Mapping the Technology Beat: Technology Reporting at the *Chicago Tribune*

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(ABSTRACT)

Since the field's inception, Science and Technology Studies (STS) has grappled with the task of creating suitable definitions of the terms "science" and "technology," but the discourse has become cyclical and unproductive. By focusing on real-world applications of these terms, through a case study of the technology "beat" at the *Chicago Tribune*, this research attempts to correct that misstep.

At the *Tribune*, as in other major American newspapers, technology reporters operate within the business section, whereas science reporters are located within the general news section of the paper. Through personal interviews and an examination of science and technology articles, it became clear that reporters see "science" as pure research, whereas "technology" signifies the application of that knowledge toward a specific end. Though science and technology reporters cover similar topics, they do so in distinct ways with disparate goals. Moreover, technology journalism is actually more complex than the reporters recognize, as these articles discuss a variety of themes beyond commercial application, including project funding, administration and even research.

This thesis illustrates that a disconnect exists between STS scholarship and the world of journalism. If STS scholars desire to remain relevant, they must embrace a stronger interaction with the journalism community. Not only should STS welcome more journalists into its fold, through educational programming and increased dialogue, but STS academics must also participate in the journalistic process themselves, by using their STS perspectives to write provocative articles for the general newspaper reader. Readers – and journalists – would benefit from the critical viewpoint that STS offers, and journalism can challenge and invigorate the scholarship in a way that has been lacking in recent years.

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I would be extremely remiss if I did not thank the people in my personal life who have seen me through this process with their emotional support. Particular thanks go to Mark and Vicki Martin, Audra Martin and Grant Price for their exceptional patience and understanding. My education and this research have caused me great excitement and great anxiety over the past two years, and I am very fortunate to have people who are willing to stand by through those crests and valleys. I hope to one day return the favor.

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List of Multimedia Objects

Part 1: Introduction

During my time working as a public relations executive, I noticed a trend in the major daily newspapers; reporters covering the technology "beat" were often managed by the business editor, and their stories appeared in the paper's business section.[1] I found this rather puzzling, since most technology that came to mind – the space shuttle, fuel cells, and the Internet – wasn't necessarily applicable to business. In fact, the science reporters, whose articles ran in the main newspaper section, often covered these and other technology-focused articles; they didn't just stick to lab science and medicine.

I was perplexed by the fact that my concept of "technology" and "science" seemed to differ so significantly from the reporters with whom I interacted on a daily basis. I became even more confused when I tried to get my hometown newspaper, the *Chicago Tribune*, to write a story on one of my clients – a radiology group pioneering the new subfield of teleradiology (sending digital medical images to doctors around the globe for immediate analysis). The company had developed an intense and original technology infrastructure to provide what they believed to be superior patient care, but the *Tribune* science/health reporter would not write the article because the company's "story" was too technology-oriented and too commercial. When I approached the technology reporter, the answer was again "no"; he refused to cover my client because the technology wasn't something applicable to or usable by the average person, nor was my client a Chicago business. He ironically sent me back to the science reporters. I couldn't win.[2]

I began to wonder how the *Tribune* staff determined what constituted "science" and what counted as "technology." There seemed to exist a complex negotiation between the two beats to which I was not privy. Upon entering a graduate program in Science and Technology Studies, I realized that my confusion over how we distinguish between these two subject areas was not as unusual as I might have thought.

[1] The term "beat" is a journalist's way of characterizing what subject matter one covers. A reporter covering car manufacturers, for example, would work on the "auto beat," while a general reporter who covers local news works on the "metro beat."
[2] I should note that this scenario was not limited just to the *Tribune*. In fact, similar events happened in my dealings with other newspapers and magazines, though arguably not as strikingly as in this case.

