

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

Allison M. Martin

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Richard Hirsh, Chair
Gary Lee Downey
James H. Collier

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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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most, been excited for my research when I feared it was irrelevant, and has, at all times, been attentive, energetic and efficient. On more than one occasion, I stopped by Richard's office intending to stay just a few short minutes, and found myself still standing there half an hour later. Sometimes, it was because we were discussing my research, and other times we were simply talking. Whatever the case, I always left Richard's office with a huge smile and a lasting feeling of camaraderie. I am privileged to have worked with him, and I am sad to be moving on. Together, Richard, Jim, and Gary have been truly invaluable resources in the writing of this thesis. If any errors or omissions remain in this research, the fault lies entirely on my shoulders.

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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

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.

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 through 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

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

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

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, Sandman’s 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

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.

in its understanding of scientific and technical information. However, in an article for *Critical Studies in Mass Communication*, journalism professor Christopher Dornan contended that scholars have been basing these types of educational and advocacy projects on faulty assumptions. He implements a critical literature review of media studies investigations, which illustrates how media researchers always assumed but never factually established that public scientific knowledge was inadequate. Their continued efforts to solve the problem through conferences, publications, and educational programming subsequently justified the need to further explore the “problem” of science communication, causing it to take root in academia more strongly than before:

The discourse on science and the media seems itself to have been dominated by a comparatively small group of academics who made the subject their specialty, whose work established a mutually held agenda, who collaborated often, and who together largely fixed the terms in which the problem was to be understood.²⁴

Thus, Dornan argues, they unwittingly created the problem they originally set out to study. In effect, he suggests that the field has become stagnated and cyclical, and that new areas of research from new perspectives are needed if this field of study is to continue.²⁵ I hope that my research here can, in part, answer Dornan’s call.

Employing a Comprehensive View

Perhaps the most widely read book on the subject of science journalism is Dorothy Nelkin’s *Selling Science: How the Press Covers Science and Technology*, written in 1987 and updated in 1995. A staple for many syllabi in university journalism and technical writing courses, *Selling Science* provides a comprehensive analytical overview of science and technology reporting at several national and local newspapers, national news magazines and specialized magazines.²⁶ By examining these sources and

²⁴ Christopher Dornan, “Some Problems in Conceptualizing the Issue of ‘Science and the Media,’” *Critical Studies in Mass Communication* 7 (1990): 64.

²⁵ *Ibid.*, 65.

²⁶ Nelkin does not distinguish between science and technology in this context, however, which proves rather problematic when she draws her conclusions about the nature of science reporting and its public impact.

combining the information they provided with data from interviews, journals and trade publications, Nelkin concluded that science writing has not taken full control of its subject matter, and has thus missed an opportunity to become truly important to the reading public. She writes:

The media can play an important role in enhancing public understanding [of science and technology], but they have frequently failed to do so. There are many examples of brilliant science reporting, written with analytic clarity, critical insight, and provocative style, but too often science in the press is more a subject for consumption than for public scrutiny, more a source of entertainment than of information... Many journalists are, in effect, retailing science and technology rather than investigating them, identifying with their sources rather than challenging them.²⁷

In other words, Nelkin concluded that science reporters have become public relations vehicles for modern science, rather than investigators and whistle-blowers, as they perhaps should be. She notes that this scenario is changing, but that as a result relationships between scientists and reporters are deteriorating, leading the science community to mistrust rather than reach out to journalists. For Nelkin, however, this adversity is the key to a new, improved approach to science reporting.

Nelkin's book is undoubtedly an invaluable asset to scholars who attempt to deconstruct the science-journalism network. *Selling Science* provides insights into the trends, tendencies and tacit knowledge involved in several aspects of science-based reporting, including editorial constraints, scientists' public relations efforts, risk reporting, and more. Yet in the end, Nelkin can offer no new solution to improve the science-media dichotomy. Instead, she reverts back to the previously-reached conclusion that we all must do our part to create the accurate science reporting that the public needs.

* * *

Throughout the literature on science journalism, a few key trends have emerged. First, each of these writers emphatically concurs with the notion that science and

²⁷ Dorothy Nelkin, *Selling Science* (New York: W. H. Freeman, 1995): 162-164.

technology, by their very nature, are socio-politically important in the modern era. Thus, reporters carry a heavy burden on their shoulders, if we are to assume that journalists feel a duty to make sure the public is informed. Second, much of the literature alleges that the public in fact is not informed adequately. The combination of these two assumptions – that science is important and that the public lacks sufficient science information – has led scholars to deduce that science awareness must be improved lest our society falter. Since general opinion holds that journalists “build up the world while simultaneously describing it,” as Jay Rosen put it, scholars have concluded that science reporters are responsible for fixing the science deficiency plaguing the American people. But, as Doman has illustrated, this web of logic is based mostly on assumption, bolstered by statistics that are subjective at best.

A third and final trend in the scholarship about science and technology journalism is that “science and technology” is almost always synonymous with “science.” In other words, technology is present in much of the literature only as a passing mention; the majority of scholarship focuses purely on science with little attention paid to its thematic counterpart. This indicates some misapprehensions on the part of media scholars: that science and technology are synonymous (a thought which would appall STS academics) and/or that technology reporting is a relatively insignificant field (a thought which appalls me).

My research represents a divergence from these trends. Though I sympathize with concerns regarding the public understanding of science, I remain uncertain that journalists lie at the crux of the problem. However, *if* science reporting does require improvement of some kind, I still maintain that we need to develop a new approach. Since the efforts by scholars of this issue seem to have resulted in little change, I have elected to change our perspective and instead take a step back to basics: uncovering the ways we define and conceptualize science and technology. Not only does this approach add some novel data to the discourse, but it also begins to correct the all too frequent invisibility of technology in journalistic scholarship.

Part IV: Defining Science and Technology at the *Tribune*

As we examined in the introduction, there exists in academia a push-and-pull debate as to how to distinguish between science and technology. In the *Chicago Tribune*'s world of newspaper journalism, this tension does not exist; instead, a clearly understood distinction does. Science and technology writers report very few "territory debates" on which beat gets to cover a certain topic. And though each individual was interviewed separately from each other, when asked to define "science" and then to define "technology," their responses were remarkably similar. This is likely due in part to the larger *Tribune* culture, but also to hierarchy within which the reporters work; each of their editors' decisions on which stories to print in which sections almost undoubtedly reflect a unified viewpoint, and unseen preconceptions, shared among upper editors and management. In this section, I will provide some basic background information on the *Tribune* and its science and technology staff and then delve into how they define these two distinct beats.

A Brief History of the *Chicago Tribune*

The *Chicago Tribune* published its first issue in 1871, using a hand press in a one-room plant. Since then, its parent organization, the Tribune Company, has become one of the most influential and widely reaching media conglomerates in the country. Aside from an assortment of Chicago-based print and media organizations, the Tribune Company owns media outlets in several major and minor markets, thus reaching an estimated 80 percent of American households through publications, radio, television and the Internet.²⁸

Science reporting has a longer history at the *Chicago Tribune* than the technology beat, and both topics have experienced a few slight changes over the years. According to *Tribune* reporters, the science beat has been a staple at the newspaper since the mid-twentieth century, and expanded with the birth of the more specialized environmental beat in the 1960s. The city desk originally supervised the science reporters until the 1980s, when the *Tribune* created a separate science section, where a science editor

²⁸ As an interesting side note, the Tribune Company also owns the beloved Chicago Cubs baseball team, which plays at historic Wrigley Field on the north side of the city. See www.tribune.com/about.

oversaw a handful of science writers. The section was later disbanded, and the science staff downsized and joined the staff of the national beat. The technology beat, on the other hand, has always been located within the business section since its inception in the 1970s. Before that, says one reporter, technology didn't need its own beat. "It's only been since the '80s that ordinary people have had regular contact with computers," he said. "Before that happened, the technology really manifested itself either in transportation or entertainment devices," which the *Tribune* covered in their own specific sections.²⁹ Technology continued to be a staple of the newspaper's coverage, reaching its peak during the "dot-com bubble" of the 1990s, when the *Tribune* would devote its business section exclusively to technology one day a week. Soon after the proverbial bubble "burst" in 2000, however, the technology section was canceled. Today, one page of the business section is allocated to technology every Saturday, though technology articles also appear frequently throughout the week.

