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1 What Are the Boundaries, Artifacts, and Identities of Technical Communication?

SUMMARY

Understanding your field and being able to map the territory of its boundaries, artifacts, and identities is one mark of an informed professional and an important indication of expertise in the workplace. There are numerous ways to define the landscape of technical communication, a field that involves practitioners, researchers, and theorists in a broad range of activities. Some efforts to identify the boundaries of the field rely on historical accounts of how it was born and grew into a recognized area of research and practice. Others describe the research base of technical communication, identifying the topics and issues that provide a focus for investigations and studies. And still other efforts identify the general kinds of skills and understandings needed by technical communicators in the workplace. Each of these approaches has its strengths and limitations, and each produces a very different map of the field.

This chapter focuses on text clouds as a way of mapping technical communication and of describing the boundaries, artifacts, and identities that constitute the field. In the following pages, we create text clouds and use them as heuristics to help us discuss the landscape of technical communication.

INTRODUCTION: MAPPING TECHNICAL COMMUNICATION AS A FIELD

In 2006, Amanda Metz Bemer, a student of technical communication at the University of Washington, Seattle, came face to face with an interesting fact about her chosen field: nobody knew what technical communication was. When she talked to her fellow students and friends outside her major, nobody knew what it was that technical communicators really did, nobody knew what research was done in the field, and nobody could imagine what issues interested technical communicators.

Amanda tried to give her friends and family an understanding of the field by listing the classes she had taken: "technical writing, instruction-manual writing, communication theory, usability testing, document design, rhe-

torical theory." But, as Amanda noted, she generally got a "blank look and an 'oh'" for her trouble. So Amanda—asking the question "What the heck is technical communication, anyway?"—wondered if there was a better way to talk about her field than by giving a "laundry list of classes."

After doing her own research on technical communication—the boundaries of the field, its artifacts, and its identities—Amanda learned that the matter was more complex than she had thought. Indeed, no single source she read had been able to identify a definition of the field that was both comprehensive and specific enough to do justice to the field and help others comprehend what went on within its boundaries.

As Amanda herself noted in "Technically, It's All Communication: Defining the Field of Technical Communication," a 2006 article she wrote for *Orange*, there had been no shortage of attempts to define the boundaries, artifacts, and identities of technical communication. However, the success of each of these attempts, she realized, had been necessarily limited, perhaps because a good map had to serve so many audiences (students of technical communication, scholars and practitioners in the field, nonspecialists and members of the public interested in what technical communication is and isn't) and perhaps because the field itself covered so much ground. No one map of the territory that the profession occupies had emerged as fully capable of representing so much ground in a concise and understandable way to so many audiences. This is not a flaw of maps as descriptive tools but, rather, a function of their inevitable biases and perspectives. All maps, including the text clouds in this chapter, highlight certain things and not others, depending on the interests and goals of the mapmakers.

The same problem that Amanda identified is shared by many others who study and practice technical communication (Jones 1995), and who argue for the significant benefits of defining the field more clearly. In the following sections, we'll look at the three primary approaches to mapping the field with words, and then outline a fourth approach—text clouds—that may offer a useful way of responding to Amanda's question, "What is technical communication anyway?" which, for the purposes of this chapter, we will restate as "What are the boundaries, artifacts, and identities of technical communication?"

The chapter begins with a literature review that describes what scholars and practitioners have already done to define technical communication with words: looking at the history of the field, defining its objects of research, and identifying the skills and understandings that practitioners need to demonstrate. The chapter then looks at text clouds as a heuristic for mapping the field, one that takes advantage of both words *and* visual information. Finally, the chapter provides an extended example that shows how text clouds might help students like Amanda make sense of technical communication as a field, one that is both complex in scope and dynamic in its practices. Every approach to mapping technical communication, however, has its strengths and weaknesses. As Carolyn Rude (2009, 178) notes, any map of such a large and diverse field is bound to be inherently biased because "some meanings and practices are chosen for emphasis and others are excluded or repressed." This caveat stands true, as well, for text clouds.

LITERATURE REVIEW: MAPPING THE FIELD OF TECHNICAL COMMUNICATION WITH WORDS

Previous attempts to map the identity of technical communication as a field have generally fallen into three categories: maps that focus on *the history* of technical communication, maps that describe *the research base* of technical communication, and maps that identify *the skills and understandings* needed by technical communicators in the workplace.

HISTORICAL MAPS OF TECHNICAL COMMUNICATION

One way of answering the question, "What are the boundaries, artifacts, and identities of technical communication?" involves tracing the roots of technical communication, creating a map—often in the form of an edited collection of works—that focuses on the historical context of scientific and technical writing and the eventual emergence of the field as we now know it. The strength of historical maps is the careful way in which they capture the social, political, economic, and institutional contexts in which technical communication has been practiced, the motivations and conditions of these practices, the preparation of practitioners, and the various forms and genres that have been developed and deployed by technical communicators. With the information that historical maps of the field provide, we can trace why and how particular genres emerged, learn more about the contributions of individual communicators, and better understand the role that technical communication has played in larger social and cultural movements. These investigations of the past accomplish more than simply providing insights into how the field has changed over the years, as Kynell and Moran (1999) note; they also suggest possible vectors along which the discipline might continue to change in the future.

In *Three Keys to the Past: The History of Technical Communication* (1999), for example, Teresa Kynell and Michael Moran trace the roots of the profession to the work of natural philosophers, scientists, and educators in past centuries. In this important historical collection, Charles Bazerman

writes about the contributions of Joseph Priestley in describing electricity during the seventeenth century; James Zappen explores the science writing and rhetoric of Francis Bacon in the eighteenth century; R. John Brockmann chronicles Oliver Evans's descriptions of mills and steam engines in the pre- and post-Civil War period of the eighteenth and early nineteenth centuries; and Teresa Kynell tells the story of Sada Harbarger's work on promoting technical communication through the Society for the Promotion of Technical Communication in the 1920s.

Despite the many strengths of historical approaches to mapping the field of technical communication, however, histories do have some limitations. As Jo Allen (1999, 227) has pointed out, historical efforts can appear "haphazard": "Should the work focus on the rise of technical communication as a career; as an academic field of inquiry; or as a centuries-old endeavor . . . ? Should the work examine the subjects, the concept, or the writers of technical communication? And which writers should it examine—those who practiced technical communication or those who have studied it?"

Similarly, when historical accounts focus on key figures, they can encourage what R. John Brockmann (1983, 155) calls a "generals-and-kings" understanding that "history consists of the work of the famous and influential." In addition, when historical studies focus on *key moments* of technological innovation (e.g., the invention of the Astrolabe or electricity, the operation of modern mills and steam engines, the publication of the first books on midwifery written by women), they can occasionally encourage disjointed, episodic understandings of technical communication that may, as Jo Allen (1999, 227–228) points out, fail to provide fully situated understandings of how movements develop and are tied to one another.