Understanding Science and Technology in Academia

The science-technology relationship has long been an issue of puzzlement, fascination and frustration for historians, sociologists and philosophers, not to mention scholars in the field of science and technology studies. Dissatisfied with the previously held notion that technology was simply "applied science," scholars have attempted to redefine how we think of science and technology. One of the most well-known essays, Edwin T. Layton's "Mirror Image Twins: The Communities of Science and Technology in 19th Century America," argued that technology is not dependent on science, but rather on its own community robust with its own theories, methodologies and practices. The two disciplines can exchange information in either direction – that is, technology can drive science as easily as science can drive technology – and in some instances, they can remain wholly separate.[3] His important portrayal of the technological discipline allows academics to see technology as more complex than simply applied science, or the creation of a tool for a certain purpose.

Later historians and philosophers have followed Layton's lead, further scrutinizing the science-technology relationship. In the article, "Science and Technology," historian of technology George Wise argues that "technology" includes both the tools we develop and the theories and ideas behind them, recognizing that science and technology can interact in multiple dimensions, not just as one discipline leading the other in an assembly-line fashion.[4]

Recent schools of thought, however, have striven to define technology as it relates not only to science, but to society as well, suggesting that technology is simply the material expression of civilization. In his essay "Technology is Society Made Durable," Bruno Latour claims that technology and society "co-produce" one another, and thus we cannot differentiate technology from the rest of our culture.[5] Philosopher Joe Pitt proposes a similar argument in *Thinking About Technology: Foundations of the Philosophy of Technology*, in which he suggests that technology can be best defined as

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[3] Edwin Layton, "Mirror Image Twins: The Communities of Science and Technology in 19th Century America," *Technology and Culture* 12 (1971): 578.
[4] George Wise, "Science and Technology," *Osiris* 1 (1985): 244.
[5] Bruno Latour, "Technology is Society Made Durable," in *A Sociology of Monsters: Essays on Power, Technology and Domination*, ed. John Law (London, New York: Routledge, 1991), 103-131.

“humanity at work.”[6] Pitt argues that this vagueness is actually liberating, because it allows us to include both tools and the knowledge behind them as technology, and it also gives us the freedom to explore the deep complexity of the technology concept.[7]

Obviously there are many ways of conceptualizing and defining “technology” within academia, each dependent on one’s own perspectives and intended outcomes. My experience with the *Chicago Tribune* indicated that this multiplicity existed not only within academia, but outside it in the professional world as well. If science and technology scholars held different opinions on the definitions of these two concepts, it was no wonder that my opinion as a public relations executive differed from the opinion of a journalist.

As historian of science Otto Mayr commented in a 1976 essay, “It is becoming clear…that a practically usable criterion for making sharp and neat distinctions between science and technology simply does not exist.”[8] Although I appreciate, and to an extent, agree with his perspective that one cannot distinguish between the two fields, I would like to suggest that there are, rather, *many* different ways that we can and do distinguish between the two, depending on a variety of factors, including our professional background. To restrict the relationship of science and technology to a rigid dichotomy robs us of the chance to understand the myriad intricacies that exist as various people, professions and even cultures interact with scientific and/or technological ideas, materials and events. As Pitt indicated, it is in fact more liberating – and, I should think, illuminating – to examine various communities’ applications of the terms “technology” and “science” as entities in and of themselves. Thus, rather than trying to create a distinction between science and technology that attempts to build a unified, dichotomous relationship, we can embrace a more complex model and turn our attention to the details that exist within that flexible structure as various professions, like journalism, apply the concepts.

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[6] Joseph C. Pitt, *Thinking about Technology* (New York: Seven Bridges Press, 2000): 11.
[7] *Ibid.*, 16.
[8] Otto Mayr, “The Science-Technology Relationship as a Historiographic Problem,” *Technology and Culture* 17 (1976): 668.

Objectives of the Thesis

This monograph has two principle goals. The first is to compare and contrast science and technology conceptualizations at the *Chicago Tribune* to understand how these two subject areas operate as newspaper beats and how they relate to one another. Gaining this perspective allows us to see that these operational definitions differ in key ways from the scholarly distinctions that academics have been making for the last thirty years. It also provides us with an alternate way to perceive these fields, thus developing the aforementioned complex model of science-technology interaction and giving scholars and professionals more classificatory freedom.

