
Rhetorical Work in the Age of Content Management: Implications for the Field of Technical Communication

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Abstract

Drawing on a survey of the content management (CM) discourse, the author highlights CM trends and articulates best practices in content strategy that CM thought leaders are helping organizations adopt. These trends and practices are changing the nature and location of rhetorical work in organizations that produce intelligent content. In these contexts, rhetorical work is located primarily in the complex activity of building content strategy frameworks that govern text-making activities. The author highlights the need for a praxis-based collaborative model for technical communication education and research, and she offers some preliminary considerations for ways that the field might move in this direction.

Keywords

content management, content strategy, intelligent content, structured content, rhetorical work, symbolic-analytic work

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Technical communication (TC) practice has undergone what Hackos (2009) and Dicks (2009) have called a “seismic shift”; this shift is the move away from a document-based to a topic-based approach to developing, managing, and publishing content. The topic-based approach focuses on the processes (e.g., content strategy, business analysis, work flow), methodologies (e.g., structured authoring, minimalism, single sourcing), and technologies (e.g., XML, XQuery, content management systems) that enable content to be manipulated at a granular or topic level. In topic-based information development (ID), content is freed from the confines of static documents. Authors, who may be subject-matter experts, marketing or training specialists, or technical writers, create and edit stand-alone topics (e.g., a procedure or product description) that conform to rules defined by standards and schemas, which ensure that the topics are consistently structured and can be assembled into different information products that are rendered in different outputs for different delivery channels. Results of three independent surveys suggest that the adoption of this topic-based approach has reached critical mass (Abel, 2013; Dayton & Hopper, 2010; SDL, 2009).

Most recently, industry thought leaders have been talking about structured content that is highly adaptable and portable and can be configured on the fly in response to specific user requests. This next generation of content supported by topic-based ID has been given various names, including intelligent content, nimble content, smart content, portable content, and future-ready content. Rockley and Cooper (2012) used the term *intelligent content*, which they define as “content that is structurally rich and semantically categorized, and is therefore automatically discoverable, reusable, reconfigurable, and adaptable” (p. 16); it is highly engineered, modular content that is not limited to any “one purpose, technology, or output” (p. 52). Although many terms have been used to describe this type of content, intelligent content, suggested by Gollner (2013b), is gaining traction “as a label for a set of documentation tools and techniques” (Introducing Intelligent Content section, para. 5). for “making content resources portable and processable,” in this way enabling organizations to “integrate and automate their [documentation] activities efficiently and effectively.” (Current Trends in Intelligent Content section, para. 5). In the TC practitioner discourse, the term *content management* (CM) is commonly used to refer to topic-based ID and increasingly used to refer to the technologies and processes supporting the creation of highly adaptable and portable structured content (for the sake of consistency and precision, I refer to this type of content throughout the article as intelligent content because the term

has been extensively defined and is thus useful for describing changes in the CM industry).

The TC field has come a long way in its understanding of the ways in which CM is changing such work. Some researchers have articulated the business and technology drivers behind this shift (Carliner, 2009; Dicks, 2009; McDaniel & Steward, 2011; Rude, 2009) whereas other researchers have studied and theorized particular practices supporting the shift, including networked or distributed work (Hart-Davidson, Zachry, & Spinuzzi, 2012; Spinuzzi, 2007; Swarts, 2010), knowledge work (Hart-Davidson, 2009; Salvo, 2004; Whittemore, 2008), single sourcing (Albers, 2003; Carter, 2003; Clark, 2002, 2008; Robidoux, 2008; Sapienza, 2004, 2007; Swarts, 2011), and technology diffusion and adoption (Andersen, 2011; Dayton, 2006). Much recent literature has also focused on the changing roles of technical communicators and new foundational knowledge areas, including content and knowledge management, information design and architecture, programming, and information technology (see, e.g., Albers, 2005; Clark & Andersen, 2005; Pullman & Gu, 2008; Salvo & Rosinski, 2009; Spilka, 2009).

Although this expanding body of scholarship has certainly helped TC researchers and teachers gain more critical understandings of particular practices and skill sets that support CM, the scholarship has been less helpful in increasing our understanding of how organizations are actually transitioning to CM (with one notable exception: Pennington, 2007). Our TC scholarship on CM to date has almost exclusively taken an academic perspective; when articulating and theorizing trends, methods, and technologies, we tend to situate our discussions within the existing scholarship rather than the larger CM discourse that is actively shaping CM practice. Our field's long struggle to keep pace with industry trends has made articulating a bigger picture view of CM diffusion difficult, but we also have not done a good job directly engaging in the robust and extensive CM conversations taking place outside of the academy.

This article begins to address this significant knowledge gap in the TC scholarship focused on CM. Drawing on what I have learned from participating in eight practitioner-oriented conferences and my systematic review of the CM discourse, I highlight CM trends and articulate best practices in content strategy that thought leaders are helping organizations adopt. These trends and best practices, I argue, are changing the nature and location of rhetorical work in organizations that produce intelligent content. So too are they changing how we conceptualize symbolic-analytic work, which, according to many TC researchers, should be the primary activity of today's technical communicators (Dicks, 2009; Hart-Davidson, 2009; Johnson, 1998; Johnson-Eilola, 1996;

Slattery, 2005; Swarts, 2007; Wilson, 2001). This article identifies implications of CM trends and best practices in content strategy and raises questions about what these implications mean for moving the field forward.

I begin by reviewing the literature on rhetorical work in document-based versus topic-based ID contexts. I use *rhetorical work* to refer to the process by which we create and shape our communication for specific audiences in specific contexts for specific purposes. I then highlight researchers' calls for knowledge-centered roles that would better position technical communicators as symbolic-analytic workers in CM organizations. I suggest that although symbolic-analytic work descriptions are promising, they have been limited in that they have been too idealistic and abstract and have largely neglected the discourse of CM practitioners. Next, I describe my study design and offer an extensive bird's-eye view of the content industry landscape and the discourse that is shaping it. Following this discussion, I argue that rhetorical work is located primarily in the complex activity of developing and managing an organization's content strategy framework; this activity constitutes symbolic-analytic work in CM contexts. I end with a call for the field to move toward a praxis-based, collaborative model of TC education and research, one that continually engages researchers, industry professionals, and educators in conversation.

The Changing Nature and Location of Rhetorical Work in Topic-Based ID

The TC field has traditionally found its core values in the rhetorical tradition (Miller, 1979), a tradition that positions technical communicators as user advocates concerned with accommodating technology to the user (Dobrin, 1989). Pringle and Williams (2005) have aptly articulated these fundamental values:

We approach technology from a human perspective and believe that technology should adapt to people, not the other way around. We design our communication products accordingly, using whatever media, software, technology, or tool is most appropriate to achieve this end. People, we would argue, are the ultimate end, not the technology. Not only is this a value set in technical communication, it's also the way we work. We use tools not as an end but as a means to help people. (p. 369)

These core values represent the field's commitment to information consumers and product users and distinguish TC from other fields concerned

with technology design and use. These are the values that technical communicators have historically enacted as rhetorical agents overseeing the ID process. But how are these values enacted in today's CM contexts? Who or what has rhetorical agency?