Those historical accounts that *do* provide a picture of the long sweep of history, moreover, can suffer from limited detail. Frederick O'Hara's "Brief History of Technical Communication," published in 2001, for instance, covers technical communication from the twelfth century to 2005 in four pages. Although short pieces like this one provide valuable thumbnails of broad historical movements, they provide neither the depth of detail nor accurate representations of the many social, cultural, and economic factors that some people might want. If we were to consider this particular brief piece a representative historical map of technical communication, for example, we would only see the largest of landmarks and these only from a distance: the emergence of mathematical writing among the Aztecs, Egyptians, Chinese, and Babylonians; the development of astronomy in the Middle East; the explosion of scientific, medical, and mechanical arts in the Renaissance; the invention of movable type and the growth of

scientific publishing in the fifteenth century; the emergence of scientific journals and patents in the eighteenth century; the introduction of federal research contracts in the nineteenth century; and innovations in military technology and the computer industry during the twentieth century.

Such a map is valuable for the major landmarks and boundaries it can identify within the field of technical communication; at the same time, however, it may provide limited information about the pragmatic concerns that demand the attention of practicing technical communicators.

RESEARCH MAPS OF TECHNICAL COMMUNICATION

A second common approach to mapping the boundaries, artifacts, and identities of technical communication focuses on landmarks identified within scholarly and research studies. These maps focus on investigations of the texts (documentation, online exchanges, reports), textual practices (editing, writing, revising), textual environments (digital spaces, organizations, workplaces), and intellectual approaches (theoretical frames, disciplinary perspectives, research methods) associated with the work of technical communication. The strengths of such research maps is that they direct our attention to the questions that have structured the study of technical communication, the methodologies that investigators have found valuable in exploring these questions, and the information that these investigations have yielded. For students, teachers, and practitioners, research maps trace the field of technical communication as a socially constructed, intellectual endeavor and sometimes offer pragmatic information for practitioners.

Central Works in Technical Communication, edited by Johndan Johnson-Eilola and Stuart Selber (2004), represents an important recent collection that offers a scholarly research map of technical communication. As Johnson-Eilola and Selber acknowledge, their own bounded take on the field is "informed by contemporary social theories" and offers a map focused on the "research and theoretical portions" (xvi) of technical communication's landscape from their position as scholars and faculty members responsible for creating curricula and teaching courses in technical communication that are aimed at preprofessional students. Thus, Johnson-Eilola and Selber note, they exclude "how-to" research projects from this collection in favor of research that is "conceptual in nature" (xvi) and that provides a "way into the scholarly conversation[s]" that constitute the field from an academic perspective. As a result of the boundaries that Johnson-Eilola and Selber set for their project, each of the chapters in the collection is authored by faculty scholars teaching in technical communication programs at colleges and universities around the United States.

The main sections of this germinal and influential collection indicate the topics of concern to the academic research scholars who contributed chapters: philosophies and rhetorical theories of technical communication, issues of ethics and power, examinations of research methods, and pedagogical directions for technical communication programs, to name just a few of these topics.

Although these topics do provide "one map among several" of the field of technical communication, it is a map purposefully influenced by humanistic disciplines (rhetoric, philosophy, ethics) and the social theories that now inform academic studies in composition, history, and English programs. Only six of the collection's thirty-two chapters focus on pragmatic "how-to" concerns of workplace professionals, and all the chapters deal with programs of technical communication based in the United States.

A similar map of technical communication as a field can be found in Tim Peeples's *Professional Writing and Rhetoric: Readings from the Field* (2003), a collection aimed at undergraduate students of technical communication preparing themselves as professional communicators. Peeples's collection, which "aims to be as representative as possible of the issues that define the field" (3), provides a map bounded by three binaries (two terms or topics generally used as polar opposites) that have historically helped structure technical communication: practice versus theory, production versus practice, and school versus work. In describing his collection, the editor notes that these binaries represent misunderstandings of the field and argues for redefinitions of each area that complicate such understandings. Among just a few of the chapter topics represented in this collection are the ethical dimensions of professional writing, the role of professional writers in shaping the social contexts associated with technical communication, and strategies for students who plan to move into the professional ranks of technical communicators.

Because this map of the profession is committed to complicating the three binaries identified above, this list of topics (and the specific articles within each chapter) suggests several key landmarks of technical communication as Peeples perceives the field. First, the collection reveals the belief that workplace practices (writing within organizations and document production) must be placed in conversation with theoretical perspectives that have typically informed academic discussions of technical communication (the social theories that inform participatory design and user-centered communication, rhetorical and ethical theories of communication, and postmodernism) and argues that "theory and practice cannot be separated from one another: good practice requires theoretical knowledge, and good theorizing is not only a practice but also requires a responsiveness to practice" (3). Second, the collection argues, in Peeples's words, that a "focus on the products of writing not only hides the social interaction that is integral to writing," but also distracts from an understanding that writing is a form of "social interaction" or the "means by which we mediate social interaction" (4). Finally, the chapters in this collection are committed to a belief that "rhetorical reasoning" is characteristic of both workplace practitioners and academic scholars of technical communication.

Despite the attempt to establish direct links between academic-based and practitioner-based perspectives on technical communication, however, this collection contains works authored only by academic faculty, rather than by workplace practitioners, and only one work by authors outside the United States (a chapter by Canadian scholars).

Although each of these extensive collections offers a valuable set of contributions to the field of technical communication, one that is especially useful for students of technical communication, as maps of the profession they suffer from being both too large and too small. They are too large, for instance, to provide a map of the profession that can be communicated concisely—in either words or images—to members of the public or nonspecialists. Individuals who hope to make some sense of these maps must read all the chapters within them. And the collections are too small, in that they focus only on works authored by academic scholars and thus necessarily reduce technical communication to a certain kind of theory-and-practice research while providing little how-to research. Even the most extensive collections can contain only a relatively limited and representative number of publications: in the case of *Central Works*, thirty-two pieces were chosen to represent the entire field; in the case of *Professional Writing and Rhetoric*, twenty-five pieces were included. Other studies—which may have gone unnoticed, given the venues in which they were published, the environments within which they were circulated, or the methodologies they deploy—may not be chosen for inclusion in such collections.

SKILLS MAPS OF TECHNICAL COMMUNICATION

A third approach to mapping the field of technical communication attempts to describe the skills and understandings needed by practicing technical communicators in the workplace. The strength of such skills maps is their focus on corporations and public-service organizations as environments for communicative exchange. In response to the dynamic nature of these environments and the changes that shape them, technical communicators are continually required to develop new and different skills—to produce, manipulate, and deploy linguistic and visual elements

in different ways, for different purposes, and for different audiences. Thus, skills maps can be understood as direct reflections of larger social, cultural, economic, and ideological movements that influence technical communication as a field. Because skills maps are predicated on a basic responsiveness to contemporary trends, they also offer a timely description of the boundaries, artifacts, and identities of technical communication.

In 2000, for instance, George Hayhoe, as the editor of *Technical Communication*, a journal aimed primarily at practicing technical communicators, sketched a relatively standard set of job requirements, maintaining that all communicators, regardless of their specific jobs, needed foundational skills in "writing, editing, visual communication, multimedia, document design, audience and task analysis, usability testing of products and documents, and interpersonal communication" (151); a mastery of "one or more subject domains in the sciences, medicine, engineering, or another technical field"; and knowledge of "how to use the software tools required for a specific task" (152).