Reporter Backgrounds

Each science and technology reporter interviewed has a distinct educational and professional background that led him to the *Tribune*. One science reporter, Ron Kotulak, graduated from college decades ago with a degree in journalism. He has been at the newspaper for forty-seven years, forty-four of which he has spent on the science beat. His companion on that beat, Jeremy Manier, earned an undergraduate degree in philosophy, where he took courses in the history and philosophy of science. While in a graduate program in experimental social psychology, Manier earned a mass media fellowship through the American Association for the Advancement of Science (AAAS), which placed him in an internship writing science articles for the *Tribune*. He returned to the paper a year later to start his writing career.

Technology reporter Jon Van earned a Bachelor's and Master's degree in journalism in Iowa, where he also covered local news and politics for the *Des Moines Register*. In 1973 he came to the *Tribune* as a general reporter, but not long after that he started on the science beat. After covering science for roughly twenty years, Van moved to the business section to cover technology; he has been at that desk ever since. His

²⁹ Jon Van, interview by Allison M. Martin, November 20, 2006, Tribune Tower, Chicago.

colleague, Eric Benderoff, also received a journalism degree, and came to the *Tribune* nearly six years ago after writing business stories for local rival paper, the *Chicago Sun-Times*. Originally, he served as an editor at the *Tribune*, but a year ago he changed positions and now works as a technology reporter.

In effect, the science and technology staff at the *Tribune* exhibits some commonalities and some individuality. One science reporter and one technology reporter have been at the newspaper for decades, while their colleagues have worked there only a handful of years. Three have journalism degrees, and one does not. The two science reporters have written almost exclusively on the science beat, but the technology reporters have moved around from beat to beat throughout their careers. Yet despite the varied backgrounds of these writers, they have a rather unified vision of how to characterize science and technology.

Science and Technology at the *Chicago Tribune*

Reporters at the *Tribune* say that, though science and technology are related, the two terms are distinct and separate. The boundary between the two can be summed up in one word: application. According to science reporters and technology reporters alike, “science” is focused on open-ended research, whereas “technology” is research or the application of research or knowledge for a specific, sometimes commercial, purpose. The last question I asked each reporter during our interview sessions, “Can you tell me the difference between science and technology?”, illustrates this distinction. Consider, for example, two responses to that question – one from a technology reporter and one from a science reporter:

Respondent A: “The science guys are more in the realm of research or pre-commercial applications. I write about a lot of research as well, but its research that is aimed at commercialization...Technology is applied science.”³⁰

Respondent B: “Science is a way of knowing the world. It relies on experimentation and the slow study refinement of knowledge through empirical

³⁰ Van, interview.

results. Technology is often applying basic scientific findings for applications in health or business or just to build cool gadgets.”³¹

Another principle for determining what constitutes science seems to be what I call the *newness factor*. “When I hear science, I think of new discoveries,” said one technology reporter.³² A science reporter commented that science was “a broad look at new developments,” in any hard science or medical sub-discipline. He explained: “When a drug gets to the point where it is FDA-approved, it’s now a business [story]. I would get interested in a product or a drug that’s been on the market *if it’s being used for a new purpose*. But it goes back to my criterion – is it new? Is it basic research?”³³

The reporters also noted that there are a few “musts” related to the technology beat at the paper. Technology stories must be clearly helpful or relevant to readers, or they must have direct bearing on economics and finance (which I will discuss in greater detail in the next chapter).³⁴ Conversely, the best science stories are those that are just plain interesting; they do not have to necessarily be useful. “Often the difference between science and other types of stories is that you can get in the paper just if it’s intrinsically interesting,” a science reporter said:

“Politics [for example] is not intrinsically interesting. But a quantum computer is a good example of something that is just intrinsically interesting. No one is going to be using a quantum computer in their daily lives in 10 years. There’s no way. [So] you could never make a practical argument for a story like that. But you can write it in a way that both what explains, as far as you can, what happened but also makes clear just how weird, how intrinsically *weird*, this thing is. For me, that’s the way a lot of it works. And that I think, for people who write about science, that is the ideal of a great science story.”³⁵

³¹ Jeremy Manier, interview by Allison M. Martin, January 5, 2007, Tribune Tower, Chicago.

³² Eric Benderoff, interview by Allison M. Martin, December 20, 2006, Westfield Norbridge Shopping Center, Chicago.

³³ Ron Kotulak, interview by Allison M. Martin, December 20, 2006, Tribune Tower, Chicago.

³⁴ The supposition that technology relates directly to economic themes is not actually new or radical. At a 1970 meeting of the Society for the History of Technology, coincidentally held in Chicago, Milton Lower of the University of Houston commented that “technology is vital to understanding economic change and development.” See Otto Mayr, John G. Burke, John J. Beer, James Lee Cate, Thomas R. de Gregori “The Chicago Meeting, December 26-30, 1970,” *Technology and Culture* 12 (1971): 255.

³⁵ Manier, interview.

Another science reporter said that it is this element of pure curiosity or interest that helps him decide what science stories to write. “It’s basically your own instinct,” he said. “What would appeal to you, what’s of interest to you, what makes you wonder, what sparks your imagination? In a way, you’re (science reporters) sort of a representative of the people, of the average person. And if it’s of interest to you, chances are it’s going to be of interest to many other people. Not necessarily everybody, but a good number of people. Inquisitive people, people who are looking sometimes for entertainment, but very often basic information.”³⁶

Room for Overlap

Although science and technology reporters may aim for different qualities when writing their stories, they acknowledge the similarities that their beats have with one another. “If you want to think of science and technology, the best way to think of them is the helix, just like a strand of DNA,” said one technology reporter. “One hand washes the other. You can’t have advances in science without advances in technology and vice versa.”³⁷ As one science reporter commented, very often elements of one get into the articles of the other beat. When he covers neuroscience, for example, not only does he write about the diseases being explored or the treatments being tested, but he must also cover the technologies that are being used; Magnetic Resonance Imaging devices (MRIs) are a prime example. The human subjects of their articles are also areas of overlap between science and technology reporters. “What makes a person an engineer versus makes a person a physicist?” one technology reporter mused:

“At Bell Labs there were three people who shared the credit for inventing [a new transistor]. One of them... went on to be a professor of physics at the University of Illinois [and] a widely renowned academic physicist. Another of the men went on to become an entrepreneur in Silicon Valley and was involved in some of the creation of those companies that utilize the transistor to have commercial viability. So, you have people who have

³⁶ Kotulak, interview.

³⁷ Van, interview.

really identical skill sets and they diverge in how they use those skill sets.”³⁸

Thus, just as science and technology have areas of similarity and difference, the practitioners themselves may often waver from theoretical occupations (science) to the more commercial endeavors (technology). Historian of science Otto Mayr commented on a similar phenomenon in a paper on nineteenth-century steam engine regulation, where he found that scientists often acted more as inventors rather than theorists, indicating that “scientists and technologists could be reconciled within one person.”³⁹

* * *

The distinction between science and technology seems clear to *Tribune* reporters, but not absolute. In the course of their research and writing, science and technology writers have often covered the same subject matter, yet they do so in completely different ways. So how do they decide what is a science story, or what is a technology story? “Well, in some ways we don’t have to decide,” a science reporter said. “It’s one of those ‘I-know-it-when-I-see-it’ kinds of things. We never define it in the abstract; we define it as who’s going to cover it, or who brought the story to us.”⁴⁰

In this chapter, I have investigated how reporters conceptualize science and technology so that they can “know it when they see it.” According to these writers, the distinction between the two lies mainly in the area of *application*, which they say is usually directed at commercial gain.⁴¹ However, further discussions with the reporters (and analysis of their articles) illustrate that technology reporting is much more than this and contains more thematic values than journalists initially realize. In the next section, I will dive further into the definition of technology and the role of a technology reporter at the *Tribune* to examine how technology appears in actual day-to-day reporting situations. Thus will we gain a better idea of what technology “is” in the journalistic world.

³⁸ Van, interview.

³⁹ Mayr, et. al., “The Chicago Meeting, December 26-30, 1970,” 249.

⁴⁰ Manier, interview.

⁴¹ As I will illustrate later, in Part VI, technology reporters actually go beyond mere commercialization and report from a more nuanced perspective; that section on Argonne National Laboratory indicates that the technology beat has more complexity than reporters might initially believe.