The second goal is to hone in specifically on the *concept* of technology within the confines of the *Chicago Tribune*: what is it, where is it, who writes about it, how is it conceptualized, and how is it presented? I accomplish this objective partially though the exploration of the science-technology relationship, as mentioned above, but also through a deconstruction of how to do technology reporting at the *Tribune*, covered in Part V. In choosing to direct much of my attention specifically to technology, rather than giving equal play to both, I break from the path taken by most media studies scholars in this area who have studied science journalism but have spent relatively little time on technology journalism (as made evident in the literature review). Of course, exploring technology journalism in this detail presents a challenge, then, as there is sparse literature to compare to my own findings. Still, it is also an advantage, as this research might open up new areas of inquiry not only in media studies, but history of technology, philosophy of technology and science and technology studies as well. If the perceptions of technology are indeed dependent on professional background and experience, as I have suggested, then the closest we could ever get to a "definition" of technology (or science) would require the conglomeration of a myriad opinions and perspectives on the subject, not only from more journalistic publications (*The New York Times, Wired* magazine, *BusinessWeek,* ABC news outlets, to name a few), but also from other professions (library science, engineering, education, advertising and marketing, etc.). The possibilities would be virtually endless, but genuinely exciting.

The research I have completed in pursuit of these two goals indicates that a major disconnect exists between academics and journalists relating to how we perceive science and technology. More specifically, though STS scholars have moved beyond the simple definitions of "science as pure research" and "technology as applied science," science and technology journalists maintain that technology is the application of scientific knowledge. Understanding how and why journalists apply these classifications will allow us to better scrutinize the benefits and drawbacks to the STS model and to see how STS perspectives might enhance today's science and technology journalism.

Part II: Methodology

Perhaps the first question readers might ask of this monograph is, "Why journalism?" Newspapers are a constant in the changing landscape of American culture. Journalists have covered the most important events in our history; their investigative reports have turned the tables on scandals and cover-ups, and their articles and editorials have documented, and even affected, our most tumultuous times. In sum, there can be little doubt that newspapers are both vital observers and active participants in our history. Additionally, journalists themselves walk the line between expert and layperson. Especially in cases where they work on a particular beat or topic area, newspaper reporters are knowledgeable about the subjects they cover, but are able to communicate their material in an easy, accessible manner (which some experts lack). They consider themselves "gatekeepers" of information, and take that role very seriously.

In doing a study related to modern journalism, I could have used a print newspaper, a print magazine, an online publication or a radio or television broadcast. I chose to cover the print version of a major newspaper mainly because of the ease of collecting its past articles and contacting the reporters who wrote those stories. Archived broadcast material is extremely difficult to come by, and each individual report typically lasts a small matter of minutes, limiting the amount of content that is communicated. Conversely, most major libraries have microfilm and/or bound copies of major metropolitan daily newspapers, making article searching easy. Newspapers also tend to have a low turn-over rate and a long history of existence – things that cannot always be said of online publications. Finally, though a study of magazine coverage could have likely proven just as rewarding, these publications often cater to a narrow, interested audience, rather than the general public. Newspapers, on the other hand, boast a greater variety of interests among readers, and so capturing the audience's attention and delivering information they consider interesting or valuable can be more challenging than in a specialized newspaper.

Completing the Research

This thesis is, at its most basic, a case study of science and technology as conceptualized and presented in modern print journalism. Yet because of the varied staffing procedures, editorial decision-making with regard to what stories to print, and diversity of the number and type of sections any given newspaper prints, I chose to situate my research within only one publication. I selected *The Chicago Tribune* for three reasons. First, it is one of the top ten highest-circulating newspapers in the United States, with a circulation of 600,988.[9] Its high readership and ultra-urban location arguably makes the *Tribune* one of the more influential and trusted publications in the United States. As a local newspaper, a significant portion of its content is regionally specific, and yet, due to both its size and readership, it also includes national news. Second, the *Tribune* has staff reporters specifically assigned to the science beat – a characteristic typical of many larger newspapers and essential to my research – and it also has staff technology reporters. As added incentive for using the *Tribune* as my case study, the newspaper publishes a Technology Page every Saturday in the business section, meaning I would have ample technology-focused stories to access in my research. Finally, the *Tribune* was, in all honesty, a convenient and practical choice. Because of my experience in a Chicago-based public relations firm, I could get my foot in the proverbial door through the contacts I had made years ago. Because my permanent residence is in the Chicago area, I was also able to reschedule any last-minute-cancelled appointments, an inevitability in the reporting world.