Other experts, however, have argued that the transition from a manufacturing society to an information culture in the later twentieth century has necessitated a change in the description of technical communicators' jobs. As Johndan Johnson-Eilola noted in 1996, technical communicators are no longer engaged in simply translating technical information for nonspecialist audiences or supporting the product development and manufacturing sectors of corporations; rather, he continues, they are doing what Robert Reich calls "symbolic-analytic work," engaging in the "manipulation and abstraction of information" (Johnson-Eilola 1996, 253). In such environments, Johnson-Eilola continues, technical communicators need the "ability to identify, circulate, abstract, and broker information" (255). In a similar vein, Corey Wick (2000) describes the work of technical communicators as "knowledge management," noting that practitioners have to "grasp the immeasurable complexities of knowledge, language, and communication" (524) and "facilitate cross-functional collaboration" (525), as well as serving as "expert communicators" (526).

Such works, while instructive on a general level, offer relatively abstract maps of technical communication as a field of practice; they do little, for instance, to identify the specific locations of technical communication work within a range of profit and nonprofit workplaces, or to describe the specific documents, texts, objects, or discourses that occupy the attention of technical communicators. Such maps are also *future focused* in that they try to anticipate the skill sets and understandings emerging within a range of workplace contexts, given larger social, cultural, and economic trends. Because of this perspective, they may be most valuable

to academic teachers of technical communication, who need to anticipate such trends so they can shape curricula that will help students prepare themselves to meet the needs of emerging work environments. These maps, however, may be of less pragmatic help to practicing technical communicators who *already* inhabit positions within the field, whose work is shaped by immediate demands of a specific industry, or whose efforts are shaped by the uneven nature of change in the large, varied, and far-reaching field of technical communication.

Finally, skills maps of technical communications are usually formulated in words—as book chapters, journal articles, or magazine features. Audiences must often read these genres from beginning to end in order to apprehend the specific particulars of authors' linear, propositional arguments. Visual maps of the field, in contrast, while not necessarily suited for presenting ideas in linear propositional logic, can present information economically and in ways that readers can apprehend through relatively quick visual examinations, much the same as they do when looking at photographs or graphs.

A HEURISTIC: MAPPING TECHNICAL COMMUNICATION WITH TEXT CLOUDS

So what other types of maps can technical communicators employ to provide a sense of the large, diverse, and dynamic professional field? In recent years, one approach technical communicators have come to rely on when they want to make sense of large amounts of information—especially when dealing with complex ideas and numerous documents and data that change over time—is the use of tag clouds and the related variant of text clouds (Nielson 2007; Rivadeneira et al. 2007), visual representations of words, typically a set of "tags" that describe different pieces of information contained in extensive websites, databases, or blogs. The visual attributes of these words—size, weight, and color, for example—are used to "represent features, such as the frequency of the associated terms" (Rivadeneira et al. 2007, 995). In describing the value of text, information designer Joe Lamantia (2007) notes that text clouds "tweak the eye-brain conduit directly," functioning like "the common executive summary on steroids and acid simultaneously" to help human readers process meaning quickly and economically. Lamantia continues: "Text clouds are meant to facilitate rapid understanding and comprehension of a body of words, links, phrases, etc." Daniel Steinbock (2008), the inventor of TagCrowd (a free text-cloud-generating program) notes that "when we look at a text cloud, we see not only an informative, beautiful image that communicates much in a single glance, we see a whole new perspective

on text." Among other functions of text clouds, Steinbock notes that they provide "topic summaries" of a text, a means of "data mining" a corpus, and a tool for reflection.

Although text clouds and tag clouds have been used for making sense of large data sets, they have not been used as a heuristic for understanding and mapping the field of technical communication. In the section that follows, we demonstrate how to use a text cloud as a heuristic for reflecting on the field of technical communication. This heuristic includes five steps.

CREATING TEXT CLOUDS

The basic process involved in creating a text cloud is represented in figure 1.1. It involves selecting a text or texts that can be used as a data set, and then employing a computer application to create a text-cloud representation of the language in the document(s). While making a simple text cloud is not particularly difficult, however, following a systematic process for focusing, refining, and interpreting a cloud can help create a visualization that is more likely to meet the rhetorical needs of an audience.

Step 1: Identify Focusing Question(s) for the Text Cloud and Its Rhetorical Context

The best place to start when creating a text cloud is to consider the rhetorical purpose, audience, and content for the cloud and the context in which it will be used. To accomplish this step of the process, ask yourself the following questions and make notes on your answers:

- What is the question I want to explore? On what subject do I want to reflect?
- What is the purpose of constructing this text cloud?
- Who is the audience who will read/look at the text cloud?
- What documents will provide the content for the cloud?

The more work you can do at this stage of your process, the more specific you can get about the question that focuses your text cloud and the rhetorical context in which the text cloud will function, the easier it will ultimately be to construct a cloud that provides an effective visual representation.

Step 2: Identify and Refine a Document/Data Set Appropriate to the Rhetorical Context

The next step in the process involves choosing a set of documents that will help you answer your focusing question and accomplish the rhetorical

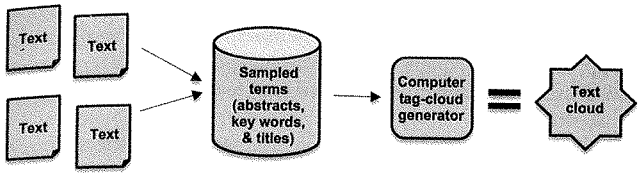

Figure 1.1. Process of creating a text cloud

purpose of your text cloud. To accomplish this step, ask yourself the following questions:

- What kind of documents and what specific documents will provide the best/most appropriate information in terms of my focusing question?
- How many documents do I need in order to accomplish my rhetorical purpose? Are the documents readily available in digital form?
- What parts of the documents contain the content most appropriate to my focusing question?

Some questions and some rhetorical contexts will require larger sets of data than others. For instance, creating a text cloud focused narrowly on one question (e.g., What are the priorities expressed in the language of Corporation X's annual report?) may require only one document as a data set (e.g., the annual report itself), especially if the text cloud is being created for a narrowly focused audience (e.g., the corporation's management) and for a particular rhetorical context (e.g., reflecting on the corporation's priorities as expressed in a draft of the annual report in order to polish the language for the document that gets sent out to shareholders). Other clouds that focus on questions more broadly conceived (e.g., What are the boundaries, artifacts, and identities of technical communication?) and are meant for broader audiences (e.g., students, scholars, practitioners) and contexts (e.g., reflecting on the boundaries, artifacts, and identities of technical communication) may require many more documents (e.g., multiple articles from journals about technical communication).

Step 3: Identify Rules for Structuring Terms and Generate a Text Cloud

Once you have collected the digital documents you are going to use, you can submit them to a computerized cloud generator like TagCrowd, the free online text-cloud generator that we used to create the text clouds in this chapter, or Wordle, another free online text-cloud generator. These

programs create clouds that give greater prominence (represented by the size and/or color of the word, or the number next to the word) to words that appear more frequently in the original source text. Figure 1.2 is a small word cloud (limited to twenty terms) that uses this paragraph as a source text.