The document-based approach to TC has been compared with a craftsman model of production in which technical communicators work as artisans, handcrafting unique document products one at a time using all-in-one tools such as FrameMaker, Word, RoboHelp, and Flare (Albers, 2003; McDaniel & Steward, 2011; O'Keefe & Pringle, 2012; Rockley & Cooper, 2012; Self, 2012). As artisans, they manage the ID process, from the research and planning of individual documents to the ways in which those documents are written and formatted, reviewed, managed, and published. They select their own tools, often licensed to local hard drives, and they create their own standards (in the form of style guides and templates) to maintain consistency across documentation sets. In this approach to TC, rhetorical agency is located with the individual writer or writing team at the document level. Writers make decisions about what content a document should include and how that content should be organized and formatted based on their own specialized knowledge of a product or a service (often gleaned through interviews with subject-matter experts) and on their own analyses of user needs, goals, and expectations.

By contrast, the topic-based approach to TC, which has been compared with a manufacturing model of production (Albers, 2003; Hackos, 2006; O'Keefe & Pringle, 2012; Rockley & Cooper, 2012; Self, 2012), requires that most decisions concerning content design, creation, and reuse be made not while making texts but while engineering the possibilities for making texts, including how they might be arranged and displayed. Rockley and Cooper (2012) drew the following parallel between manufacturing physical products and manufacturing content:

When a physical product is being designed, the individual components are considered as part of an interconnected whole, not just as small stand-alone pieces. The design is built around the fact that the components are reusable—you don't need to create new components to build new products We have to create content the same way: considering each component not only as an individual piece of information that has value, but also as part of a larger information product, or ideally, part of more than one information product. (p. 38)

Self (2012) used the allegory of motor vehicle manufacturing to illustrate this change from a craftsman to a manufacturing model of production in TC:

In 1908, Henry Ford introduced the “assembly line” for motor vehicle construction. The first car to be produced on the production line was the Model T. The assembly or production line replaced the “coachbuilding” method of building cars (where cars were built individually, one by one). . . . The assembly line was built on a foundation of standardisation; standard processes to produce simple components in a standardised production system.

In both Rockley and Cooper’s (2012) and Self’s (2012) descriptions of standardized ID contexts, those who have the job of authoring content topics (or “components”) are positioned as assembly-line workers, a role that affords them limited rhetorical agency. Standardization requires content authors to follow strict rules for writing content. As Gu and Pullman (2008) have argued, these authors have “no authority over their information at all”; they have no control over how topics are written, assembled, or displayed or how the topics are accessed, viewed, or used (p. 6). Those who do have rhetorical agency—those who make decisions guiding the invention, arrangement, style, memory, and delivery of content—are, for the most part, those who design the system of CM. This system governs what content can be written and how it must be written, structured, and tagged to support reuse and dynamic publishing.

Technical communicators whose primary job is to produce content, then, are often relegated to working within the confines of CM systems that, in most cases, others have designed. These writers are not tasked with making situated rhetorical decisions; rather they are tasked with writing and editing content topics according to the schemas and standards embedded in their XML authoring tools (Albers, 2003; Carliner, 2009; Gu & Pullman, 2008; Robidoux, 2008; Sapienza, 2007; Swarts, 2010; Whittemore, 2008). These schemas and standards represent, as Swarts (2010) argued, “a routinized process that [is] formalized and delegated to a technology” (p. 133); this process ensures that topics created by one person can be seamlessly integrated with topics created by another. Seamless integration is vital, as CM tools are programmed to pull topics from a database and assemble them on the fly. Swarts found in his study on writing reuse that technical communicators in CM contexts were not making decisions about where content ought to be reused and how; rather, these decisions were pre-defined inputs and outputs of the CM tools (p. 147). The activity of reuse was “delegated to the [content management system] that masks the complexity of the rhetorical relationships negotiated by reused text” (p. 158). The technical communicators did not need to understand these rhetorical relationships in order to produce consistent, well-structured content; they

just needed to comply with the defined standards for authoring and managing content.

This need for adherence to standards has two major consequences for technical communicators in CM contexts. First, although technical communicators, a majority of whom still view themselves as independent craftspeople, have tended to resist a strict adherence to rules, this resistance in a manufacturing model of TC can cause inconsistencies in how topics are written and compromise the quality of any information products that might be assembled from those topics (Albers, 2003; Robidoux, 2008; Rockley & Cooper, 2012). Standards compliance becomes even more critical when topics are written by different people—who may be subject-matter experts, marketing or training specialists, contractors, or other professional writers—at different times in different places. Quality management tools such as Acrolinx and the DITA Constraint Mechanism have thus emerged to enforce and better automate compliance with style standards, vocabularies, and rules for using elements in topics. And most XML authoring tools now enforce required topic structures, with rules built into the XML markup and topic types (e.g., concept, task, reference, and any specializations). Second, the schemas and standards embedded in the tools have made it possible for people who are not trained technical writers to produce well-structured content, allowing for the outsourcing and offshoring of writing and editing activities (a practice that has been recently debated in numerous technical writing LinkedIn Groups; see also Bacha, 2008; Carliner, 2009; Dicks, 2009; Hart-Davidson, 2009). As a result, writing and editing in CM contexts may be viewed as commodity or “wordsmithing” activities that add little value to the bottom line (Ames & Jensen, 2004; Dicks, 2009; Molisani & Abel, 2012). Technical communicators whose primary job is to produce content, then, are seeing fewer full-time, in-house positions because more of these jobs are being outsourced to contract workers or offshored to writers who produce content at a fraction of the cost.

Calls for Knowledge-Centered Roles: Technical Communicators as Symbolic-Analytic Workers

In response to changing ID environments and declining traditional technical communicator roles, a number of scholars have argued for moving TC from a production-centered field that focuses on providing support for products to a knowledge-centered field that focuses on contributing knowledge that adds value to an organization (see, e.g., Albers, 2005; Dicks, 2009; Faber & Johnson-Eilola, 2002; Salvo, 2004; Slattery, 2005). This more sustainable

focus for the field, some have further argued, can be achieved by rethinking TC in terms of Reich's (1992) "symbolic-analytic work" (Dicks, 2009; Hart-Davidson, 2001; Johnson, 1998; Johnson-Eilola, 1996; Slattery, 2007; Swarts, 2007; Wilson, 2001). Johnson-Eilola (1996) first called for rethinking TC in terms of symbolic-analytic work in the mid-1990s. He described this kind of work as using skills in "abstraction, experimentation, collaboration, and system thinking," as Reich proposed, "to work with information across a variety of disciplines and markets" (p. 248). He suggested that technical communicators doing symbolic-analytic work would engage in activities such as conducting usability research, working on distributed teams, and finding and articulating patterns, structures, and relationships in large amounts of information and across specific problems, projects, and task domains (pp. 258–261). Engaging in these high-level activities, Wilson (2001) added, would afford technical communicators meaningful agency in their organizations; engaging in routine production activities, on the other hand, would position technical communicators as "pawns of global corporations, cogs in the machine" (p. 84). Routine production roles are often the first ones to be contracted out to groups in other countries.