My primary research took two separate paths. The first consisted of personal interviews with science and technology reporters working at the *Tribune,* which proved crucial to my research. The decision of whether to write, and later, publish, any given story is often not a solitary one. Reporters and editors must agree about which articles are relevant or interesting. In addition, reporters get story ideas from a variety of sources, including public relations executives, professional and trade journals, their editors and, of course, their own intuition. Finally, time and column-inch constraints are always a factor in daily newspaper publication. Thus, the pursuit and publication of any given story is

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[9] *International Yearbook: The Encyclopedia of the Newspaper Industry* (New York: Editor & Publisher, 2005).

often a complex negotiation of various independent factors. I knew that printed articles alone could not adequately explain these whys and hows of *Tribune* reporting, so I conducted several interviews and e-mail correspondences with four *Tribune* reporters: two science reporters and two technology reporters.[10] As these employees effectively *create* their respective beats through their reporting, the ways they conceptualize their subject matter and responsibilities proved vital to understanding my subject matter. In the interviews, each reporter and I covered a variety of subject matter relating to the journalism profession. We discussed their education and past careers, their responsibilities at the *Chicago Tribune* and their perspectives on science and technology. (Appendix A contains a list of sample questions I asked during the interviews.)

In the second phase of my research, I reviewed articles published on a specific topic – The Argonne National Laboratory – from 2003 to 2006. Throughout my interviews, both the science and the technology reporters mentioned Argonne as a subject that they covered. The lab thus serves as an area of overlap between the two beats, an ambiguous entity that is neither totally science nor technology. Focusing on coverage of the lab provides an opportunity to learn how reporters put into practice the notions of science and technology even when, perhaps, the reporters' definitions of science and technology (as revealed in interviews) did not apply perfectly. The case permits us to examine the reporters' claims about their views of science and technology without fully accepting them at their word, allowing us to use the analytical approaches of STS to understand better how journalists cover the technology beat. In other words, Argonne serves as an ideal topic with which to compare and contrast reporting of science and technology.

The first national laboratory, Argonne is one of the largest labs in the United States, with more than 200 research projects currently underway from a variety of institutions. It is one of the most important scientific facilities in the country, and a source of local pride for the city of Chicago.[11] Argonne's newsworthiness could thus hardly be disputed. Its relevance to both science and technology stories proved the lab a

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[10] This actually winds up being two-thirds of the science reporting staff at the *Tribune*, and the entire technology reporting beat.

[11] Interestingly, Argonne was also the site of the world's first controlled nuclear chain reaction in 1942. (see www.anl.gov/about.html)

valuable topic within which to explore the complex arena of technology journalism. Plus, the number of stories published and their interconnectedness made information collection and analysis rather painless.

I should emphasize that I have situated this research purely in the contemporary – and localized – world of the *Tribune*. I do not wish to insinuate that the story I tell represents the way technology has always been conceptualized at the *Tribune,* nor do I want to suggest that my findings at this newspaper represent the situations at other comparable publications. Though I would be very surprised if there were no similarities within the profession, a newspaper is, for all the reasons mentioned above, a very individual entity. It is shaped not only by those who operate it, but those who work for it, and those that read it. To assume that what is the case in one newspaper would be the case in another would lead to potentially problematic conclusions.