Thinking of text clouds as *wholly* determined by computers, however, can mask a number of important issues involved in generating a text cloud and much of the work that must be done to make text clouds useful to a particular audience. To make good use of computerized text-cloud generators, you need to make certain decisions about the rules that structure the terms within the cloud. Often these rules are determined by the text-cloud generator that you use. TagCrowd, for instance, allows you to decide on the size of the cloud you generate (e.g., the maximum number of terms it can include), whether the frequency counts of words should be displayed, whether to group similar words (e.g., *focus*, *focused*, *focusing*), and whether some words should be ignored (for the text cloud in figure 1.2, we directed the program to ignore the articles *a*, *an*, and *the*, as well as the coordinating conjunctions *and*, *but*, *or*, *nor*, *for*, and *yet*,' so that the word cloud would focus on nouns, pronouns, verbs, adverbs, and adjectives, which are more informative in this context).

Depending on the rhetorical context within which a text cloud will be used, creating a *rhetorically useful* cloud may involve additional steps that require manual manipulation of the data either before it is submitted to a text-cloud generator or after the text cloud is generated. To determine these rules, which should always be considered in terms of rhetorical context (e.g., purpose, audience, information, situation), ask yourself the following questions and derive rules from the answers:

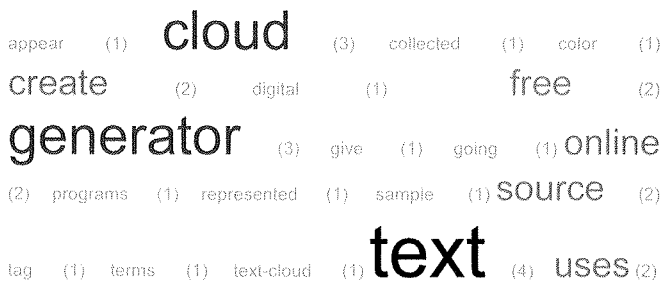

Figure 1.2. Sample text cloud with twenty terms

- Given the rhetorical context in which the text cloud will be used, is it important to include or exclude proper nouns (e.g., Texas, Exxon) or people's names (e.g., Jane Smith, Thomas Wolfe)?
- Given the rhetorical context in which the text cloud will be used, is it important to hyphenate nouns and the words that directly modify these nouns (e.g., analysis-*factor*, tags-*computerized*).
- Given the rhetorical context in which the text cloud will be used, is it important to manipulate word order (identifying subordinate and superordinate, or parent, terms) or to use hyphens to preserve semantic relationships (e.g., text-computer-tagging-of, analysis-corpus, analysis-factor, analysis-textual)?

Step 4: Adjust the Granularity in Text Clouds in Light of Their Rhetorical Context

After you have focused your text cloud and identified its rhetorical context, assembled the digital source documents and submitted them to a computerized text-cloud generator, and determined the rules that will help structure the most useful cloud for a particular rhetorical context, the next step is to determine the optimal size and level of granularity for the text cloud. Often these strategies will need to be applied in combination to create text clouds that are appropriate for a particular rhetorical purpose.

The size of text clouds, for instance, depends to a large extent on the rhetorical purpose for which they are designed and the rhetorical context within which they will be used. In some situations, it may seem impossible to create a text cloud *small enough* to make sense to readers seeking a quick overview and, at the same time, *detailed enough* in terms of granularity to represent all the important information that they need in order to make decisions. In such cases, you can design and compare several text clouds of different sizes (small text clouds with a limited number of terms that are easier to read and larger text clouds that include a larger number of terms but that are harder to read) and compare them in terms of their utility.

Similarly, techniques for structuring the level and granular focus of text clouds—by using brackets to cluster related terms—can also improve their rhetorical value. Text clouds structured almost exclusively by alphabetic order, for instance, provide a reliable way to locate individual words, but they give readers little help in identifying related words (e.g., *woman* and *female*) unless they occur next to each other in alphabetic order or they happen to share a similar root (e.g., *user* and *usability*).

To focus on the size and granularity of text clouds, we can suggest several additional questions to ask.

- Given the rhetorical context in which the text cloud will be used, what is the appropriate level of granularity or detail? Is the text cloud more informative if it is larger and more encompassing or smaller and more focused?
- Given the rhetorical context in which the text cloud will be used, should related terms be grouped within brackets that highlight certain relationships (e.g., is it useful to group terms like *hospital-costs*, *drug-costs*, *salaries-doctors* within a single set of brackets labeled *Health Care Costs*)?

Step 5: Interpret and Compare Text Clouds

Generating text clouds is relatively easy, but *interpreting* them is a more difficult task. To make sense of the text clouds that you create requires active reading and interpretation. The following questions can help in this task. Some of these questions may necessitate creating additional text clouds for purposes of comparison.

- What insights are suggested by the relative frequencies of terms? What are the boundary terms at the low end of frequency, and why might they be mentioned so infrequently? What are the boundary terms at the high end of the frequency scale, and why might they be mentioned so frequently?
- What insights are suggested by the larger clusters of terms? What issues/topics/terms connect these larger clusters? What insights are suggested by smaller clusters of terms? Why might these clusters of terms be significant?
- What patterns and trends emerge from the text cloud? What repetitions and singularities?
- What terms emerge as key for particular users? Do users' interpretations of the text clouds differ, or are they more or less congruent? Why?
- What terms seem to be missing and why?
- When you change the size and the rules that govern a text cloud, what new patterns, trends, repetitions, and frequencies emerge? Why?
- What happens when a time-based series of text clouds is created from comparable data (e.g., text clouds of annual reports over a period of ten years or text clouds of annual reports from every five years)? What patterns, trends, repetitions, and frequencies change? Which remain stable? Why?

AN EXTENDED EXAMPLE: CREATING TEXT CLOUDS

In this section, we create some examples of text clouds that could help Amanda get a fix on the field of technical communication and the boundaries, artifacts, and identities that characterize the profession. It is important to acknowledge at the outset, however, that it is impossible to represent, in any summarized form, the *entire* field of technical communication—to represent all of the technical communicators who are practitioners, all of the different kinds of businesses and organizations that employ technical communicators, all of the genres associated with the academic study of technical communication, all of the different ways of researching technical communication and its effectiveness. Nor is it possible to examine every practice involved in technical communication, every piece of technical communication produced in this country and others, the history of the field, or all of the research investigations that help make up technical communication. It is also true that any map of the field will necessarily be limited to the field as it exists at a specific time and place—it will provide a snapshot of technical communication, rather than a movie. In the final analysis, *all* maps have their biases and shortcomings—but that recognition shouldn't keep us from trying different representations and experimenting with different kinds of text clouds to see how and why they serve our rhetorical purposes.

Step 1: Identify Focusing Question(s) for the Text Cloud and Its Rhetorical Context

To begin answering Amanda's question "What is technical communication anyway?" we rephrased her query more specifically as "What are the boundaries, artifacts, and identities of technical communication?" The next step of our process involves focusing more narrowly on the rhetorical context of the task. For our sample text-cloud exercise, we have identified the following context:

Purpose: To create maps of technical communication that provide informed overviews of the field's work and general understandings of its contours, and that are easily comprehended in terms of visual display and content.

Audience: Students of technical communication, like Amanda Metz Bemer.