The symbolic-analytic work that Johnson-Eilola (1996) and Wilson (2001) described is precisely the kind of work that is required to design, integrate, and manage CM systems in organizations. Those participating in CM problem-solving activities at a high level contribute assertions, recommendations, and value judgments (Dicks, 2009, p. 55); they "analyze, synthesize, combine, rearrange, develop, design, and deliver information to specific audiences for specific purposes" (p. 54). They collaborate with business leaders, software engineers, and information architects in designing and managing strategic ID processes, contributing special expertise in the technological and rhetorical coordination of texts (Slattery 2007, p. 324). These symbolic-analytic workers are perceived as adding value to the customer experience and thus contributing monetary value to the organization.

Hart-Davidson (2009) and Salvo and Rosinski (2009) suggested that technical communicators are well suited for performing the kind of symbolic-analytic work that Dicks (2009) and Slattery (2007) described as characterizing high-level CM design decisions. To illustrate how they are well suited, Hart-Davidson (2009) offered the field's first macroscopic view of CM practices in organizations, locating potential roles and responsibilities for technical communicators among those practices. He explained that the tasks that an organization must do well—including creating whole

documents; creating and managing content objects, “defining relationships among these, and specifying display conditions for specific views of these”; and “designing and managing workflows and production models” (p. 135)—represent the organization’s collective effort to develop a content strategy. He suggested that technical communicators can and should orchestrate, coordinate, and negotiate these tasks; as symbolic-analytic workers, they should orchestrate CM initiatives and take on “increasingly varied organizational roles and responsibilities” (p. 130).

These scholars offer strong arguments for technical communicators to take on new knowledge-centered roles in CM contexts, and they offer researchers and educators a way to think beyond the skill sets that technical communicators should possess to the functions or tasks that they must be able to perform. Hart-Davidson’s (2009) mapping of CM practices is particularly useful in advancing our field’s understanding of the tasks that symbolic-analytic workers should be able to perform and orchestrate in CM contexts. Yet Hart-Davidson’s and others’ arguments have been limited in two ways:

1. They describe symbolic-analytic workers in CM contexts using terms that are too idealistic and abstract, such as *gardener* and *nurturer*. Hart-Davidson (2009), for example, noted that “technical communicators look after the ecosystem by acting as gardeners of a sort, nurturing growth, tending to the soil, and yes, occasionally getting our hands dirty and actually writing” (p. 137). As a field, we have not done a good job of articulating symbolic-analytic work in CM contexts in concrete terms. In what ways do symbolic-analytic workers use abstraction, systems thinking, experimentation, and collaboration in devising their organizations’ content strategy?
2. Their descriptions of symbolic-analytic workers ignore the CM discourse, particularly the critical work that thought leaders have done to help organizations transition to topic-based ID. This body of work is smart, concrete, and comprehensive, and it is shaping the next generation of TC.

Put otherwise, these scholars’ symbolic-analytic work proposals do not adequately help other TC scholars and educators to understand in practical terms how organizations are moving from learning about CM to fully implementing the methodologies, processes, and technologies that support topic-based ID. We need new descriptions that map Reich’s (1992) proposed skills for symbolic-analytic work—abstraction, systems thinking, experimentation, and collaboration—onto the content strategy practices

used in industry. This mapping would help us articulate in concrete, action-oriented terms how technical communicators can move into leadership positions that afford them opportunities to orchestrate, coordinate, and negotiate CM tasks and practices.

Method

Spinuzzi (2007), Hart-Davidson (2009), Spilka (2009), and McDaniel and Steward (2011) have each argued that the field of TC must get a handle on what is happening in the content industry and make the programmatic and curricula changes that are necessary for preparing technical communicators to assume leadership positions in CM initiatives and contexts. In addition, Dicks (2009) and Spilka (2009) have urged TC researchers to develop more involved methods for staying abreast of rapid industry changes. To better understand such changes in the CM industry and how these changes are affecting rhetorical and symbolic-analytic work in CM contexts, I employed a phenomenology research design to survey the CM discourse from 2010 to 2013. This discourse includes a collective of industry conferences (including official talks and casual conversations), publications (e.g., books, articles, white papers, newsletters), blog posts, online discussions, and workshops and Webinars.

I focused particularly on the work of five CM thought leaders who are largely defining and shaping the discourse and who each direct successful consultant and research organizations. These leaders include Rahel Bailie, principal of Intentional Design; Joe Gollner, director of Gnoxyx Research; JoAnn Hackos, president of Comtech Services and director of the Center for Information-Development Management (CIDM); Sarah O'Keefe, president of Scriptorium Publishing; and Ann Rockley, president of The Rockley Group. These organizations publish books, white papers, newsletters, and blogs on CM best practices; host industry conferences that attract ID managers and professionals from companies across the world; conduct workshops and Webinars; and facilitate CM-focused conversations on LinkedIn Groups, Google Groups, and Facebook Groups. In addition to surveying the work of those five leaders, I followed other influential contributors to the CM discourse, such as Mark Baker, Paul Trotter, and Scott Abel.

My goal in surveying the CM discourse was to examine the following research questions:

- How is content consumption and production changing in industry?
- How are thought leaders conceptualizing the shift to CM and guiding organizations in making this shift?

- How are CM initiatives being orchestrated and by whom? What qualities define these orchestrators?

To examine these questions, I participated in eight industry conferences, attending CM-focused sessions, reviewing speaker slides, following Twitter feeds, and conversing with speakers and participants; reviewed five best-selling CM books for CM industry professionals; surveyed CM-focused articles, reports, white papers, blogs, and slide decks posted to high-traffic and widely referenced organizational Web sites and blogs; examined discussion threads on dozens of high-traffic CM-focused forums and listservs; and attended periodic CM-focused Webinars.

Survey of the Content Industry Landscape

In this section, I paint a picture of the content industry landscape and how intelligent content and the content strategy infrastructure that support it are shaping that landscape. First, I describe how information consumers' expectations are changing and how organizations are re-envisioning their content in order to meet those expectations. Then, I articulate the tremendous potential of intelligent content for enabling organizations to meet consumers' expectations and why its success hinges on an organization's content strategy. My objective is not to provide a comprehensive overview of the state of the content industry or the content strategy discourse. Rather, my objective is to offer enough of a bird's-eye view of the industry and discourse in order to situate rhetorical and symbolic-analytic work in the age of CM.

How Information Consumers' Expectations Are Changing

Fewer and fewer people are using printed manuals. Consider your own tendencies. When you have a question about how to use a particular feature on a new device or how to accomplish a particular task, where do you look for the answer? Most people go directly to Google. And more and more people are accessing Google through a Web-enabled smartphone or tablet. If they are not accessing Google, they are searching mobile app tutorials or watching video tutorials on sites such as YouTube, eHow, and wikiHow. This shift in content consumption practices is why CM thought leaders have been talking so much about the death of the document (Trotter, 2012), about how it is slated for extinction (Gollner cited in Giordano, 2012).