Part V: The Nuts and Bolts of Technology Reporting at the Tribune

In speaking with science and technology reporters at the *Tribune* it becomes clear that technology journalism is a line of work in and of itself, with its own set of news values and criteria, as well as characteristics that make the individual technology reporter effective in his work. Thus, as Gary Downey and Juan Lucena put it in their analysis of the engineering education culture at Virginia Polytechnic Institute and State University, the *Tribune*'s technology beat is a distinct discipline, complete with its own expectations, activities, values and "best practices" for practitioners within the field.⁴² Examining how the discipline of technology journalism operates at the *Tribune* offers key insight into how these reporters understand themselves, both as practitioners of a craft as well as pieces in the greater *Tribune* puzzle. Once we understand how they conceptualize their work, we can then move on to understanding how they conceptualize their subject matter.

What is a good technology story?

At its most basic, good journalistic work is timely, accurate and impactful – criteria that are widely accepted throughout the journalism profession.⁴³ But to get to that point requires diligence, precision and creativity on the part of the reporter. As Carl Hausman illustrates in his handbook, *The Decision-Making Process in Journalism*, with every article they write, newspaper journalists must consider the work's newsworthiness, accuracy, fairness, logic, lack of distortion or bias, liability for libel or invasion of privacy, ethics and professionalism, and the possible consequences of printing their stories.⁴⁴ Not only must articles meet these standards, but they must also be clear and enjoyable to read.

Tribune technology reporters recognize these journalistic benchmarks, but indicate there are more precise qualities that, if honed, can make a technology article a great story. The first is its implications for or relevance to economics. Most of the reporters who, by title, are official technology reporters are managed by the business

⁴² Gary Lee Downey and Juan C. Lucena, "When Students Resist: Ethnography of a Senior Design Experience in Engineering," *International Journal of Engineering Education* 19 (2003): 168-176.

⁴³ Carl Hausman, *The Decision-Making Process in Journalism* (Chicago: Nelson-Hall, 1990): 12-13.

⁴⁴ *Ibid.*

editor, or the “business desk.”⁴⁵ As a result, technology reporters write about tools, gadgets and phenomena with commercial applications. As one technology reporter put it, “I’m working for the business side of the paper, so what I’m mostly interested in is... technology which is mostly in the realm of commerce.”⁴⁶ Technology reporters are also responsible for covering the businesses themselves that operate in the technology sector. Thus, acquisitions such as Google’s recent purchase of YouTube was covered by a technology reporter, even though the main theme of the story may have had less to do with technical knowledge and more to do with corporate practices.

Because the *Tribune* operates as a local paper, serving the city of Chicago and the suburban areas around it, stories with a local focus are extremely important to technology reporters. Chicago-area-based companies such as Motorola or Boeing, for example, receive special attention because of the impact those companies can have, not only on nationally used products and services, but also because of their potential impact on local economy, job markets, real estate and more. “A lot of things that you would see played up in the *New York Times* or the *Wall Street Journal* we would just take a wire story [such as one from the Associated Press or Reuters] and run it on an inside page because it’d have no Midwest connection,” one technology reporter said.⁴⁷ Stories that have a Chicago or Midwest connection, however, get featured more prominently, either on the front page of the business section or even in the main section of the paper (Section A). Yet that doesn’t necessarily guarantee that every local technology company gets inches in the *Tribune* just because they’re local. One reporter expressed his frustration at reader criticisms that the *Tribune* rarely focuses on “the little software shop down the street,” as he put it.

We try to [cover them],” he said, “and every now and then you get stories in on that, but there are so many of these little companies that it’s really hard to do. Also, it’s very challenging to get at why I should be writing about the small stuff, first off all. Yeah, they make a great little plug-in application that works great with Microsoft Excel and helps CPAs manage the flow of tax season better. But that’s a story for *CPA Monthly*, not for

⁴⁵ Information collected through Bacon’s Information (www.bacons.com).

⁴⁶ Van, interview.

⁴⁷ *Ibid.*

the *Chicago Tribune*. But yet, you can also look at that product and think maybe there's something else in there that's interesting. Maybe I could pair that up with three or four other little software companies in Chicago – you need to manage [these stories] in a different way perhaps.⁴⁸

Thus we have a prime example of a third tenet of technology journalism at the *Tribune*: technology with a personal touch and a large-scale impact. These technology reporters describe many of their articles as “encapsulating” how people use or manage technology. Thus, personal anecdotes from a technology's users or designers can greatly enhance a technology article's impact. Indeed, one technology reporter stated that he defines his beat as “how we interact with technology, whether that's for personal use or business use.”⁴⁹ Similarly, articles that explain how and why a given technology is changing certain areas of one's daily professional or personal life are principal tenants within the technology beat. These stories are the proverbial “gold mines” that often have the best chance at escaping the business section and landing on the hallowed Page One. “There's lots of different types of stories,” one reporter commented. “The basic stories are news stories: ‘Google Buys YouTube.’ You have to write that story. But to make it Page One story, you try to find some people, for instance, who are big YouTube users. Talk to them. What do they think about this [event]; do they even care? Then you try to broaden the story as much as possible. – you know, We're very big at the *Tribune* on big broad thoughts like [stories that start with] ‘At a time when...’ If you can pull it off, it can help a lot.”⁵⁰

These three article characteristics – economics, locality, and personal use combined with major trends – are the qualities that, for technology journalists, separate average technology coverage from exceptional stories. Although individually they may likely make appearances as values in other beats of the paper (In Metro, for example, local focus is non-negotiable, as region-specific versions are printed for each of the

⁴⁸ Benderoff, interview.

⁴⁹ *Ibid.*

⁵⁰ *Ibid.*

Chicagoland localities.), in the business section the combination of these values is what reporters strive to execute in their articles.⁵¹

Having examined the first type of discipline within technology journalism – the expectations and values of the field – let us now turn our attention to the second form of discipline, according to Downey and Lucena: the qualifications and expectations for the practitioners themselves.

Being a technology generalist

Over the last few years, a trend has emerged in newspaper hiring practices; the major papers want to hire science reporters with actual science degrees. Various scholars and reporters have commented on this phenomenon, among them Dorothy Nelkin. Yet no such trend has emerged in technology journalism. In fact, as one *Tribune* staffer put it, “Technology is very broad. Technology applies to everything we do today. We have cell phones in our pockets, or in our purses. We have digital cameras everywhere. There’s no degree in ‘gadgetology,’ so I don’t know where you would draw the line. Science is more easily well defined. Technology by its very nature...just crosses the gamut. So how do you define what expertise you want that person to hold?”⁵²

Does a lack of technology “education” hinder the process of writing about technology? Not according to the *Tribune* staffers. One technology reporter, who was previously a science reporter, noted that when it came down to it, talking to one expert is no different than conversing with another. “It’s a matter of getting a grasp on whatever jargon any individual field is imbued with,” he said. “Once you understand the jargon, talking to doctors or talking to engineers really isn’t all that different.”⁵³ Another reporter pointed out that in newspaper writing, it is often preferable to have a solid foundation of basic knowledge, rather than narrow expertise, because reporters have to write in a manner that makes their subject material accessible for a lay audience.⁵⁴

⁵¹ A stark contrast to this scenario is the science beat, which we covered briefly in the previous chapter, where “newness” is lauded above most everything else, and local focus takes a backseat to other journalistic values. (Manier, interview.)

⁵² Benderoff, interview.

⁵³ Van, interview.

⁵⁴ Benderoff, interview.

In fact, rather than have a specific knowledge base in one or two areas, flexibility and versatility are valued on the *Tribune* technology beat. They call it “being a generalist.” Because the newspaper’s audience is varied across professional, economic, educational and demographic boundaries, articles that are printed must be able to reach those varied audiences. The more technical an article gets, the more poorly that article addresses the needs of *Tribune* readers. “If you cover Boeing, and you’re doing it well, you’d be trying to get ‘inside’ the company,” one reporter said. “But you need to be careful that after a year or two of covering Boeing, your stories are still appropriate for the *Tribune* and not *Aviation Week*.”⁵⁵ For this reason, reporters sometimes change beats after a certain amount of years, having to start all over in a new beat, either because they burned out on the first or got too close to the subjects they were covering. Being a generalist, with no formal training in technology, and writing on a variety of topics within the tech beat, thus benefits both readers and reporters.

* * *

Within this chapter, I have explored the two tiers of the “discipline” of technology journalism at the *Tribune*, and we now have a better idea of what it means to *do* technology reporting at that publication. In the next and final chapter, we will complete a miniature case study of technology reporting to see the application of the concepts, news values, and reporter perspectives that we have been discussing in action.