Step 2: Identify and Refine a Document/Data Set Appropriate to the Rhetorical Context

Creating any text cloud requires sampling key terms from a document or set of documents. To answer Amanda's question, we have chosen to focus our sample text clouds on the research conducted in technical communication as published in two journals in that field: *IEEE Transactions on Professional Communication* and *Technical Communication Quarterly*. *IEEE Transactions on Professional Communication* focuses on research projects undertaken primarily by workplace practitioners and in workplace contexts. *Technical Communication Quarterly*, in contrast, not only focuses on research about technical communication practices in the workplace, but also features research undertaken by both academic scholars of technical communication and workplace practitioners. Because we want to focus on technical communication *practices* rather than *curricular and classroom issues*, we can eliminate those articles from the two journals that have a curricular or teaching focus.

Both of these journals are accessible in digital format from 1996 to 2006, a ten-year window on the research within the profession and on the practice of technical communication. During this ten-year period, we can identify 168 articles from *IEEE Transactions on Professional Communication* and 116 articles from *Technical Communication Quarterly* as a preliminary data set. However, if we use the entire text of all 284 published articles, the text clouds we generated would be far too large. Fortunately, both journals provide a short list of controlled indexing terms or subject terms for each article as well as a brief abstract and a title. These important elements—the indexing terms, subject terms, abstracts, and the titles for all 284 articles—provide a smaller and more manageable data set for text clouds designed to explore the boundaries, artifacts, and identities of technical communication, and to address Amanda's original question about the field of technical communication.

Step 3: Identify Rules for Structuring Terms and Generate a Text Cloud

The next step in creating a useful text cloud involves using an online cloud-generating program to process the data set, or source text(s), and turn it into a text cloud. Even though we have reduced the size of our data set, it still needs to be structured in ways that make it useful before we employ a cloud-generating program. In particular, we need to "clean" the source text to eliminate words that don't help us accomplish Amanda's task of exploring the boundaries, artifacts, and identities of technical communication.

For this purpose, we used the following rules to focus and structure our combined source text:

- Keep nouns and noun phrases (e.g., text, tagging, analysis), but eliminate most other parts of speech (e.g., verbs, pronouns, conjunctions) that are likely to provide less information about the boundaries, artifacts, and identities that characterize technical communication.
- Exclude proper names of people (e.g., the names of authors, the names included in textual citations).
- Include words that directly modify nouns (e.g., *factor* analysis, *computer* tagging) to provide additional context for understanding.
- Manipulate word order (identifying subordinate and superordinate, or parent, terms) and use hyphens to preserve semantic relationships.

Once we apply these rules to our source text, we can then submit it to TagCrowd to generate a text cloud that will address Amanda's original question about the field of technical communication.

Step 4: Adjust the Granularity in Text Clouds in Light of Their Rhetorical Context

The text cloud that TagCrowd generates from our focused source text is still too large and unwieldy, containing approximately 2,240 terms. This enormous text cloud is almost impossible to make sense of and will not help us address Amanda's question by providing an *economical* visual overview of the field of technical communication, in reflecting on the field, or in constructing a collective social sense of the boundaries, artifacts, and identities of the profession. Figure 1.3 shows a very small piece of this larger cloud, focused on terms associated with the word *language*.

This portion of the text cloud, containing twenty-eight different terms, may still be too detailed to provide the kind of economical overview of the patterns and trends of *language* use in technical communication that

language (3) language-biomedicine (1) language-boring (1) language-challenges (1) language-disorders (1) language-documentation (2) language-impact (1) language-impaired-people (1) language-impaired-users (1) language-intensity (1) language-markup-extensible (2) language-markup-hypermedia (1) language-needs (1) language-proficiency-English (1) language-restricted (1) language-skills-teaching-course-English (1) language-skills (1) language-support-tool (1) language-theory (1) language-translation (5) language-universal (1) language-usage-contemporary (1) language-use (2) languages-local (1) languages-natural (4) languages-object-oriented (1) languages-page-description (3) languages-visual (1)

Figure 1.3. One small portion of the large and detailed text cloud focused on the boundaries, artifacts, and identities of technical communication

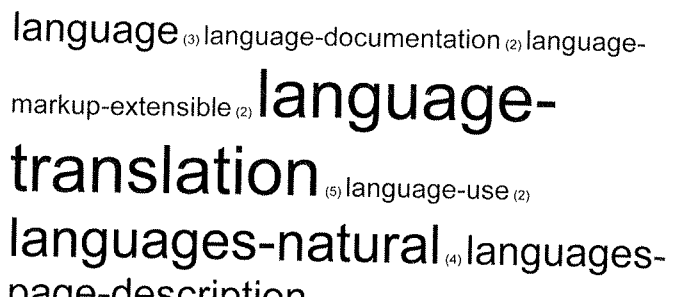

Figure 1.4. The same portion of the text cloud as in figure 1.3, focused on language but excluding words mentioned only once

might be useful for Amanda's task. By adjusting the granularity (level of detail) of this portion of the text cloud, we can eliminate those words occurring less than two times to generate a smaller and much more manageable set of seven terms with their variants (figure 1.4). At this level of granularity, with fewer terms competing for attention, two key focal points in the field of technical communication emerge more clearly: first, the recent emphasis on and need for *language translation* in technical communication resulting from patterns of globalization, and, second, the emphasis on *natural-language* processing, which characterizes work in artificial intelligence and references the digital work that describes so much of technical communicators' labor in the twenty-first century, both trends that we will discuss later in this chapter. This small portion of text cloud also has its shortcomings, however; twenty-one terms have been dropped completely because they occur only once.

This kind of problem becomes even more evident if we think about the entire text cloud in the context of Amanda's rhetorical task and how it would help her characterize the boundaries, artifacts, and identities of technical communication. Another example will help us explore this point. If we eliminated those terms appearing only once from the entire text cloud, we would lose key words like *cancer*, *Alzheimer's disease*, and *diabetes*. Further, because two of these terms (e.g., *cancer*, *diabetes*) were used in the data set without being next to a word like *disease*, they were not linked to any parent term (a superordinate term that serves to collect several items under one umbrella) that would help Amanda spot their connection. To solve this problem, we can group those terms associated with a common parent term in a set of brackets within a text cloud.

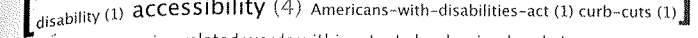

Figure 1.5. Grouping related words within a text cloud, using brackets

Consider, for example, the terms in figure 1.5: *curb-cuts*, *accessibility*, *Americans-with-Disabilities-Act*, and *disability*. In an alphabetized and unclustered text cloud, these terms would be separated, and, as a result, readers like Amanda might not recognize them as forming a semantically related cluster. Grouping related terms using brackets allows us to identify the parent term of *accessibility* and gives a clearer picture of the topics that the field of technical communication addresses in connection with that term.

In this small portion of the text cloud, what becomes visually clear is a concern about accessibility which arose, in part, from the work of disabled activists and, in part, from the legislation of the Americans with Disabilities Act that was passed on July 26, 1990 (Public Law 101–336 [42 U.S.C. sec. 12101 et seq.])—both cultural phenomena were reflected in the topics taken up by the field of technical communication from 1996 to 2006 (Wilson 2000).

