professors who have previously had no major dialog with Engineering students. UVA as an institution should embrace this multidisciplinary approach to help enrich both parties with the wealth of knowledge that they are not currently integrating into their studies and better prepare the next generation of engineers for the ethical scenarios that they will have to work with further in their career.

References

Castells, M. (2011). Network Theory| A Network Theory of Power. *International Journal of Communication*, *5*(0), 15.

Cressman, D. (April 2019) A Brief Overview of Actor-Network Theory: Punctualization, Heterogeneous Engineering & Translation

Dunbar-Hester, C. (2010, September 16). *Beyond McLuhan: Your New Media Studies Syllabus.* The Atlantic.

Funk C. (2016, July 26). Americans see science and technology as positives for society. *Pew Research Center Science & Society*.

Newberry, B. (2005). Technological Fix *Encyclopedia of Science, Technology, and Ethics*

Pickard, V. (2015). *America's Battle for Media Democracy: The Triumph of Corporate Libertarianism and the Future of Media Reform*

Schubert, C. & Sørensen, E. (2016). Encounters, Lone Travellers or Productive Differences: media studies and STS in Germany. *TECNOSCIENZA: Italian Journal of Science & Technology Studies*, *7*(1), 109-128–128.

Spöhrer, M., & Ochsner, B. (2016). *Applying the Actor-Network Theory in Media Studies*.

Tatnall, A., & Gilding, A. (1999). Actor-Network Theory and Information Systems Research.

Thielmann, T. (2013). Digitale Rechenschaft. Die Netzwerkbedingungen der

Akteur-Medien-Theorie seit Amtieren des Computers. In T. Thielmann, & E. Schüttpelz (Eds.), Akteur-Medien-Theorie (pp. 377-424). Bielefeld: Transcript.

Vaidhyanathan, S. (2018). *Antisocial Media: How Facebook Disconnects Us and Undermines Democracy*

Vaidhyanathan, S. (2020, February 6). Silicon Valley sells snake oil “solutions”. The Democratic party fell for them | Siva Vaidhyanathan. *The Guardian*.

Vaidhyanathan, S. (2018, April 21). Techno-Fundamentalism Can’t Save You, Mark Zuckerberg | *The New Yorker*.