⁵⁵ *Ibid.*

Part VI: Argonne National Laboratory: A Case Study in Science and Technology Reporting

Founded in 1946, Argonne National Laboratory is the United States' first national laboratory and one of the largest research centers owned by the Department of Energy; it is operated by the University of Chicago. The lab is located roughly 25 miles southwest of downtown Chicago and boasts an array of roughly 200 current research projects. According to the laboratory's Web site, Argonne's research is divided into five "broad categories":

- Basic science (experiments in materials science, chemistry, physics, computer science, etc.)
- Scientific facilities (The Advanced Photon Source, The Argonne Tandem Linear Accelerator System, and other facilities that can be utilized by multiple companies and universities)
- Energy resources (technological developments to improve energy efficiency and safety)
- Environmental management (alternative energy programs, environmental risk/economic impact studies, nuclear waste studies, etc.)
- National Security (counterterrorism modeling, development of threat detection instruments, etc.)⁵⁶

During my time interviewing employees at the *Tribune*, both science and technology reporters mentioned Argonne National Laboratory when discussing their past articles.⁵⁷ Depending on the type of story, one beat might be a more appropriate choice to write the article than another. For example, when Argonne bid for – and won – a government contract to build the Rare Isotope Accelerator (an important project in modern nuclear physics), a technology reporter wrote the article, but when a few curious scientists put an ant in the Advanced Photon Source (a very powerful x-ray facility) just

⁵⁶ [Http://www.anl.gov/index.html](http://www.anl.gov/index.html).

⁵⁷ Another popular topic is the Fermi National Accelerator Laboratory, also owned by the Department of Energy and located outside Chicago. For more information on this laboratory, visit <http://www.fnal.gov/>.

to see what would happen, they called a *Tribune* science reporter. (I will discuss this particular story in greater detail below.)

In this chapter, I will examine the way the *Chicago Tribune* has covered Argonne National Laboratory over a three-year period: 2003 to 2006. The lab is chiefly covered by the technology beat, so I will first examine the types of stories written about Argonne by comparing them to the technology reporting values discussed in the previous chapter. Then, I will look specifically at a subset of these articles – those that focus on the research being conducted at the lab – and examine how these articles, written by both science and technology reporters, compare with the reporters’ views on science and technology, as discussed in Part IV.

Topics of Argonne Articles

From January 2003 to December 2006, twenty articles written about Argonne National Laboratory appeared within the pages of the *Tribune*.⁵⁸ Each of them, save two, had technology reporters’ names on the bylines (the exceptions were both science articles). These articles can be broken into three main subject categories: research, laboratory administration and project acquisition/funding. The following graph illustrates the breakdown of these categories in the total Argonne coverage:

⁵⁸ I use the term “about” in order to distinguish between articles that simply mention Argonne, and those where Argonne or its research is the main topic of the article. In this research, articles where Argonne is simply mentioned have been omitted.

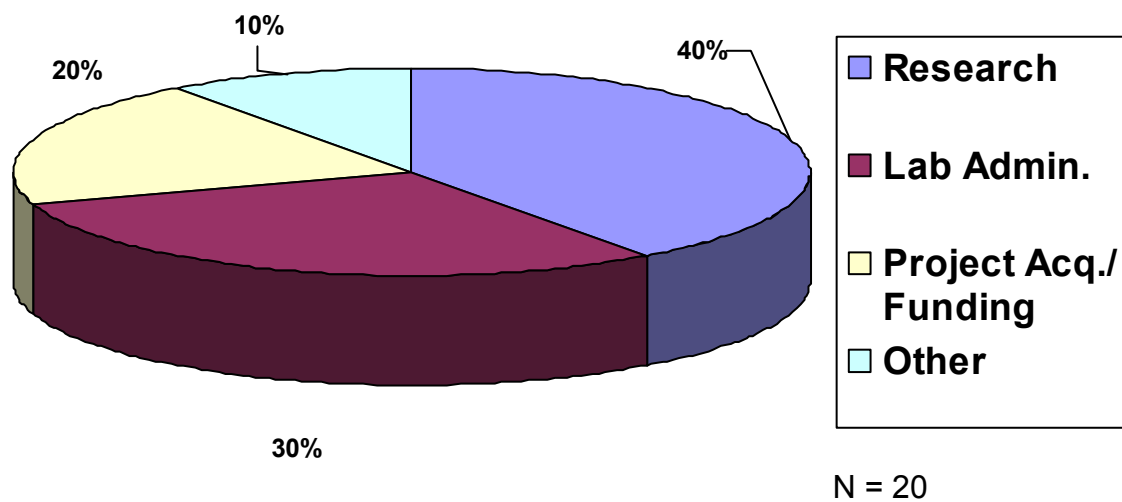


Figure 1: Articles about Argonne National Laboratory appearing in the *Chicago Tribune* from 2003 to 2006

While technology reporters’ stories run the gamut of each of these categories, science articles carry only the science subject theme. Thus, the typical technology-beat coverage of Argonne includes a variety of story types – and emphases – while science stories are more focused. In this first section, I will explore those subject areas that are exclusive domains of the technology beat – lab administration and project acquisition/funding – to determine what kinds of information they contain. The second section of this chapter will deal with the research category in greater depth in order to better understand how each beat, science and technology, presents Argonne research. In the end, the multidimensionality of the technology beat will become clearer, as will the reasons why the *Tribune* situates the beat within the business section.

Argonne Administration: The subject area “Argonne administration” refers to articles announcing laboratory directorship, safety procedures, and corporate/university control of the facility. It is an important subject for *Tribune* reporters to cover because of

the myriad potential effects that a change in leadership, regulations or like could have on the rest of Chicago economy or business. Consider a March 16, 2005 article titled “Argonne National Laboratory’s Chief Scientist Takes Director Post.” Aside from the relevance this news would have for the almost three thousand Chicago-area residents employed at Argonne, this information applies to areas of state and local politics, as well as technological development. As the article mentioned, the new director had to take the lead on lobbying the Energy Department for the privilege of building the billion-dollar Rare Isotope Accelerator (RIA), a project that could have implications for astrophysics research, as well as applications for medical practices. Illinois governor Rod Blagojevich and other local politicians strongly supported Argonne’s acquisition of this project, making the choice of a director who could successfully bid for the project crucial not only to local science and technology, but also to local policy and politics. (We will discuss the RIA in greater detail in a moment.)

Another article regarding Argonne administration, published one year later, reported apparent nuclear safety violations within the lab. Safety had, according to the U.S. Energy Department, been lax since 1999. Despite the duration of these mistakes, the Department was waiving the usual fines for this sort of incident because, as the article put it, the safety enforcement official was “‘extremely impressed’ and ‘encouraged’ by Rosner’s aggressive efforts to correct the problems.” The article goes on to explain specific safety violations, as well as the steps the lab was taking in order to manage this high-level technology. It also discusses new corporate partnerships that Argonne has made in order to improve future operations.

Consider also articles appearing a little over a year later, when the University of Chicago’s stewardship of the laboratory was up for renegotiation – and potentially cancellation – as mandated by Congress.⁵⁹ These articles, almost exclusively focusing on the bidding process, have an incredibly strong local focus, which, as we have discussed, is a crucial element to writing a good, relevant technology article. The University of Chicago, in its bid to retain control of Argonne, enlisted the help of Northwestern University (located outside Chicago) and the University of Illinois (campuses located

⁵⁹ This recent Congressional Act requires that all national laboratories’ management must go up for “competitive bidding” after a given period of time, during which process lab management could stay “as is” or could be relegated to a different institution.

both in Urbana-Champaign and in Chicago) to serve as science advisors and on the board of directors. Thus, University of Chicago's retention of its management role would mean huge benefits for other Chicago-area universities and businesses, and thus research opportunities and potential commercial applications. As an August 1, 2006 article announcing the University's win stated, "Now that management issues are settled, [director Robert] Rosner said that Argonne looks forward to pushing research initiatives on several fronts. A high priority is research into alternatives to fossil fuels, including plug-in hybrid automobiles, new kinds of batteries, biofuels and nuclear powers, Rosner said."⁶⁰

In each of these articles, science and technology, though they are not the main focuses, still appear and play important roles in the stories being told. The same is true for the next set of articles, which report on University of Chicago's efforts to retain management of Argonne, as well as its sister laboratory in Idaho, Argonne West.