Another example of a focused text cloud can be seen in figure 1.6. Here we have created a relatively small text cloud that focuses on the boundaries of technical communication, interpreting *boundaries*, in this particular case, as having to do not only with geography and geographical borders, but also with larger topics related to geography, like *globalization*. This approach results in a text cloud that would offer students like Amanda both focus and detail, identifying all of the geographical locations—and the terms associated with geography—mentioned in the abstracts, titles, and indexed terms of *IEEE Transactions on Professional Communication* and *Technical Communication Quarterly* from 1996 to 2006.

In part, this focused text cloud reflects how the field of technical communication, in the period between 1996 and 2006, had become increasingly concerned with communication practices in countries outside the United States, including China, Japan, and Korea. These Asian nations experienced rapid growth and made related technological advancements during the decade on which our text cloud focuses, and, thus, had come to influence the practice of technical communication in the United States. Fatemeh Zahedi, William Van Pelt, and Jaeki Song (2001, 83) trace one perspective of this trend as it relates to web design for technical communicators: "Since the web can now link diverse regions and communities across the globe that were relatively isolated by time and space, the growth of

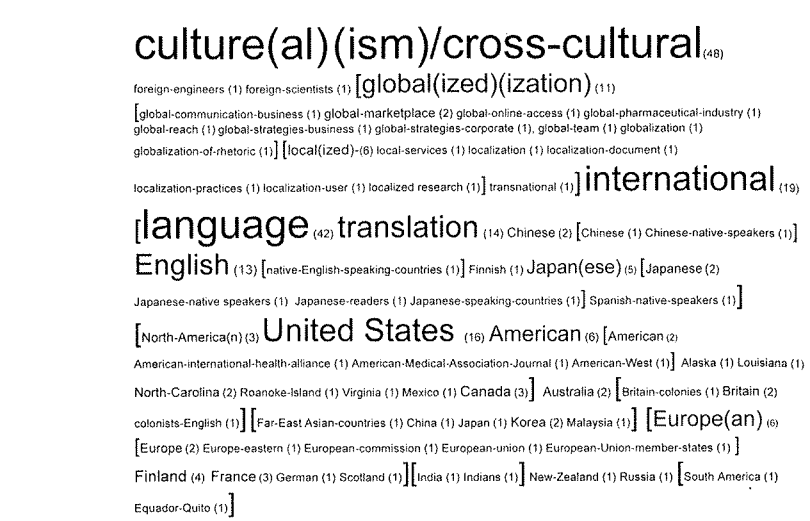

Figure 1.6. Text cloud focusing on the geography of technical communication

global communications has increased and intensified the need for learning to communicate successfully with a multitude of diverse, localized cultures. No single model of cultural understanding is sufficient for communicating effectively with all web audiences."

The text cloud in figure 1.6 also employs several kinds of brackets that provide additional insight into the field of technical communication for students like Amanda. The larger brackets are used to group terms that are topically related, a rhetorical decision on the part of the text-cloud creators. Note, for instance, that the terms associated with *globalization* and terms associated with *localization* are grouped together to indicate that they both relate to discussions of changing markets and trade, transportation systems, and communication patterns on a global scale. The smaller brackets are then used to group terms that provide some detail and focus within this same discussion. For example, the term *global*, its variants, and associated hyphenated terms—used a total of eleven times in the data set—are contained within a set of smaller brackets. Smaller brackets are also used to group the term *local* and its variants, used a total of six times.

Both of these important parent terms (*global* and *local*) in the text cloud shown in figure 1.6—as well as the mention of nations (Ecuador, Finland, France, China, Korea, Mexico, Malaysia, India, Scotland, Russia, New Zealand, among others) and languages (Chinese, Japanese, Spanish, Finnish)—clearly reference the increasingly international scope of technical communication as a profession during the period 1996–2006. Importantly for students like Amanda, the visual prominence of the key terms *global* and *local* also reflects the tension between globalization and localization that was influencing technical communication during this period when companies who used extended computer and telecommunication networks, an expanded system of international trade, and extended global transportation routes were struggling with issues of how to leverage the power and reach of globalization while addressing the specific linguistic and cultural needs of local audiences.

Kirk St. Amant (2005, 73) references this important boundary tension between globalizing and localizing forces, noting that "website designers . . . find themselves in the position of creating online materials that will be used by a broad international audience. In an ideal situation, the designer works with a localizer who revises materials to meet the expectations of a particular cultural audience. The speed and cost with which localizers can revise materials, however, is often related to the items provided by the original website designer."

We can undertake a similar exercise by creating a text cloud focused on the identities of technical communication as a field, looking at the terms used to name or refer to the profession. The cloud in figure 1.7, for instance, uses two levels of brackets to group terms.

Focused in this way, the text cloud in figure 1.7 offers some additional perspective with regard to Amanda's original question "What is technical communication anyway?" First, the text cloud reflects a snapshot of a field. During the period identified by the sampled texts, the years 1996 to 2006, technical communication, as scholar Saul Carliner (2010) documents, was focusing not only on *writing* (variations of which appear 109 times in this text cloud with such terms as *technical writing*, *editing*, *technical editing*) as a primary meaning-making activity of technical communicators but also on a broader conception of *communication* (variations of which appear 560 times with terms such as *technical communication* and *communication of technical information*, *professional communication*, *organizational communication*, *business communication*), by way of acknowledging the role that visual design, images, and other modalities of expressions played in meaning making. From this perspective, the two major clusters of words that anchor this text cloud (*writing* and *communication*) reflect the rapid growth of technical communication as a field after World War II and through the information-age decades of the 1980s, 1990s, and the beginning of the

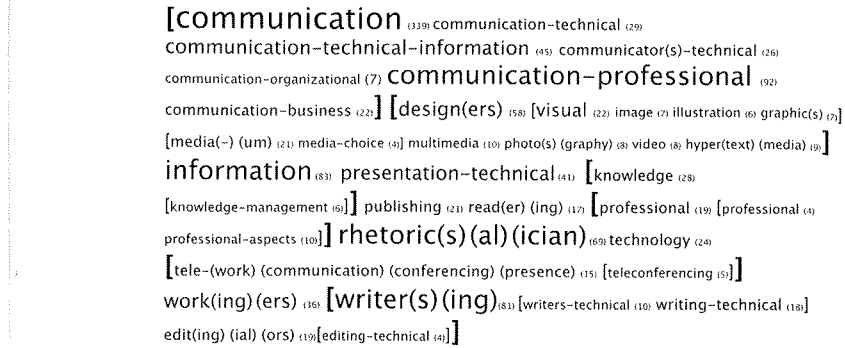

Figure 1.7. Text cloud focusing on identity terms for technical communication

twenty-first century. During this time, the artifacts that technical communicators designed and produced and the work in which they engaged changed dramatically. Where the primary effort in the field had focused early in this period on printed and written manuals to accompany mass-produced manufactured goods and on texts to explain scientific and engineering innovations to nonspecialist readers (Pringle and Williams 2005), technical communication in the postindustrial age became a much more broadly practiced and defined profession, whose members were involved in communication that employed a variety of modes and genres and that occurred in a range of contexts. Technical communicators were engaged in the dynamic design, management, and manipulation of information (Slattery 2005); the kinds of experimentation, collaboration, abstraction and system thinking required of "symbolic-analytic workers" (Johnson-Eilola 1996); the interpretation of end users' needs (Pringle and Williams 2005, 364); and scholarship, teaching, and research within the profession of technical communication.