Part III: Literature Review

The 1960s were arguably the most technologically rich for the American public. With newspapers and news broadcasts covering the space race, the commercial release of the birth control pill, the Cuban Missile Crisis, the Vietnam War, the legalization of artificial insemination and more, hardly a day could go by without the public hearing about the latest scientific and technological developments.[12] Thus, it may come as little surprise that in the 1970s, scholars began to question just how well the media were communicating these complex issues. The general consensus held that the public had an inadequate understanding and appreciation of science, a phenomenon that, a decade earlier, author C. P. Snow blamed on the nation's educational system.[13] But in the wake of these sociopolitical issues coming to a boil, blame turned away from the school system and focused instead on media communicators. Peter Farago argued in *Science and the Media* that reporters and media outlets were at fault for this supposed deficiency, and advocated for the establishment of an independent institution that would facilitate the exchange of information from the scientists themselves to media representatives.[14] He contended that the public's lack of scientific understanding was more problematic than its ignorance of other subjects. Louis Vaczek, a former editor of *Encyclopedia Britannica* who reviewed the book, agreed. As he put it, "…science is the one and only activity that distinguishes our civilization from every other – it is from our scientific view that our technology evolves – and if it atrophies for whatever reason…so will our civilization atrophy."[15] Though his claim that science is the *only* distinguishing feature of our culture

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[12] This time period also saw significant growth of science journalism as a profession; the job was actually created during World War II in William Lawrence of the *New York Times*, the first official full-time science reporter. (See George Sylvie and Patricia D. Witherspoon, *Time, Change and the American Newspaper* (Mahwah, NJ: Lawrence Erlbaum Associates, 2002): 161.

[13] See, for example, C. P. Snow, *The Two Cultures and the Scientific Revolution,* (New York: Cambridge University Press, 1959).

[14] Today, I would argue that the Internet has filled the role of independent fact-checker and facilitator. Specialty Web sites, blogs and independent news outlets are exceedingly popular and allow for the quick transmission of information among scientists, reporters and laymen alike (though the accuracy of said information is, of course, questionable). Some of the most popular online journalism is technology and science-based. See John Pavlik, *Journalism and the New Media* (New York: Columbia University Press, 2001).

[15] Louis Vaczek, review of *Selling Science* by Dorothy Nelkin, *Technology and Culture* 18 (1977): 269.

might make some lawyers, politicians and other professionals cringe, the rallying call for better scientific understanding, and thus, communication, was heard loud and clear.

Farago published his work at the beginning of a major trend in media studies, which focused on science communication and its effectiveness in various forms of media. In the last three decades, scholars and practicing journalists alike have attempted to deconstruct the world of scientific and technical communication. In the development of this subfield of media studies, several trends have emerged.

Understanding the Actors

One popular topic within science-focused media studies research is the relationships among the actual "doers" themselves, i.e. scientists and the journalists. In their 1986 edited volume, *Scientists and Journalists: Reporting Science as News*, Sharon M. Friedman, Sharon Dunwoody and Carol L. Rogers compiled essays from scientists and journalists alike in an attempt to illustrate "the rich complexity of interactions that makes the patterns [of interaction] hard to discern."[16] The book provides an interesting examination of the differing needs of the two professions, pointing out, for example, that although scientists are often fascinated by the details and intricacies of research, journalists often focus on science's "big picture" implications, and leave out the minutiae scientists value so much. However, the book contains no recommendation other than that we respect and nurture the journalist-scientist "symbiosis," and it offers little theoretical content. Much the same can be said about its contemporary, *Public Health and the Environment – The Journalist's Dilemma* by Peter Sandman, a professor of environmental journalism. Written as both a practical handbook for students and a critical analysis of the field, Sandmans' book presents science journalists as mediators between "the technocrats and the techno/peasants" and claims that journalists thus have an important role in making sure the public takes "responsible control of technology" though he is not clear exactly what he means by "responsible control."[17] Though the instructional materials are constructive, his analysis centers on unsubstantiated claims of

[16] Sharon M. Friedman, Sharon Dunwoody, and Carol L. Rogers, eds., *Scientists and Journalists: Reporting Science as News* (New York: Free Press, 1986): xv.
[17] Peter M. Sandman, *Public Health and the Environment – The Journalist's Dilemma*, Oak Park, IL: Council for the Advancement of Science Writing, 1984.

public interest in science, offering little evidence to support how he envisions the profession of science writing.