Project Acquisition/Funding: One of the major stories to involve Argonne in the last few years is its bid for, and later acquisition of, a government-funded project called the Rare Isotope Accelerator (RIA). This is a unique project in and of itself, from a journalistic standpoint, because a story about the RIA could focus on a variety of themes. One of the earliest articles announcing the project required technology reporter Jon Van to don several hats: that of a technology reporter, a business-section contributor, and a science-enthusiast.⁶¹ He opens his article, "Isotopes, unstable atomic forms that are of interest primarily to scientists and crossword puzzle enthusiasts, are, of late, catching the attention of politicians from Illinois and Michigan." As the article continues, he explains how "there are 92 stable elements and about 7,000 isotopes – which are variations of these elements. For any given element, there is a narrow range of stable ratios of protons to neutrons that can occur in its nucleus." Several paragraphs in the story further explain what isotopes are and why they are important. With this information alone, one might assume that this was a science article, appearing in the main section and focused mostly on educating the public on elements and their isotopes. However, in actuality this information only supplements the more principal themes of the

⁶⁰ Jon Van, "U. of C. retains Argonne control: Contract to run 5 years, or up to 20," *Chicago Tribune*, August 1, 2006.

⁶¹ Jon Van, "Chicago Laboratory Vies for Federal Isotope Lab," *Chicago Tribune*, October 31, 2004.

article: potential applications and products, administrative politics and local economics. Van explicitly lays out which Illinois politicians favor the \$1 billion project and why the project is even important. As Van writes, “The project is still in its early stages, but some speculate the project could create a few hundred jobs for scientists and a few hundred more for support staff. Apart from the economic jolt the project promises, the RIA research is expected to deliver new technology to advance medicine and industry. It should also be valuable for homeland security, helping to track the origin of nuclear weapons.”⁶² Here in a nutshell are the news values lauded by *Tribune* technology reporters. The billion-dollar contract would obviously boost the local economy, and the jobs created wouldn’t hurt either. The lab lies just outside Chicago, and a Chicago University operates it. Though readers might not personally interact with the RIA, it has “obvious” implications for our medical and national security needs – areas of great concern for many Americans. Subsequent articles, published as the bidding war continued, highlight each of these different themes individually, but the economic relevance – both the dollar amount of the bid and the deliverables expected from the project – remains a constant throughout each article. Science reporters did not cover the RIA acquisition process, though clearly there was enough scientific information available around which to base an article. Was this because that scientific information was not “new” knowledge? Or was it because the business side of the story – dollars, administration and “bidding” – was more compelling or interesting than the science? According to Van, the reason he wrote the story is far simpler. “I wrote it because I know about it. [There isn’t] some kind of organizational chart that says I can’t do this or that because I don’t have ‘this’ title. When you’re a reporter, you’re a reporter.”⁶³ Van’s perspective indicates that the trends and commonalities in the ways reporters on specific beats cover their stories are learned behaviors, rather than institutionally mandated practices. Thus, science and technology coverage, and likely other beats in the newspaper, is a direct result of reporters’ interests, experiences and instincts.⁶⁴ Van’s

⁶² *Ibid.*

⁶³ Jon Van, phone conversation with author, March 7, 2007.

⁶⁴ This likely corresponds to earlier observations that science and technology reporters rarely fight over who should cover a certain story, and why subjects and institutions, like Argonne, can be written about by reporters on different beats. If each reporter has his own interests and perspectives, then stories will

earlier post at the *Tribune* was as a science reporter, so he has a great deal of familiarity with scientific concepts. That familiarity seems to have coupled with his years in the business section, addressing the specific needs of his audience and adapting his reporting to fit his new beat's definition of newsworthiness. As Van's colleague has said, "Jon has used his science background to his advantage."⁶⁵ Just because Van is a technology reporter doesn't mean he can't include science in his articles; in fact, his perspective gives him a unique voice at the newspaper. But the culture in which he currently works – the business section – seems to unconsciously mandate that certain information, like funding for example, make its way into the articles. And as the next section indicates, a similar phenomenon occurs in science coverage.

Research-focused Articles on Argonne

The final, and largest, category of Argonne articles is the research that the lab executes. As I pointed out in Part IV of this monograph, while both science and technology reporters cover research, they claim to have different objectives in mind; science reporters cover research because it is new or just plain interesting, and technology reporters cover research when it leads to a usable product or has economic relevance. In the case of these eight articles, that distinction seems to hold up.

In the following graph, I have further broken down the research category used above into three categories: "pure science," products and trends. The two articles in the "pure science" category turned out to be authored by science reporters. My categorization of them apart from the technology reporters' articles was not intentional, yet there were fundamental differences in their approaches to reporting that could not be overlooked. Let us first continue with our focus on technology, examining articles written about products and trends in Argonne's research. Then, we will compare these articles with the science articles in order to fully illustrate the differences between the two beats and, thus, gain a better conceptualization of technology itself at the *Tribune*.

naturally be different from person to person. And since there are no "rules" at the *Tribune* over who can and can't cover a story, territory battles are averted.

⁶⁵ Eric Benderoff, phone conversation with author, March 6, 2007.

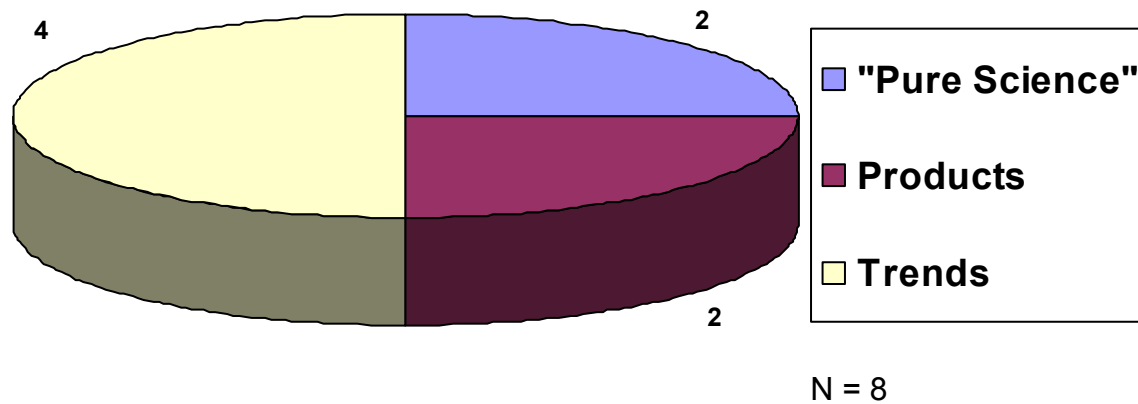


Figure 2: Content Breakdown of Science-Themed Argonne Articles

Products and Trends: As both technology reporters indicated to me, trend stories – articles that discuss a broad change occurring either across a specific field or discipline or within the general public – are attractive and interesting stories to print in the paper, because they connect readers not only to specific events or product developments, but to a broader idea as well. In the example of Argonne National Laboratory, locating its research within a broader national or international trend lends relevance and importance to Argonne’s work, while potentially strengthening positive public opinion about the lab. How excited might Chicagoans feel, for example, when they learn that the ethanol-related fermentation research, undertaken at Argonne in 2004, might “spark an economic boom in the Midwest” and allow our regional companies to “compete with the dominant oil industry”?⁶⁶ Or that the federal funds awarded to Argonne for anti-terrorism chemical studies could not only save them from “anthrax, plague and other nasty agents” but would also “boost the region’s biotech industry, which

⁶⁶ Jon Van, “Scientists promote Use of Biotechnology at Chicago Forum,” *Chicago Tribune*, October 16, 2004.

is struggling for the prominence enjoyed by established biotech centers on the East and West Coasts”?”⁶⁷ Trend stories like these are not only interesting, but again and again they prove their relevance to readers, whether because of their connection to current hot-topics and local industry, but also because they never fail to express what new products might come out of this research. Even articles on technologies as abstract as nanotechnology mention the potential applications of the research, if only in a vague, noncommittal sense.

Currently available products also make frequent appearances in Argonne-related technology articles in the *Tribune*, which at this point should come as no surprise to any of us. Some products or applications appeal to local residents, while others have a more distant use. For example, a 2004 article described a new chemical spray, similar to concrete, which Argonne developed for use in developing countries. The spray they call Grancrete reinforces and strengthens homes originally made from thatching or tin, thus drastically increasing the house’s durability and market value. The product, along with a few other Chicago-based products, received an R&D 100 award from *R&D Magazine*, indicating the importance of this material. Closer to home, another Argonne-related product proved itself a valuable resource for Chicago jetsetters. The lab developed a diet plan specifically to curb the negative effects of jet lag and paired with a local company to put the diet online for anyone to access.⁶⁸ Chicago boasts two major airports and is a major tourist destination, so this topic has clear, if specialized, relevance to the economies of the area. Add to that the fact that a slew of Chicago business people travel regularly as part of their careers, and the reasons for printing this story in the business section become obvious.