If Amanda looked at figure 1.7, for instance, she would see a text cloud that provides a glimpse of this changed landscape, in which the profession's identity had come to include both *writing* and a broader conception of *communication*. Part of this landscape is evident in the text cloud's focus on key terms like *information* (mentioned 83 times in the source texts), *knowledge* (mentioned 28 times), and emergent terms like *knowledge-management* (mentioned 6 times). By 2005, for instance, Pringle and Williams described the profession of technical *communication* without using the word *writing*: "As technical communicators begin to articulate and understand our own professional identity . . . we will be recognized as

ones who approach technology from a users' perspective and who possess expertise in 'communicating.' If there's one thing that the stunning speed of technological innovation has made clear, it's that communication is no longer just an adjunct to business, it *is* business" (369).

From this perspective, the text cloud in figure 1.7 might help readers like Amanda perceive the centrality that terms like *design* (variants and related terms used 65 times), *visual* (variants and related terms used 42 times), and *media* work (variants and related terms used 60 times) had come to play in the field of technical communication by the end of the twentieth century.

In the field of technical communication, this historical trend was accelerated by the first mass-produced personal computers in the late 1970s and 1980s, which made possible the subsequent development of software applications that allowed for what-you-see-is-what-you-get (WYSIWYG) page design and layout, graphic design, photo manipulation, and digital video and audio editing (Pringle and Williams 2005). If Amanda looked at figure 1.7, for instance, she might see multiple references to the results of this trend not only in the key term of *visual*, for example, but also in related terms that reflect visual communication (*image*, mentioned 7 times; *illustration*, mentioned 6 times; *graphics*, mentioned 7 times). Similarly, in connection with the key term *media(um)*, Amanda might get a sense of technical communication's interest in *media choice*, mentioned 4 times; *multimedia*, mentioned 10 times; *photography* and *video*, mentioned 8 times each; and *hypertext*, mentioned 9 times.

A final related perspective offered by the text cloud in figure 1.7 is that technical communication as a profession was increasingly practiced throughout the period within digital environments and often within distributed networks. One specific aspect of these practices is evident in the cluster of terms around *telework*, *telecommunication*, *telepresence*, and *teleconferencing*. The same technologies and computer networks that supported multimodal and multimedia communication practices at the end of the twentieth and the beginning of the twenty-first century also supported the growth of telecommuting, telework, and teleconferencing, making these activities increasingly prominent landmarks within the field of technical communication during the period represented in the text cloud. As Scott and Timmerman (1999) observed, information workers who telecommute rely heavily on a variety of communication technologies not only to do their work, but also to maintain their relationships with coworkers and supervisors within the companies that employ them and to exchange information with contacts outside those companies.

Although telework represents only a small part of the online and digital

information work done within the field of technical communication (as evidenced by the relatively few terms and the relatively low frequency of these terms in the text cloud in figure 1.7), the text cloud provides Amanda with a visual snapshot of these practices in distributed and online work environments between 1996 and 2006.

BY WAY OF CONCLUDING, BUT NOT FINISHING

Technical communication scholars and practitioners like Amanda Metz Bemer, as contemporary "knowledge workers," "must make sense of huge amounts of unstructured textual data" (Havre, Hetzler, and Newell 2002, 9). One valuable heuristic for making sense of these large data sets involves "exploring multiple visual presentations, or visualizations of the data," each version of which may well "lead to important insights and/or a better global understanding of the collection" as a whole (1077). Text clouds, as Mogens Nielson notes, allow users to "quickly and intuitively get an overview of the most used tags in a tag space." This kind of representation functions "like a satellite image of an area" (Nielson 2007, 7), to provide a particular perspective on the field and to offer what Keng Siau and Tan Xin (2005, 275) call a visual "frame of reference."

So let's conclude by creating a final 10,000-foot view of the field of technical communication for students like Amanda. Toward this end, we can generate a text cloud that includes only those terms used ten times or more in the sample; clustering them under the focal categories of "boundaries," "artifacts," and "identities"; and using brackets to group terms into clusters around related ideas. Importantly, this text-cloud map does not give us some of the detail we've identified in the more focused text clouds in figures 1.3 to 1.7. In addition, this text-cloud map is highly interpretive in that it depends both on authorial judgment to determine how terms are grouped and to suggest how they might be read, and on readers' understanding that the contexts within which terms were originally used in the sample may vary widely from the ways in which they are interpreted in a text-cloud map. At the same time, this cloud can offer Amanda one example of how students might compose their own visual-verbal map of technical communication as a field, by composing an overview that, while interpretive and limited in its own ways, is also informative.

In figure 1.8, readers will see that we have grouped those terms we associate with **boundaries** (supplemented with the terms *borders* and *locations* to suggest dimensions of geography and focus, as well as location) into four sets of brackets by way of signaling what we consider to be related clusters of words from our sample texts. We have bracketed the first set of terms to indicate a field that seems, from our reading of the sample

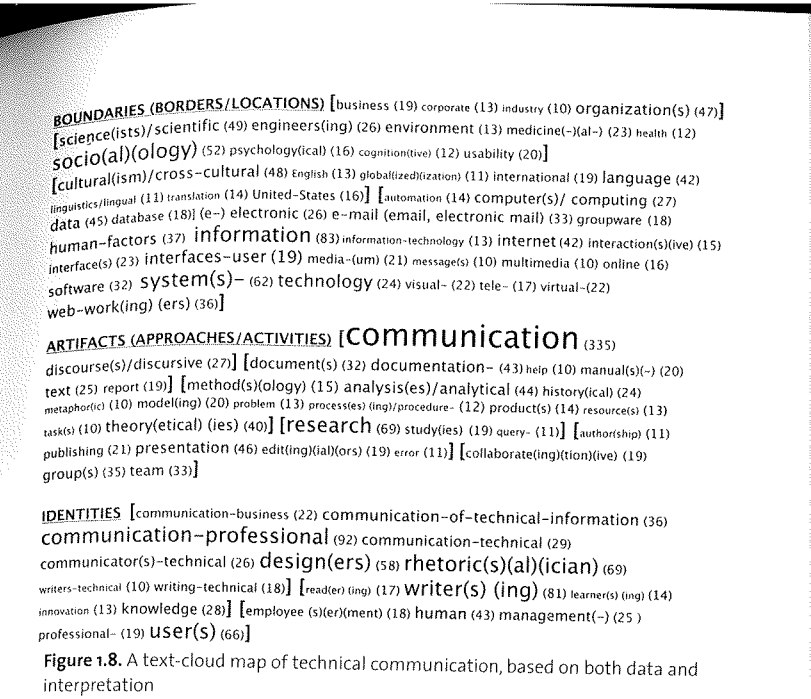

Figure 1.8. A text-cloud map of technical communication, based on both data and interpretation

texts, to have its feet planted firmly within the borders of the private sector (*business*, *corporate*, and *industry*) and related organizational contexts (*organizations*); and the second set of terms to suggest that the field's primary interests remain located in the arenas of *science* and *engineering*, with strong interests, as well, in *environment*, *medical*, and *health* areas during the period in which the texts for this chapter were sampled. The text cloud also indicates technical communication's interest in *sociology*, *psychology*, *cognition*, and *usability* as locations of work. With the third set of brackets, we point to what we see as technical communication's border-crossing activities: the production of texts in the *United States* and in *international* settings, a focus on communications that are *cross-cultural*, and an interest in projects that involve *language* and *translation*—all work that is *globalized* (in terms of communication systems and standards) yet marked by localized user requirements arising from the needs of readers in various cultural and social settings. In the final set of brackets, we have included terms that we believe describe the location of technical communication in the boundary-crossing spaces of the *internet*, *electronic* networks, *infor-*

mation networks, and *telework*. Terms within this set of brackets, we believe—*multimedia*, *interface*, *virtual*, and *web work*, among others—point to the work that now captures so much of technical communicators' attention within the boundaries of digital spaces.