Organizations that have adopted or plan to adopt CM have realized that today's information consumers do not have the time, the attention span, or

the desire to read long manuals, searching through blocks of text for the answer to their task-specific or problem-specific questions. Rather, many consumers would rather search for information via the Web. They want bite-sized topics, targeted and tailored information, answers on their smartphones, and videos and interactive live content—and they want to be able to provide feedback on that information (Schwartz & Gettinger, 2010). These consumers are solutions oriented and impatient. They want to be able to access just the content they need—anywhere, anytime, and on any device. Symantec, for example, found that in 2007 “customers were 500% more likely to search the Web than to locate official manuals”; today, 75% of Symantec customers look for product help via search engines (Bishop, 2011). Hewlett-Packard too has found that customers are increasingly relying on the Web to learn about its products. In 2011, more than 90% of its sales were online, meaning that the vast majority of customers bought products without touching them (Jones, 2012). These statistics speak volumes about consumers’ changing content expectations. As Hackos (2010) asserted, “we need to find ways not to go down the obsolescence road.” We need a strategic plan for dealing with the “tilt away from text.” The era of customers reading technical documentation in the form of giant, static PDF documents, many argue, is over.

“We live in exponential times,” Trotter (2011a) stated as the opening line of his talk at the Intelligent Content Conference. Trotter, the Founder and CEO of Author-it Software, was speaking about the explosion of new technologies on the market, technologies designed to afford customers access to the on-demand, bite-sized, customized, portable content that they want anytime and anywhere. These technologies include Web 2.0, high-speed networks, CM systems, and open content technologies (e.g., XML, Darwin Information Typing Architecture (DITA), XQuery). But the technology that CM thought leaders most attribute to revolutionizing content consumption—and thereby production—is the Web-enabled mobile device. Abel (2012) cited statistics from the International Telecommunications Union, which revealed that 75% of the world’s population has access to a mobile phone and that for many of these people, the mobile phone is their primary way to access the Internet. Those statistics align with the findings from On Device Research that a growing number of mobile Web users are mobile only, meaning that they “do not, or very rarely also use a desktop, laptop, or tablet to access the web” (mobiThinking, 2012).

Predictions on mobile device sales and access to high-speed mobile networks mark 2017 as the pinnacle of the mobile-economy boom (Ericsson, 2012; Strategy Analytics, 2012). Ericsson (2012) predicted that laptop- and

tablet-based mobile connections will rise to 650 million in 2017, up from 200 million in 2011, and that 85% of the world's population will be covered by high-speed mobile Internet by 2017. Strategy Analytics further predicted that 4G (the fourth generation of high-speed wireless service) "will account for 1 billion mobile connections by 2017, up from 90 million mobile connections in 2012." According to a survey conducted by the Pew Internet and American Life Project, "the mobile device will be the primary connection tool to the internet for most people in the world in 2020" (Anderson & Rainie, 2008, p. 2). Thus, the future of content, particularly customer-facing content (e.g., product, technical, and marketing content), is clear: It must be increasingly modular, dynamic, and customizable, and it must be designed to adapt to the vast range of mobile devices and device constraints.

How Organizations Are Meeting These Expectations

To compete in an increasingly mobile world, organizations must rethink the nature and function of their content—from the marketing materials that consumers read in order to make purchasing decisions to the technical documentation that consumers draw on to set up, use, and troubleshoot products and services. Customers are increasingly unwilling to search for information about a product or a service in different locations. They want all the information they need to make informed decisions about a product or a service in one centralized location, and they want to be able to access that information quickly and from any device. To help organizations meet these expectations, CM thought leaders are pushing organizations to view content as a critical asset of their products and services and to focus on the customer's total information experience.

Content as a Critical Asset. Bailie and Urbina (2013) presented a business case for why organizations must move from viewing content as a cost center to viewing content as a critical asset, an asset that builds customer relationships. Without these relationships, they argued, organizations simply cannot compete in today's global economic playing field. Such business-critical content, or customer-facing content, is any content that "supports purchasing decisions, pre-sales, or . . . the relationship between you and your customers, post-sales." This brand-building content includes "product content, marketing content, technical content, and pass-through content such as user-generated and social media content" (p. 5). Any content that customers need in order to make informed decisions about products and

services is business-critical content, and that means content that directly affects an organization's bottom line.

Total Information Experience. Organizations that realize the potential return on investment in producing modular and dynamic business-critical content are moving away from traditional ID strategies—in which different departments rely on their own processes, methodologies, and technologies for creating and disseminating information—to an approach that focuses on the total information experience. This approach, as Bredenkamp and Beaupre (2011) explained, centers on customer focus (“attention to the real and changing interests of customers”), customer engagement (“listening to the customer”), and customer involvement (“leveraging user-generated content to help improve the customer experience”).

Organizations such as IBM and Juniper Networks have taken the lead in transforming their entire approach to customer-facing content; these organizations have developed visions and missions that drive and unify their respective enterprise content development strategies. For example, Eileen Jones, executive of IBM Client Information Quality and director of Information Development, explained that IBM's client information strategy grows out of the following vision of how information affects its clients:

Clients encounter information every step of the way as they learn about, evaluate, buy, plan for, deploy, use, maintain, and support IBM products and solutions. The marketing literature they read, the social commentary they rely on for recommendations, the on-line tutorials they take, the wizards and procedures that guide them, the advisory content delivered as part of smart products like Watson that enables them to use products to address business goals and challenges, the messages that alert them to problems, the best practices shared by the user community on YouTube and in forums that help them to get the most from products, the support information that helps them recover—all of this information shapes how clients perceive IBM products and solutions. It shapes their Total Information Experience. (personal communication, April 4, 2013)

The client experience, then, is at the center of IBM's information strategy. This strategy governs its practices for developing all business-critical content.

Juniper Networks, which recently renamed its technical publications team the Information Experience team, has adopted a similar vision and strategy. Under the leadership of Ben Jackson, vice president of Technical

Documentation and Information Experience, Juniper has defined its information experience vision as “empower[ing] and connect[ing] [customers] through an architected information experience.” Juniper supports this vision with its mission to deliver “high-quality, industry leading content . . . in new, dynamic and innovative ways, including Video and Social Media, that aligns with technology and customer usage trends” (Jackson & Perrotta, 2012). The Information Experience team, according to Jackson, now produces more than 80% of the company’s website content. Comprising departments that were previously siloed, the Information Experience organization now has company-wide accountability for developing and delivering product documentation, web information applications, and content localization.

Some of the ways that organizations are focusing on the total information experience are through content convergence, content customization and personalization, and user participation in content creation:

- Content convergence: Bailie and Urbina (2013) described content convergence as the merging of an organization’s business-critical content into a single portal from which customers can find everything they need to know about a product or service. Industry research, they report, reveals that potential customers are increasingly reviewing product user guides and technical specifications before they decide whether or not to purchase a product. These ostensibly postsale materials help customers to compare products and imagine how they might experience those products (pp. 5–6). From the home pages of the websites of Hewlett-Packard and Adobe Systems, for example, customers can shop for products and services, find in-house and online training opportunities, access product support and troubleshooting content, and join support communities.