These articles, and the fliers’ diet in particular, serve as perfect examples of instances where research and technology’s audience is the same as business’ audience, and thus strengthens the case for situating technology articles within the business section. Now let us do a direct comparison of technology and science articles to strengthen our understanding of the difference between these two beats.

⁶⁷ Jon Van, “Terrorism Fears Fuel Funding for Midwestern Biotech Companies,” *Chicago Tribune*, March 24, 2004.

⁶⁸ Visit the site at <http://www.antijetlagdiet.com>.

“Pure Research” versus Applicability: Below is an excerpt from the anti-terrorism article mentioned earlier, which was authored by a technology reporter and published in the business section of the newspaper:

Federal authorities want new products to detect deadly pathogens. But equally important, the *products need* to quickly analyze the pathogens to determine if – and how – they were genetically manipulated to resist available treatments.

This is a new research focus but its *value* goes beyond potential bioterror attacks, researchers say. Because viruses and bacteria evolve naturally, many infectious diseases once regarded as under control are re-emerging as significant health threats.

They have evolved to resist penicillin, erythromycin and other antibiotics that once easily annihilated bacteria.

Drug-resistant TB, staphylococcus and sexually transmitted diseases are already spreading without the aid of human terrorists.

‘The issue of antibiotic resistance is a formidable *problem*,’ said Johnson. ‘My hope is that bioterrorism will turn out to be the lesser issue.’

Nearly 20 Midwestern academic institutions have joined together to form the Great Lakes Research Center of Excellence. The organization, which won the \$43.5 million grant, serves as a *platform that enables scientists to attract millions more in funding* to study infectious disease, Rosenberg said. ...

Nanosphere Inc, based in Northbrook [Ill.] hopes to research a product related to the SARS virus, [Vijaya Vasista] said, and if it does, having a safe laboratory nearby would help. Building and staffing a lab where dangerous agents can be studied is beyond the reach of small firms like Nanosphere, she said.

‘Having access to a lab like that really *bolsters our ability to do work*,’ said Vasista.⁶⁹

If we compare that excerpt with one from a science article, very different kinds of information, and an entirely different tone, emerges:

⁶⁹ Jon Van, “Terrorism Fears Fuel Funding for Midwestern Biotech Companies,” *Chicago Tribune*, March 24, 2004. Emphasis mine.

Field Museum zoologist Mark Westneat often compares his current research with the science he practiced as a boy: frying ants with focused sunlight from a magnifying glass.

Only now, Westneat and his colleagues are bombarding insects with radiation one billion times more intense than a medical X-ray, using a \$500 million particle accelerator at Argonne National Laboratory near Lemont. And these bugs revealed something *interesting* before they died for science – the *discovery* that many insects breathe by flexing their windpipes, similar to how we use lungs.

Believe it or not, scientists hadn't known that – most thought that oxygen simply filtered into an insect's body from the outside with only some active pumping.

As remarkable as what the team found is the method they used – few others had tried putting a living animal under the light of Argonne's Advanced Photon Source, one of the world's most powerful X-ray facilities. Experts said Westneat's report, published Friday in the journal *Science*, shows how scientific advances often arise from *idle tinkering for the sake of pure curiosity*. ...

Now other researchers are lining up to use the Argonne beam to study insect movements, which experts say could lead to new designs for robots or medical devices.

That's far more than Argonne physicists had in mind two years ago when they were trying to think of new uses for the X-ray facility. Since the facility opened in 1995, the beam had been used by pharmaceutical companies to reveal the molecular structure of proteins and by auto designers to glimpse the spray within fuel injectors – but rarely to see how an animal moves.

Then one Friday night, Argonne physicist Wah-Keat Lee and his assistant had a *wild idea*: *What if we put an ant in that thing?* ...

Robert Full, a professor of integrative biology at Berkeley, said the Argonne study has made him consider using the facility's powerful X-rays to examine the movement of insect legs.⁷⁰

⁷⁰ Jeremy Manier, "Argonne video turns ant into a science celebrity," *Chicago Tribune*, January 24, 2003. Emphasis mine.

Though, as we see, this second article focuses more on the “wow” factor of science research, still a few similarities exist between the science article and the earlier technology piece. Both articles reference the monetary value of the equipment or initiative discussed. Both allude to other businesses and institutions that plan to partner with Argonne to complete further research. And, both articles explain scientific concepts related to the research underway. Yet, even with these similarities, the articles remain clearly distinct, especially in the words and phrases emphasized. The first article discusses problems that need solutions, products that must have certain specific characteristics and the relative value of the research being done. The story also speaks to future initiatives and partnerships that could result from the boost in funding (which would likely make Chicago financial experts green with anticipation). Even the article’s vocabulary carries loaded meaning suggestive of the corporate world: need, enable, attract, win, bolster.

On the other hand, the science article carries dramatically different information. Highly anecdotal, the article presents new research findings as a fun experiment akin to childhood adventures that led to an exciting discovery. There is almost no mention of why this study was necessary, or what relevance or impact it might have for non-scientist readers. Instead, the story comes across as a whimsical tale about the astonishments of science; words like interesting, remarkable, pure curiosity and the ever-evocative “What if?” capture the imagination and communicate the sheer wonder that is scientific discovery.

In direct comparison, one might call the information presented in the technology article “useful” or “applicable,” whereas the information presented in the second article could be considered “weird” or “cool.” Is the science article more “intrinsically interesting,” as science reporters claim their beat is? Maybe; it depends on one’s perspective. But that is certainly how the author has presented this story.

* * *

The technology articles discussed in this section illustrate the news values inherent in the *Chicago Tribune*’s technology beat, discussed in Part V: economics, locality, personal use and major trends. Technology, on the newspaper’s terms, is

tangible and usable and carries direct relevance to administrative and economic concerns. Through these articles, one can gain a better sense of science and technology coverage in professional execution, where technology is an entity “in the realm of commerce” and science is “intrinsically interesting.”

Additionally, by comparing a technology article and a science article side by side, the relative conceptualizations of how science and technology differ become more apparent. As one *Tribune* reporter commented to me, “[Science and technology] are two sides of the same coin.” The beats, though they have areas of convergence, can present information rather dissimilarly, further illustrating the stark boundaries between the two subject areas that reporters adamantly described in Part IV.

Hence, it has become clear that technology at the *Tribune* can encompass a variety of topics, presented with a variety of perspectives, but that there still remain fundamental differences that keep technology its own entity separate from sister-topics, such as science. Recognizing these intricacies means a new avenue for media studies scholars interested in science and technology reporting, as well as STS scholars who hope to further explore the science-technology relationship.

Part VII: Conclusion

This research has illustrated the ways in which reporters at the *Chicago Tribune* characterize science and technology in their newspaper pages. From their perspective, science is a subject of new discoveries, pure knowledge and “intrinsically interesting” findings. Technology, on the other hand, concerns the *application* of that knowledge, often relating to economics, the local community or reader needs. Interestingly, though these beats have different values and emphasize different qualities over others, they sometimes cover the same subject, as in the case of Argonne National Laboratory. The technology beat, as I mentioned, is primarily located within the business section, implying that commercialization is a major tenet to technology reporting, and indeed the writers support and agree with this inference. The inclusion of Argonne in the technology reporters’ repertoire, however, indicates that the technology beat is more complex than that; any kind of application, be it commercial or otherwise, falls under the jurisdiction of the technology reporters.

Thus, we have returned to the dominant model of technology as “applied science” – the very conceptualization that Edwin Layton rejected over thirty years ago. The journey that STS scholars have made toward a more expansive view of technology seems not to have made it into the professional world of journalism, where the dominant model endures. The research indicates, then that a disconnect exists between STS scholarship and the journalism field – at least where the *Chicago Tribune* is concerned. This kind of divide is not specific to the field of STS; numerous distinct disciplines complain of a difficulty connecting scholarly work to lay publics.⁷¹ But such disconnections do not result from a simple lack of “education” of the lay public by scholars, nor can the solution be a simple matter of increased communication between parties. Rather, the objectives of science and technology journalists and the objectives of academic

⁷¹ As a brief list of examples, see James M. Donovan and H. Edwin Anderson, *Anthropology and Law* (New York and Oxford: Berghahn Books, 2003): 84-85; Stephen G. Morris, “The Fundamentalist Attack on Science: A Problem That Won’t Just Disappear,” *Executive Summary Information and Society Working Group*, Annenberg, <http://assets.wharton.upenn.edu/~faulhabe/annbrg.pdf>; Michael C. Dorf, “Thanks to a Joint Statement by Top Law Journals, Law Review Articles Will Get Shorter, But Will They Get Better?” *FindLaw* (2005), <http://writ.news.findlaw.com/dorf/20050228.html>; and Sanford Lakoff, “The Disconnect Between Scientists and the Public,” *The Chronicle Review* (2005), <http://chronicle.com/weekly/v51/i35/35b01801.htm>.

scholarship in STS are merely different. One article described this bifurcation perfectly when discussing the differing objectives of legal scholars and attorneys. “The disconnect between academics and practitioners arises from their increasingly divergent missions,” the article stated:

Freed from the burden of deciding numerous concrete cases, legal academics could engage with questions of legal doctrine on a larger scale than judges, but, in their view, the questions they addressed were not qualitatively distinct. Judges and professors alike asked: How best should cases be decided?⁷²

In other words, legal scholars and professionals by definition have very different occupational objectives, yet at their most fundamental both vocations deal with the same issues and ask the same questions – just in different ways.