Applying Case Studies

Another popular approach among media studies scholars is the execution of case studies of one or a select group of publications. These research efforts have often focused on the content and/or frequency of science news stories in order to understand the underlying rhetoric and depth of coverage. Moreover, they often provide intriguing insights into conceptions and portrayals of science in journalism.

One of the more fascinating examples of this type of research is a 1989 study by Gerald Hinkle and William R. Elliott, which examined three “mainstream newspapers” (the *New York Times*, *USA Today* and the *Philadelphia Inquirer*) and three supermarket tabloids (*National Inquirer, Weekly World News* and *The Star*) to determine which group published the most science content.[18] They divided the types of science stories into four categories: medicine/health, technology, hard science and pseudoscience, though the last category was omitted from their results due to an insufficient amount of data. They defined each of these categories mainly through examples of the kinds of articles they determined fit within those boundaries. For example, their definition of technology articles read, “…developments within the fields of engineering and applied sciences. Examples from this category include news of the space program, computer technology, and superconductor research.”[19] Hinkle and Elliot found that tabloids were much more likely to publish articles on medicine and health than the mainstream papers, and they placed a greater emphasis on their science-related stories in general; also, of the three mainstream papers, the *New York Times* displayed the most coverage of “hard science” and the greatest depth of coverage overall.[20]

On the rhetoric side of content analysis, Elfriede Fürsich and E. P. Lester’s 1996 survey of the *New York Times* Tuesday science section, “Science Times,” found that the

[18] Gerald Hinkle and William R. Elliott, “Science Coverage in Three Newspapers and Three Supermarket Tabloids,” *Journalism Quarterly* 66 (1989): 353-358.
[19] *Ibid.*, 355.
[20] The study defined “emphasis” as placement in the general news section, usually called section A or the main section, and determined depth of coverage by measuring the number of words per paragraph per science story.

paper tended to focus more on the natural, rather than the physical, sciences. They also found several dominant themes in the way the newspaper covered science; among those themes were competition, determination and the image of "pristine science."[21] Science writers Brian Vastag and Katherine Arnold affirmed those findings in an article they wrote in 1999 for fellow journalists titled "Reporting Biotechnology." They noted that stories on biotechnology were very popular in the press, but were often "slanted" by reporters. That is, "[journalists] either spin the story with a 'great promise' slant, focusing on benefits…or with a 'great concern' slant, emphasizing risks."[22]

These types of case studies illustrate that, though there are commonalities among news outlets, each publication remains distinct in the way it operates and the stories it prints. In "New Complications in Reporting Science," editor Cornelia Dean explored the nature of science reporting at the *New York Times*, one of the world's most widely read newspapers. Dean argued that "for a long time it has been a truism in journalism that science is a hard sell in newspapers," and said that the fact that the *Times* has an entire science section every week sets the paper apart from its competitors. However, "science" stories need not be located just in the lab, according to Dean; the science staff has run stories on the September 11th terrorist attacks, the *Star Wars* franchise, crime, pharmaceutical advertising and more. She points out that roughly half of the paper's science reporters have degrees in science, which is important because more and more important political and current events issues involve science to some degree.[23]

That allegation – that science is becoming increasingly important socio-politically – is a prime motivation in the establishment of science writing and technical writing programs in American Universities, and a source of great pride for those that operate these programs. Articles written for aspiring journalists, like "Learning to be a Medical Journalist" by Thomas Linden, and reports on the successes of these programs, such as "Expanding the Scope of Technical Communication: Examples from the Department of Technical Communication at the University of Washington" by Mark P. Haseklorn, et. al., are all written echoing Farago's assertions that the public is problematically deficient

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[21] Elfriede Fürsich and E. P. Lester, "Science Journalism Under Scrutiny: A Textual Analysis of 'Science Times,'" *Critical Studies in Mass Communication* 13 (1996): 24-43.
[22] Brian Vastag and Katherine Arnold, "Reporting Biotechnology," *Quill* 87 (October 1999): 40.
[23] Cornelia Dean, "New Complications in Reporting on Science," *Nieman Reports* 56 (2002): 25-26.