Such convergence requires content to be consistent across departments, such as marketing, training, technical publications, and product support. If customers encounter inconsistent or conflicting product information accessed from different portal sections, such as Support and Shop for Products, their resulting confusion or frustration can negatively affect the product brand (Bailie & Urbina, 2013; Rockley & Cooper, 2012). To address this problem, units across CM organizations are syncing their content strategy; they “are identifying shared content assets and pooling their resources” (para. 2) in order to develop customer-facing content more efficiently and to ensure “that customers receive consistent information and a

unified message” (O’Keefe & Pringle, 2012, Content Collaboration Across the Organization section, para. 4). In addition to improving the customer’s total information experience, content convergence saves organizations’ money by reducing content development costs.

- Content customization and personalization: Customers increasingly want customized products and services, which means that the documentation that accompanies those products and services must also be customizable. Companies such as Dell and Hewlett-Packard offer products with dozens or even hundreds of variations; customers can select the features and functions that they want and then order a product that is customized to their needs. Customized products require customized documentation, so organizations must be able to automatically generate user guides from relevant content topics (e.g., feature descriptions, procedures). Many organizations also offer customers online portals from which they can dynamically generate their own user guides; customers can call up (or pull) just the content that they need when they need it.

In addition, organizations are beginning to offer adaptable content—content that customers can aggregate (as in RSS feeds), display, and filter based on personal preferences. Customers increasingly want to personalize their online spaces; the more modular and dynamic an organization’s content, the more that organization can support customers’ desire to personalize.

- User participation in content creation: A growing number of CM organizations are embracing users’ participation in creating business-critical content. Many customers want to both shape and provide feedback on product support materials. These customers “respect content created by themselves and their peers, and expect it to appear next to the content created by the site sponsor” (Myers, 2010, p. 191). With the help of Web 2.0 and social media, these CM organizations are offering customers the ability to create, rate, and comment on content as well as to converse with other users about content in discussion forums. Companies such as IBM, Microsoft, and Adobe Systems are leading the charge with their high-traffic user communities and community wikis.

To control for quality, some organizations are beginning to cycle user-generated content back into what Trotter (2011b) referred to as a component-based, continuous publishing model. Any modified or

new content component—whether created by users, technicians, subject-matter experts, or technical writers—is channeled through the review cycle, which “ensures that the content is accurate and representative.” This publishing model not only improves the quality of the total information experience but also helps build trust between organizations and customers because customers can see the direct impact of their contributions.

How Intelligent Content Enables Organizations to Meet Consumer Expectations

How can organizations rapidly respond to changing consumer expectations for content and remain competitive in an increasingly mobile world? How can organizations “create more content, more quickly, customized for more customers and for more media than ever before”? (Rockley, 2010, p. 270). The answer to these questions, say CM thought leaders, is to design structured content that is highly adaptable and portable. This type of content is increasingly referred to as *intelligent content* but has also been referred to as “nimble content” (Lovinger, 2010), “portable content” (Bailie, 2009), “smart content” (Bock, Waldt, & Laplante, 2010), and “future-ready content” (Wachter-Boettcher, 2012). Intelligent content, the term that has been most extensively defined and adopted, is “content that can be managed efficiently and dynamically delivered to an unlimited range of targets using high-precision automation” (Gollner, 2011, Going Mobile section, para. 1). It comprises stand-alone, topic-based content components that are “not limited to one purpose, technology, or output” (p.52); their rich structure (i.e., structured authoring) and semantic categorization (i.e., metadata) make them “automatically discoverable, reusable, reconfigurable, and adaptable” (p.16) (Rockley & Cooper 2012). When topic-based content components are well structured, well defined, and well described, suggested Lovinger (2011), they can travel freely, retaining their context and meaning, and can be reused and recombined in myriad variations.

This fluidity of intelligent content represents a radical departure from the static whole documents that have long been the primary deliverable of technical communicators. Rockley and Gollner have both frequently referred to these documents as the “black boxes” of content. The problem with managing static, whole documents, Rockley (2010) noted, is that “we cannot easily get at the information in the document to use elsewhere in another way” (p. 270). With the mobile device fast becoming the primary connection tool

Table 1. Differences Between Static and Dynamic Content and Local and Online Content.

Static Content	Dynamic Content
Same content for everyone	Intelligent engine—knows who you are
Bulk updates	Continuous component-based publishing
Need to separately publish each format	Dynamic rendering from central content repository
Basic feedback mechanisms	Community feedback, rating, and contribution
User needs to discover new and updated content	Users can subscribe and are notified of changes
Local Content	Online Content
Delivered with the product	Accessed over the Internet
Quickly out of date	Latest content always available
Difficult and expensive to update	Content easily changed and published
Delivered in multiple formats	Platform independent and standard based
Generic content	Content can be tailored to audience

Note. Adapted from Intelligent Content—Future Trends, Future Solutions, by P. Trotter, [Power-Point Slides] Intelligent Content Conference, Palm Springs, CA, February 2011. Adapted with permission.

to the Internet for most people, the document-based approach to ID will become less viable.

Trotter (2011a) articulated key moves toward intelligent content, including the moves from static content to dynamic content, locally installed content to content stored online, distributed to centralized authoring, and closed to community content contribution from end users. The first two moves address the “black boxes” of content problem. Table 1 identifies the key differences that Trotter articulated between static and dynamic content and local and online content. These differences demonstrate why dynamic online content, or intelligent content, is the sustainable solution to ID in a mobile world.

Whereas static content is locked into particular formats—so everyone receives the same content (document) with each new product release—dynamic content is free from formatting constraints. With its semantic tagging and rich structure, dynamic content can be rendered from a central content repository at the time of viewing; it is granular, customizable, and portable, and it can be easily updated and appear in multiple contexts. Dynamic content is also conducive to online access: It can be easily updated, accessed, shared, and configured on the fly in response to specified customer needs. With such online access, organizations no longer have to print and

deliver long comprehensive documents with each product. Further, online access, Web 2.0 technologies, and high-speed networks afford customers rich opportunities to provide valuable feedback on and contribute to content, opportunities that in turn build customer trust and strengthen the brand.

How Content Strategy Supports Intelligent Content

While high-speed networks and the evolution of content technologies (e.g., Web 2.0, CM systems) and their underlying standards (e.g., XML, HTML5, DITA) have made possible the emergence of intelligent content (see Gollner, 2013a), its success depends on the content strategy that governs its life cycle. In simple terms, Rockley suggested, “content strategy is the plan of action, and intelligent content is the way we implement it” (as cited in Nagel, 2010). Bailie and Urbina (2013) defined this plan of action:

[Content strategy is] a comprehensive process that builds a framework to create, manage, deliver, share, and archive or renew content in reliable ways. It’s a way of managing content throughout the entire lifecycle. In other words, content strategy is to writing what house construction is to decorating. Decorating may be what denotes quality to the human eye, but it is construction quality that keeps the house standing strong. Similarly, writing (or copy) is what readers see, but it’s the construction of that copy—the content strategy—that makes it useful to your customers. (p. 4)

Here, Bailie and Urbina (2013) emphasized the critical role of the framework that controls the system of content production, management, and delivery. Content strategy is, as Rockley (2011a) has articulated, about process and control: “Everything is planned, everything is identified, everything is controlled—this is how you get from beginning to end—from research and analysis all the way to users receiving content.”