In a similar fashion, STS scholars ask the same questions as science and technology journalists: what is new in science and technology, and how does it affect our lives? How do we interact – personally and culturally – with science and technology, and where can we go from there? However, each vocation answers these questions in unique ways and to unique purposes; that is where the disconnect originates. One could almost say that journalists see their role chiefly as reporting on how the world *is*, whereas scholarship often includes, or at least alludes to, a judgment of how the world *should* be. In the case of a major industrial disaster, such as the Chernobyl accident, for example, journalists would report on the circumstances surrounding the accident, investigate the causes, interrogate business and government leaders on how future disasters will be prevented, and perhaps assess and editorialize the pros and cons of having a facility of this type in their area. STS scholars, on the other hand, would go a step further, analyzing power structures within the plant, assessing its internal culture and external pressures. They might investigate whether plant managers came to normalize deviations from safety protocols, and how that normalization compares to other similar disasters. Scholars might even return to the accident years later to gauge its effect on energy policy or public perceptions of industry. In short, though both journalists and scholars would

⁷² Sanford Lakoff, “The Disconnect Between Scientists and the Public,” *The Chronicle Review* (2005), <http://chronicle.com/weekly/v51/i35/35b01801.htm>.

strive to understand the disaster, journalists would employ a narrower, finite focus, whereas scholars would search for broader trends and lessons to be gleaned from the incident. In effect, a significant part of STS scholarship remains today, to use the above author's words, external to professional aims and absent from public consumption.

Where Do We Go From Here?

Remaining “external” to the subjects they study is not the fate most academics in STS would prefer for their scholarship. Thus, the task at hand is to figure out how best to integrate the sophisticated discourse in Science and Technology Studies with the disciplinary cultures of science and technology journalists.

Scholars might be tempted to suggest a complete overhaul of the journalistic beat system, in favor of a new, more holistic kind of newspaper free from the imaginary boundary lines of separate beats and separate sections. Intriguing as this scenario might be, it is not feasible in the practical world of print journalism; if the *Tribune* were to adopt a different definition and conceptualization of technology, then the entire beat would have to change its focus—as would nearly every single beat around it. For example, if the *Tribune* defined technology as “humanity at work” as Pitt suggests, then where would the stories appear? The lifestyle section? The main section? What kinds of articles would these be, and what ramifications would this change carry? Pitt, after all, claims that we can think of the Supreme Court as a technology, which, in the context of the *Tribune*, would have implications for national news and political reporters. If editors defined technology as “society made durable,” in Latour's words, then, again, what precise subject matter are we about? Technology reporters could write about anything with a physical manifestation that affects our social behavior or reflects social needs and values. Liberating though it might sound, if that system were in place, almost anyone at the paper could be considered a technology reporter. Thus, too broad a definition essentially becomes no definition at all, and in an institution like the *Tribune*, precision is vital. Lines between beats have to be drawn somewhere, even if it seems there might be some grey area still left. If we were to change the current structure of the science and technology beats and implement a new structure and way of conceptualizing these topics,

we would, in effect, simply be replacing one model with another, and hence replacing one set of inaccuracies and problem areas for a new, and not necessarily better, set.

Similarly, we should not resign ourselves to accept the current model as it is. After all, some innovations – like the space shuttle, nanotubes or even animal breeding methods – aren't necessarily commercial or marketable products, yet they are considered technologies under definitions other than that of *Tribune* reporters. This inconsistency is potentially problematic for the general public's understanding of science and technology, since, as many media scholars and journalists allege, newspapers influence their readers and can act as “change agents” for their communities.⁷³ STS scholarship could be effective in instances such as these by encouraging reporters to imagine new ways to think – and write! – about their subject matter. Journalists at the *Tribune* are not locked into writing for only one section at all times, and beats do sometimes cross newspaper section boundaries.⁷⁴ Playing up this flexibility and adding a new consciousness about some of STS' favorite topics, such as the ramifications of certain technologies for a community, risk analysis studies, gender and minority issues in science and technology, science policy, etc., would further broaden the scope of science and technology reporting and infuse some contemporary scholarship into the working world.

What value could STS add to a newspaper like the *Chicago Tribune*? In the broadest sense, the STS perspective would make visible the hidden aspects of science and technology. Topics such as risk analysis, semantics, history of science and technology, the relative nature of facts, and other themes are relevant and important for readers to explore, but might not normally be covered by reporters because of their lack of experience or familiarity with these concepts. How do power structures in Argonne National Laboratory, for example, affect the kinds of research projects undertaken, or decide who acts as the lead investigator on the study? These questions might not occur to a reporter without an STS background, but could prove essential to local researchers, minority rights activists, politicians and Argonne employees. Broader trends could also be illuminated in greater detail. In the past few years, concerns have arisen about the

⁷³ See for example Aurora Wallace, *Newspapers and the Making of Modern America: A History* (Westport, CT: Greenwood Press, 2005): 1.

⁷⁴ Science reporter Jeremy Manier has had stories appear not only in the main section of the *Tribune*, but also in the Tempo, Lifestyles, and even the Sports sections.

apparent lag in science and technology degrees awarded to American students compared to other nations; are there fundamental problems with science-based education in our colleges, or misconceptions about technology and the people who create it? STS-educated individuals are primed to answer these questions. Pairing these kinds of articles with the exceptional critical reporting already underway could dramatically enhance the way we all approach scientific and technological news.

There are a few ways to accomplish interplay between modern journalism and academic scholarship. The first is simply to invite journalists to learn about STS from the scholars themselves. Massachusetts Institute of Technology (MIT), for example, invites American and international science journalists to study in the university's STS department for one year, through its Knight Science Journalism Fellows project.⁷⁵ The program, in its 25th year at MIT, has counterparts at Stanford University and the University of Michigan, and similar programs are available elsewhere.⁷⁶

Secondly, STS practitioners should enter the world of journalism through profession-diverse organizations like the American Association for the Advancement of Science (AAAS) and more specific groups like the National Association of Science Writers (NASW). The latter is a particularly good arena in which to infuse STS-type scholarship, as it seems to recognize the importance of a critical eye toward science and technology; each year, the organization presents five Science in Society Journalism Awards, "for investigative or interpretive reporting about the sciences and their impact for good and bad, especially the kind of critical, probing work that would not receive an award from an interest group," one award each for newspaper, magazine, broadcast, book, and Web categories.⁷⁷ In addition, NASW offers a plethora of workshops and in-house publications in which STS scholars could participate. By participating with one another, scholars and journalists can learn how best to integrate the strengths of each discipline.

⁷⁵ Massachusetts Institute of Technology Knight Science Journalism Fellowships Program, <http://web.mit.edu/knight-science/index.html> (accessed March 14, 2007).

⁷⁶ The Knight foundation's efforts to gauge the relative success of these programs consists mostly of a database cataloging the careers of its former participants; a scholarly examination of the program and its results would likely prove a useful resource as we continue to explore this topic area.

⁷⁷ National Association of Science Writers. "Awards." <Http://www.nasw.org/awards/index.htm>. National Association of Science Writers (accessed March 12, 2007).