The terms we've associated with **artifacts** that characterize the field of technical communication (to which we have added *approaches* and *activities* to capture a sense of process) include six bracketed clusters that relate to work processes, approaches, and products. We have included terms in the first set of brackets, for example, because we believe they signal the field's focus on a core set of activities surrounding *communication* and *discourse*, and we have included terms that describe the most common kinds of artifacts associated with the work of technical communication in the second set of brackets: *documents* and *documentation*, *texts* and *reports*, *manuals* and *help* texts. In the third set of brackets, we have included terms that could suggest the methodological approaches used by technical communicators to create these documents, including *analytical* and *theoretical* understandings; *historical* and literary approaches (*metaphor*); *modeling* and *problem* investigations; and attention to *procedures*, *tasks*, and *products*. We believe these approaches are deployed by technical communication specialists, as the fourth set of brackets indicates, as they (and sometimes their audiences) engage in *research* and *studies* of communication or attempt to answer or pose *queries* involving communication. We have used the fifth and sixth sets of brackets in the artifacts category to signal the continuing importance of authoring (*authorship*), *publishing*, and presenting (*presentation*) within the field of technical communication, as well as the ongoing focus on *editing* and *collaboration* among *groups* and *teams* to produce finished communication products.

We have grouped terms in the **identities** category for the field of technical communication into three sets of brackets. The first we use to signal both the range and the focus of the field, pointing out identity terms that are traditional (*technical communicators*, *technical writers*, *rhetoricians*) and those that are emergent descriptors (*designers*) for specialists in the field and the work they do (*business communication*, *technical communication*, *professional communication*, and *technical writing*). Because this text cloud cannot show the context in which these words originally occurred, the second set of brackets may be more ambiguous. Here we have grouped identifying terms that could be associated with technical communication specialists, the work they do, or the audiences they attempt to reach (*reader-reading*, *writer-writing*, *learner-learning*). Similarly, we have included terms in the second set of brackets to characterize the contexts in

which we see technical communicators working, highlighting *innovation* and *knowledge* work as suggested by scholars like Johndan Johnson-Eilola in his germinal "Relocating the Value of Work: Technical Communication in a Post-Industrial World" (1996), which documents the fundamental changes that computer-based communications introduced to the U.S. labor market in the twentieth century, shifting the alignment of technical communication from a service tied to the manufacturing of products to the kind of broad-based knowledge work characterizing a postindustrial world. The third set of brackets have been used to identify the different kinds of people shaping the communicative exchanges within and around technical environments: *employees*, members of *management* teams, and *users*, among them.

The final text cloud we have composed in figure 1.8, then, is a map based both on data from our sample and on our own interpretive understanding of that data. Based on our reading of the sample texts, we have clustered the frequently appearing terms to provide what we consider to be a reasonable visual and verbal map of a field, one that describes technical communication as a profession focused on the production and study of texts of all kinds (print, digital, multimedia) and related communication practices. We have composed a map of a profession exploring the recent changes that globalized and localized trends like digitization and information/knowledge work have introduced into our lives. We have also created a map that marks the involvement of technical communication in a wide range of arenas ranging from science and engineering to sociology and human factors.

We end our chapter, then, by turning to Julie Fisher (1998, 186), who acknowledges realistically that "[t]he profession of technical communication is not easily defined in part because the profession encompasses a wide range of skills and crosses many professional boundaries. Even among researchers of technical communication there are disparate views of who technical communicators are and what they do. Beck suggests 'Perhaps one reason for this lack of definition comes from the inherent diversity within the field, a diversity that expands as the membership increases.'" Despite the difficulties Fisher describes, however, the act of composing, focusing, and interpreting text clouds like the ones we've featured in this chapter could help students like Amanda Metz Bemer identify for themselves a set of informed—albeit not definitive—answers to her question "What is technical communication anyway?" and help her explain to friends and family the importance, the complexity, and the range of the field she is studying.

DISCUSSION QUESTIONS

1. Think about the textual work (e.g., websites, poetry, grocery lists, e-mail, text messages) that you do in the course of your life at home, in the community, and at work. Choose one of these data sets. How could you create a text cloud that would help make sense of the data you produce?
2. How could you use text clouds to show how your interests and activities have changed over time—for instance, comparing your interests in grade school to your interests today? What would these comparative text clouds show about you and the ways you have changed?
3. What is your own best learning style? Do you learn best through images? Printed words? Aural sources? How might this approach to learning suit you as you enter a career as a technical communicator?
4. Try creating a text cloud from a lecture that one of your teachers gives. Take notes on the lecture or use an audio recorder and then transcribe the recording. Structure your notes or the transcription and submit it to an online text-cloud generator. What key terms seem to anchor the text? What words are used most often? What words could be eliminated without much loss of information? How could you structure clusters of words to help you make more sense from the lecture?
5. Try creating a text cloud from your own résumé. What kind of a visual picture of your skills and interests emerges? What key terms seem to anchor the text? What words are used most often? What words could be eliminated without much loss of information? How might you change the entries on your résumé to give a more professional visual image of yourself?
6. Try creating a text cloud that captures the key threads of a chapter or an article that you are assigned to read for class. What kind of a visual picture emerges? What key terms seem to anchor the text? What words are used most often? What words could be eliminated without much loss of information? How could you structure clusters of words to help other readers make more sense of the chapter or article?
7. Using the heuristic we have provided, have each member of the class create a cloud from their own résumé. Then, in teams of two or three, examine these text clouds and see what they reveal about the professional preparation of the class as a whole. What are the strong points of class members' preparation? The weak points? What areas of technical communication as a field seem well represented? Less well represented? When teams report to the whole group, see if you can add to or challenge the findings of other groups.
8. If you are a practicing technical communicator, find a digital document in your organization that you can use to create a text cloud of the company's concerns/foci (e.g., an annual report, a strategic plan, a mission/goals statement). If you are a student, pick a company you'd like to work for that has such a document online where you can capture it in digital form. Submit the document to an online text-cloud generator. Do some interpretation of this text cloud to identify the key patterns or trends you find. How accurate is the text cloud you produce? How could you structure or focus it to be more informative? What impression does this text cloud give of the company? Do you think the company would be pleased with this impression? Why or why not?
9. Choose any text/document and its accompanying text cloud to examine as a class. Identify and discuss the cloud's weaknesses and gaps. What is missing? Why? How could these weaknesses be corrected? How might you create a revised, and more productive, version of the text cloud?
10. What are the differences between an index and a text cloud drawn from the same source text? Discuss for what rhetorical circumstances and for what audiences each might be preferable. Which would you prefer as a reader and why?

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