Designing the system that controls the creation, delivery, and governance of intelligent content is not a practice with which most CM initiative leaders or technical communicators are well versed. Consulting groups such as Comtech Services, Gnoxyx Research, Intentional Design, The Rockley Group, and Scriptorium Publishing have been actively working to address this training gap through various best practices publications, conferences, workshops, Webinars, and online discussion forums. These thought-leader organizations are guiding ID organizations through the process of developing a content strategy and defining critical components of that process. Component-based content strategy (as distinguished from Web

content strategy), in fact, has been widely referenced as a new field of practice that has emerged in direct response to the need for training for those who lead such CM initiatives; as Bailie (2010) noted, there are no college programs, professional certificates, or training courses through professional associations that are adequately addressing this growing need (some certificate programs, such as the Certificate in Digital Content and Communications at the University of British Columbia, however, are emerging).

Different thought leaders and consultant groups have developed their own approaches to content strategy training, but each of these approaches focus on stages for carrying out a content strategy, planning deliverables required to support each stage, and roles needed to develop and deploy the content strategy. Table 2 contains a composite and descriptions of the essential stages, key activities, and common deliverables in building a content strategy framework; these framework components are described by Rockley and Cooper (2012), Rockley (2010), and Bailie and Urbina (2013). All key activities focus on the content and processes that span the organization, not that just occur within a single department.

Building a content strategy framework and transitioning an organization from a document-based to a topic-based approach to ID is a complex undertaking that requires leadership from decision makers who have a broad range of knowledge and skills in business, technology, design, and communication. Those who are being called on to orchestrate CM initiatives are increasingly referred to as *content strategists* defined by Molisani and Abel (2012) as people who help “the organization identify how to best utilize its resources (human, technological, financial, and otherwise) to efficiently and effectively create, manage, and deliver all product content in accordance with defined goals” (p. 17). At the most basic level, the content strategist draws on expertise in business, technology, design, and content to “determine [the] requirements (of the business, content, and users), determine [the] future state [of content], identify gaps, and create a roadmap from [the] current to [the] future state” (Bailie, 2010, para. 3). Rockley and Cooper (2012) called for both a senior content strategist and a content strategist to oversee a CM initiative. The senior content strategist serves as a manager, working with all content stakeholders and content creation teams to gain buy-in for the content strategy and ensure that the strategy is effectively carried out (p. 252) whereas the content strategist serves as the primary architect of the content strategy, “building the information product models, component models, metadata, reuse strategies, and workflow” (p. 253). The content strategist must have strong analytical and design skills and be familiar with content and usability standards.

Table 2. A Composite and Descriptions of the Essential Stages, Key Activities, and Common Deliverables of Building a Content Strategy Framework.

Stages	Description	Key Activities	Common Deliverables
(1) Analyzing customer needs	“Identify how well your current content is meeting your customers’ needs and identify any gaps in the content” (Rockley & Cooper, 2012, p. 67).	<ul style="list-style-type: none"> gather user requirements define personas and scenarios identify device constraints 	Gap analysis, needs assessment, personas scenarios, flow diagrams
(2) Analyzing business needs	“Figure out what is going on with the content [in your organization], how it is being used, and how it is being managed, as well as the processes used to create, publish, and store it.” (Rockley, 2010, p. 272)	<ul style="list-style-type: none"> gather business requirements analyze content lifecycle conduct content audit analyze existing content 	Gap analysis, requirements matrix, content inventory, content audit, process models, business plan
(3) Developing an information architecture (the content strategy road map)	“Develop an information architecture to support information products, structured content, reuse and metadata.” Build information models and define the metadata that describes the content; these models and metadata “become the roadmap the intelligent content strategy follows.” (Rockley, 2010, p. 273)	<ul style="list-style-type: none"> build content models and define metadata that describe the content define reuse strategy define adaptive content strategy 	Content models, metadata model, wireframes, customization and personalization maps, localization plan, guidelines for writing topics (style guides, rules embedded in topics or elements), templates and forms, document-type definitions or schemas, delivery style sheets

(continued)

Table 2. (continued)

Stages	Description	Key Activities	Common Deliverables
(4) Creating unified processes (work flow and governance)	<p>Develop “unified processes so that everyone involved in creating, developing, storing, and publishing content does it in the same way, or at minimum, is able to interact effectively and share content.” (Rockley & Cooper, 2012, p. 87)</p> <p>Determine “who is allowed to create content, who has final authority over it, and how the content gets published.” (Baillie & Urbina, 2013)</p> <p>Program aspects of governance into the content management system, including compliance rules (e.g., writing style standards, vocabularies, rules for using elements in topics)(Baillie & Urbina, 2013).</p>	<ul style="list-style-type: none"> ● define workflow: how people and tasks will interact ● define governance: who has authority to make content decisions at various times and levels of operational importance 	<p>Workflow diagrams, role and task descriptions, process maps, business rules, governance guidelines</p>
(5) Developing the technology strategy	<p>Evaluate, select, and implement a structured authoring tool, a component CM system, a workflow system, and a delivery engine (Rockley & Cooper, 2012, p. 310).</p>	<ul style="list-style-type: none"> ● define technology requirements ● evaluate tool options ● work with CMS integrators to implement the content model ● implement tools ● create structured content (create new content or convert unstructured to structured content) 	<p>Technology requirements, proof of concept, pilot-phase test plans, implementation strategy</p>
(6) Creating structured content	<p>Use content models and standards to create structured content, components that have “recognizable structures that are repeated each time the information type is created” (Rockley & Cooper, 2012, p. 206).</p>	<ul style="list-style-type: none"> ● create change-management plan, including a communication plan ● enlist change agents and champions ● define new roles and modify existing ones 	<p>Structured content</p>
(7) Managing change	<p>Identify the pain points and issues in your organization and the impact of not addressing those issues: connect with and listen to people within the organization, involve them in problem solving, and “communicate the reasons for change, your plan, and the project’s status” (Rockley & Cooper, 2012, p. 231).</p>	<ul style="list-style-type: none"> ● create change-management plan, including a communication plan ● enlist change agents and champions ● define new roles and modify existing ones 	<p>Change-management plan, communication plan</p>

While orchestrating a CM initiative might be the purview of one or two content strategists, developing a content strategy requires numerous roles (one person might assume more than one role). Rockley (2010) identified these roles as essential: business analyst, information architect, technology strategist, content coordinator, change manager, and trainer (p. 272). Notably, she does not identify the content author as an essential role in building a content strategy framework. In CM contexts, content authors are responsible for writing structured, reusable content according to the standards and rules defined in content models; although content strategists often engage authors in the planning process in order to gain buy-in and ensure shared understanding, content authors primarily create structured content (stage 6 in the framework for building a content strategy; see Table 2). But content authors who are skilled in business and content analysis or have technology expertise often move into one of the essential roles that Rockley described.