The solution cannot be to educate these “simple-minded” journalists about their unsophisticated perspectives on science and technology; a program of that nature will never succeed. Rather, if STS academics are so concerned with the public understanding of science and technology (and research trends show that, indeed, they are), then scholars need to be on the front lines with the journalists whose work reaches the lay public more easily. Thus, there is an easy way for STS scholars to transmit their perspective to journalists and, consequently, the public: write it themselves. The unfortunate reality of academia as a profession is that one’s career depends on publication, and academic journals carry far more weight than the general press, and thus scholars tend to focus their literary efforts on the former. But, as I have previously noted, talking only within one’s profession limits the ability of a field to effect change in the general society. If STS scholars want their theories and perspectives to be represented in the press, and thus, among the general public, there can be no better solution than getting involved directly, whether through submitting editorials or writing articles periodically.⁷⁸ My research is not the first to make this kind of recommendation for STS scholars. Wiebe E Bijker proposed a similar scenario in a 2001 address at the annual meeting of the Society for the Social Studies of Science. There, he insisted that STS academics become “public intellectuals” by involving themselves in the politics of our technological culture. As Bijker put it, “It is only one step to observe that we live in a technological culture. I am arguing that STS needs to make a further step and actively contribute to democratizing this technological culture,” and thus act as “knowledgeable guides and members of civic society.”⁷⁹

Readers – and journalists – would benefit from the diversified, critical viewpoint that STS offers, and STS researchers can offer the best interpretation of their discipline’s perspective. But the reverse is also true. Journalists must be willing to challenge STS modes of thinking on these same topics and challenge the assumptions and the conclusions of the field. As this thesis has demonstrated, journalists, at least at the

⁷⁸ Benjamin Sovacool, a recent graduate of the Science and Technology Studies program at Virginia Polytechnic Institute and State University, serves as an excellent example of this type of activity. From 2004 to mid-2006, Sovacool wrote 13 pieces for various local papers on energy policy. Upon graduating, he obtained a related position at Oak Ridge National Laboratory.

⁷⁹ Wiebe E. Bijker, “The Need for Public Intellectuals: A Space for STS,” *Science, Technology & Human Values* 28 (2004): 444-446.

Tribune, have a very distinct conceptualization of science and technology that makes sense for the kind of business environment within which they operate. To integrate that perspective into the STS discourse would challenge and invigorate the scholarship in a way that has perhaps been lacking in recent years.

* * *

STS offers a valuable and important perspective – but it does no good to keep that perspective out of public reach. Nor should we assume that STS perspectives, definitions and dichotomies are the absolute, be-all-end-all way to think about science and technology. As this research has shown, other conceptualizations of these subjects exist, with their own inherent advantages and disadvantages.

It would be unfair to say that there is a “problem” with today’s science and technology journalism; in truth, after reading extensive articles and speaking with the writers themselves, I am impressed with the kind of critical eye and playful prose that reporters apply to their subject matter. But the prospect of heightening that eye and expanding that prose through increased journalism-STS cooperation is too exciting to ignore. After all, just because it ain’t broke doesn’t mean we can’t make it better.

Appendix A: Sample Interview Questions

Below is a sample list of questions I asked the *Chicago Tribune* journalists in relative order. Because my interviews were much more akin to conversations than question-and-answer sessions, certain questions popped up in my discussions with some reporters and not with others. Thus, this list is neither exact nor exhaustive. (In questions where “science/technology” appears, I used the word “science” with the science reporters and “technology” for technology reporters.)

1. To start off with, can you tell me about your educational background?
2. What is your current position at the *Chicago Tribune*?
3. Tell me about the kinds of assignments you’ve had before obtaining this position.
4. What is it about a certain topic or story that makes you want to write about it?
What are the qualities of a good technology article?
5. Tell me about some of your favorite or most memorable articles you wrote as a science/technology reporter for this publication.
6. In what section do your articles typically appear?
7. Do you think an education in a science/technology-related field is important in your job?
8. Why do technology reporters at this publication report to the business editor (if applicable)? Has this always been the case?
9. What kinds of science/technology do you and your colleagues typically cover?
Any science/technology you don’t cover?
10. Have there ever been instances where both science and technology reporters have wanted to cover the same story? Has it ever caused a conflict?
11. How would you define “science” and “technology”? Can you give me examples of these two terms?

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Appendix C: Vita

Allison M. Martin

1651 Hampshire Drive Elk Grove Village, IL 60007

(847) 691-2366

allison_meredith2004@yahoo.com

OBJECTIVE:

To obtain an education or community relations position in a science museum or similar facility.

EDUCATION:

M.S. in Science and Technology Studies, Virginia Polytechnic Institute and State University, Blacksburg, VA, 2007

History of Science and Technology Concentration

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

B.A. in Journalism, Butler University, Indianapolis, IN, 2004

Cum Laude with High Honors

Secondary Major in Spanish; minor in Science, Technology and Society

Thesis: *The NASA Challenger and Columbia Accidents: A Crisis Communication and Public Relations Analysis*

LANGUAGES:

Proficient in Spanish.

PROFESSIONAL EXPERIENCE:

Virginia Polytechnic Institute and State University, Blacksburg, VA (August 2005 to present)

Teaching Assistant

- Assist in classroom discussion and lectures; tutor and provide writing help; grade papers; conduct research; and edit articles and books for publication.

Scanlon Corporate Communications, Chicago, IL (June 2004 to July 2005)

Assistant Account Executive

- Managed public relations accounts in a variety of industries, executing client interaction and campaign design; wrote press releases and other marketing materials; and pitched to media.

NASA Ames Research Center, Moffett Field, CA (June to August 2003)

Public Affairs Intern

- Wrote feature stories for employee newsletter; initiated an inter-agency press release and Web portal; developed Web site material; arranged and escorted tours; and attended to media visitors.

Holcomb Observatory: Butler University, Indianapolis, IN (January 2002 to May 2004)

Tour Guide

- Orchestrated weekly planetarium shows and telescope viewings to audiences of all ages and interests; designed informational lobby display posters; and provided administrative assistance when necessary.

- Finalist for Campus Employee of the Year, 2003.

The Butler Collegian: Butler University, Indianapolis, IN (Fall 2002 to May 2004)

Opinion Editor, Head Copy Editor, Copy Editor

- Managed the opinion section; wrote weekly editorials; edited all copy.

- Received third place editorial award, Indiana Society of Professional Journalists.

Admissions Office: Butler University, Indianapolis, IN (January 2002 to May 2004)

Student Ambassador

- Gave weekly campus tours to prospective students and families; appeared on several informational panels; made courtesy calls; processed event surveys; and assisted with office management.

Village of Schaumburg Special Events Office, Schaumburg, IL (May to September 2002)

Special Events Intern

- Provided support to one of Chicagoland's largest summer festivals; designed promotional materials; directly interacted with event planners, sponsors and patrons; managed event hotline and databases.

RESEARCH SKILLS:

Experienced in library and Internet research.

Trained in written survey, focus group and personal interview methodology, as well as SPSS statistical software.

PUBLICATIONS:

Martin, A.M. (2006), *Guinea Pigs, Grounded Pilots: The Thirteen Women Who Wanted to Touch the Stars*. Association for Women in Science Magazine, Vol. 35, Issue 2, Winter 2006.

Martin, A.M. (2005), *An Alternative Outlet: Women Who Blog*, Association for Women in Science Magazine, Vol. 34, Issue 4, Autumn 2005.

Martin, A.M. (2005), *Searching the Skies: Jill Tarter*. Association for Women in Science Magazine, Vol. 34, Issue 2, Spring 2005.

Martin, A.M. (2005), *Science and Technology Studies Proves Intriguing Alternative to Traditional Science Degree*. Association for Women In Science Magazine, Vol. 34, Issue 1, Winter 2005.

PAPERS PRESENTED AT CONFERENCES:

The Museum Laboratory: A Case Study of the Paleo Prep Lab at the Indianapolis Children's Museum. Presented at the Annual Meeting of the Indiana Academy of Social Sciences, Indianapolis, IN, Fall 2004.

The NASA Challenger and Columbia Accidents: A Crisis Communication and Public Relations Analysis. Presented at the Butler University Undergraduate Research Conference, Indianapolis, IN, April 2004.

CURRENT RESEARCH INTERESTS:

History of technology journalism in the United States.

Spaceflight and astronomy history.

The symbiosis of science fact and fiction.

PROFESSIONAL MEMBERSHIPS:

Society for the History of Technology: 2006 – Present

Association for Women in Science: 2001 – Present

- Deputy editor: 2006 – Present
- Writer: 2004 – Present

National Association of Science Writers: 2006 – Present

HONORS AND AWARDS:

Virginia Polytechnic Institute and State University Graduate Teaching Assistantship

National Society of Collegiate Scholars

Alpha Lambda Delta and Phi Eta Sigma Academic Honor Fraternities

Butler University Memorial Scholarship

Butler University Academic Scholarship