CM thought leaders tend to agree that the most effective content strategists are those who have a strong background in content design and development. Content strategists, Bailie (2010) noted, need “to have some sort of content background . . . to understand the qualities and properties of content “because” undertaking any sort of content analysis or taxonomy effort or content rewrite implies some measure of skill at content development.” (para. 4). But a good content strategist must have more than just content expertise. Content strategists must also have expertise and experience in “management, business, content processes, open content standards and intelligent content technologies” (Gollner, 2001, Content Strategists Unite section, para. 1). Bailie and Urbina (2013) cautioned those making decisions about CM initiatives not to assume that writers can easily move into content strategist or information architect roles because they simply might not be equipped to do so:

Content development has become too complex to be left in the hands of the inexperienced. We don't expect writers to be experts at information architecture just because they know how to create folder structures on shared drives Writers cannot be expected to know enough about content standards and content modeling, re-use models, metadata best practices, microformats, writing for syndication, and componentization for content management systems to make informed decisions about how to pull all of the pieces together to support business directives. (p. 254)

Content strategy as a discipline requires roles different from those required in document-based ID environments. Those charged with

orchestrating an organization's content strategy must think more like managers and engineers than writers. They must be able to think and operate in the big picture terms—to understand individual content components as part of an interconnected whole, gain buy-in from and work effectively with content stakeholders and decision makers across the organization, and ultimately design a system for producing, managing, and delivering intelligent content that both meets consumer expectations and improves business performance.

Rhetorical Work in CM Contexts

In CM contexts, rhetorical work is located primarily in the complex activity of developing and managing an organization's content strategy framework. This framework governs text-making activities in organizations producing intelligent content. Decisions about how content should be classified, written and structured for reuse, labeled for quick retrieval, and assembled to form coherent information products are made not by content authors but by cross-disciplinary teams of content strategists, business analysts, information architects, and information technologists. These are the people, Dicks (2009) noted, who are “designing information for specific audiences and purposes” (p. 70). They are the masterminds of their organization's content strategy, which, in all its stages of development and implementation, requires rhetorical decisions concerning invention, arrangement, style, memory, and delivery—from how to define business goals and analyze the organization's content to how to embed in the CM authoring tools the schemas and standards that govern what authors can write and how and where they can write it.

Figure 1 represents the CM system—the technological process of producing, managing, and delivering intelligent content—and the content strategy framework that supports this system. Those contributing to the planning, design, and implementation of the system are symbolic-analytic workers who apply their knowledge of rhetoric, business, and technology to complex information problems. They use skills in abstraction, systems thinking, experimentation, and collaboration to carry out the work of content strategy, which includes analyzing user and business needs, developing an information architecture for the organization's content corpus, creating unified processes, and developing a technology and change management strategy. These high-level, problem-solving activities take place in the content strategy framework whereas content authoring activities take place within the CM system, which is governed by the framework.

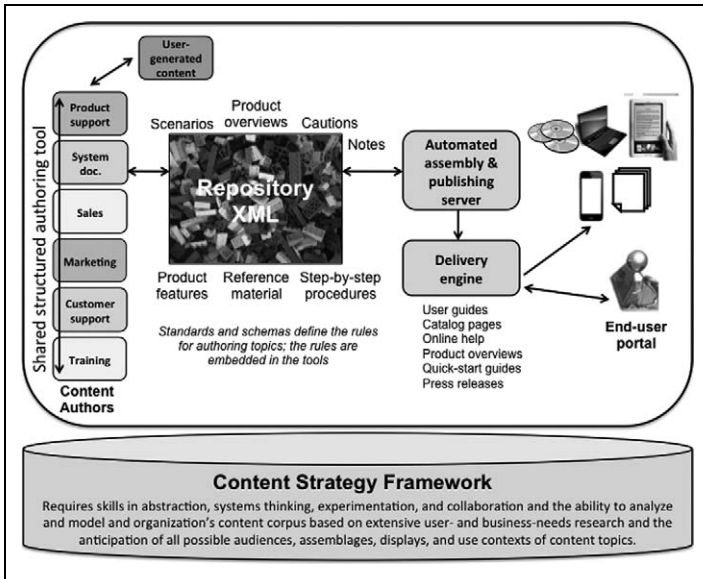


Figure 1. The content management system and content strategy framework supporting that system.

Each stage of building the content strategy framework requires symbolic-analytic work, but some stages demand such workers to use one skill set more than others (strategists, e.g., use abstraction skills to analyze content, but they must be able to collaborate with leaders across departments and disciplines in order to understand larger content goals, uses, and audiences). Here are the primary skills associated with symbolic-analytic work in the content strategy framework:

- **Abstraction:** Skills in abstraction involve being able to solve problems in an innovative, proactive manner. Reich (1992) described abstraction as “searching for new ways to represent reality which will be more compelling or revealing than the old” (p. 229). Symbolic analysts applying such skills, Johnson-Eilola (1996) suggested, “discern patterns, relationships, and hierarchies in large masses of information” (p. 260). In terms of building a content strategy, abstraction is required to analyze user and business needs (particularly to audit and analyze the organization’s content corpus), make

a business case for moving an organization to CM, and develop an information architecture to support the CM system.

- **Systems Thinking Skills:** Systems thinking involves the ability to understand how different parts of the whole are related. When presented with a problem or an issue, Reich (1992) described, systems thinkers can “discern larger causes, consequences, and relationships” (p. 30); a symbolic analyst can redefine problems in terms of a “broad system of forces, variables, and outcomes” that might not be immediately apparent (p. 31). All stages of building a content strategy framework require systems thinking. Content strategists must understand the whole of an organization’s content corpus and content needs (e.g., existing content development pain points) before they can begin developing an information architecture that requires them to define relationships among content topics and elements. Content strategists must also understand the whole of an organization’s business processes and define unified content processes that align with business needs.
- **Experimentation:** Skills in experimentation entail the ability to try out new techniques and explore a range of possibilities and outcomes (Reich, 1992, p. 31); experimentation “involves forming and testing hypotheses about information and communication” (Johnson-Eilola, 1996, p. 258). Building a content strategy that works for an organization requires a great deal of trial and error. Content strategists, for example, must experiment with new content technologies, conducting test runs and exploring configuration and customization options. They must bounce ideas off other stakeholders, gathering their input and refining ideas based on that input. Experimentation plays a critical role in developing a content strategy because there is no one-size-fits-all strategy.
- **Collaboration:** Skills in collaboration involve being able to share knowledge, ideas, problems, and solutions in an effort to reach consensus on the best plan for moving forward (Reich, 1992, p. 32). Symbolic analysts can articulate clearly their ideas to others. They can “accept criticism from peers, solicit help, and give credit to others,” and they can “negotiate—to explain their own needs, to discern what others need and view things from others’ perspectives, and to discover mutually beneficial solutions” (p. 32). Content strategists must apply collaboration skills to work effectively on cross-disciplinary teams and with representatives from cross-organizational departments such as marketing, training, and engineering. Those in change agent and champion roles must be particularly skilled

collaborators. As TC practice becomes more integrated within other disciplines, collaboration may prove to be one of the most important skills of a content strategist.

Ben Jackson's recent effort to transition his technical documentation team at Juniper Networks into an information experience team serves as a rich example of symbolic-analytic work in action. In his keynote talk at the 2012 CIDM Best Practices Conference (Jackson & Perrotta, 2012), Jackson described how he was able to change how the organization viewed content and technical documentation; from beginning to end, he applied skills in abstraction, systems thinking, experimentation, and collaboration. He began by doing an inventory analysis of the entire information experience organization (all units producing content), assessing what was working well and not so well. He examined people, processes, tools and technology, and the user experience, looking specifically at customer feedback. He then identified problems and their causes and developed a Quick Wins program to address the causes. This program included results of his analysis, steps that could be taken now to address problems, and a strategy for moving forward; central to this strategy was a business case that showed how content is a critical organizational asset and how technical documentation is a key part of the information experience. He took this program to executives and they listened. Drawing on concrete data, he convinced them that having many teams create content, using different tools and web portals, was negatively affecting the customers' information experience. Obtaining the green light to unite organizational content silos into one information experience team, Jackson took his lead people offsite for a couple of days to create vision and mission statements for the team. His next steps included defining the return on investment of uniting content silos, proposing a funding model for supporting the information experience team and proposing a strategic plan for architecting the user experience, including plans for leveraging social networking and delivering dynamic information.

From beginning to end, Jackson functioned as a content strategist performing symbolic-analytic work. He had to examine all facets of the content problem in need of resolution, all ways in which the problem was affecting both internal and external content stakeholders, and all circumstances (e.g., financial, technological, sociocultural, political) that limited possibilities for resolving the problem. In other words, Jackson had to examine a rhetorical situation that was vastly expanded from the one that most technical communicators have been trained to examine (i.e., a document-based situation focused on the writer–audience–subject relationship). Addressing the

expanded situation—its exigencies, audiences, and constraints—meant viewing it from a business-management, technology, and content perspective in order to find a solution that synergized these perspectives to benefit both the organization and its customers. As Jackson's case shows, the topic-based approach to ID calls for new ways of thinking about the rhetorical situation and spaces that afford rhetorical actions. In CM contexts, decisions concerning invention, arrangement, style, delivery, and memory must be made in the space of the content strategy framework that governs the CM system. This vastly expanded rhetorical situation has significant implications for how we train future technical communicators and how we research and practice TC. One implication, and perhaps the most significant, is that for the betterment of the field, the academy and industry need to find ways to work together more strategically and more often.

Moving Toward a Praxis-Based, Collaborative Model for TC Education and Research

Since Miller's seminal 1989 article, "What's Practical about Technical Writing," TC academics have called for stronger connections between theory and practice and a more collaborative partnership between the academy and industry. But a long-in-the-making strained relationship between our respective constituencies has made implementing and sustaining these connections and partnerships difficult. Many have argued that this strained relationship is in part the result of each group finding little value in and use for the work of the other (see, e.g. Blakeslee & Spilka, 2004; Clark, 2004; Dicks, 2002; Mirel & Spilka, 2002). But sweeping changes in the content industry have elicited promising signs that the two groups need each other more than they have in the past. For example, a key topic of discussion in the practitioner discourse has been the need for technical communicators to gain new competencies and assume new roles; ID managers too have called for new research that examines existing beliefs and habitual practices. On the academy side, numerous scholars have argued for getting a better handle on what is happening in the content industry, and the themes of recent conferences hosted by the Council for Programs in Technical and Scientific Communication (CPTSC) and the Association of Teachers of Technical Writing (ATTW) have focused on ways that our programs can better address changes in society and in the field. What is promising about these expressed concerns and needs is that they are shared, and they suggest that the time might be right for forming new, mutually beneficial collaborations.

Intelligent content and the content strategy framework that supports it present rich opportunities for the field to move toward a more praxis-based, collaborative model for its work. Miller (1989), one of the first to call for viewing TC work as praxis, described *praxis* as a form of conduct, a process of getting from theory to practice with the goal of doing or performing well for the greater good. Changes in the content industry are reshaping all aspects of TC practice. As a result, the field could greatly benefit from new research that examines both what is working and why and what might be improved and how; it could also benefit from new and revised courses in our certificate and degree programs that prepare students for performing rhetorical and symbolic-analytic work in CM contexts. These are shared needs and concerns of industry and the academy, and this mutual interest is where productive dialogue between the two groups might begin. In the following subsections, I outline some preliminary considerations for ways that the field might move toward a more praxis-based, collaborative model for TC education and research.

TC Education

Technical communicators who perform symbolic-analytic work in CM contexts draw on their business knowledge, technical aptitude, and rhetorical expertise to solve complex information problems. These three competency areas are essential for technical communicators who want to perform as analysts, architects, strategists, and managers on ID teams. What do business knowledge, technical aptitude, and rhetorical expertise look like in the content strategy space? I gathered preliminary answers to this question when I asked three CM thought leaders—Joe Gollner, JoAnn Hackos, and Charlotte Robidoux—to share their thoughts on what graduates of TC programs should know and be able to do when they apply for jobs in the field. Table 3 presents the specific abilities and tasks that Gollner (personal communication, March 29, 2011), Hackos (personal communication, March 30, 2011; April 1, 2011), and Robidoux (personal communication, March 30, 2011) identified as being increasingly required of those working in topic-based ID environments and thus of new TC graduates. These abilities are essential for performing rhetorical work that includes analyzing, designing, authoring, and managing an organization's content corpus.

Both industry professionals and students interested in a career in TC need to develop these abilities if they wish to move into leadership positions that afford them opportunities to orchestrate, coordinate, and negotiate CM tasks and practices. Certificate and degree programs have long been the

Table 3. Core Competencies, Specific Abilities, and Tasks Required of Technical Communicators Who Perform Symbolic–Analytic Work in CM Contexts.

Core Competencies	Specific Abilities	Required Tasks
Rhetorical expertise	Topic-based authoring	Plan and develop stand-alone, topic-based content that can land on various devices. Practice minimalism and structured authoring with DITA and XML. Apply style, grammar, punctuation, and spelling knowledge
Rhetorical expertise and technical aptitude	Information design and information architecture	Analyze, categorize, and model content. Create metadata schemas and taxonomies. Code content in XML, XSLT, HTML, DITA, and DTDs. Know basic infrastructure of XML authoring and rendering tools, as well as CM systems
Rhetorical expertise, technical aptitude, and business knowledge	User-centered design and user-experience design	Understand customer goals in using products and address them in content. Leverage social media (wikis, blogs, podcasts, video) to connect with users and gather input
Rhetorical expertise and technical aptitude	Multimedia integrations and production	Integrate different media types (illustrations, photographs, audio, animations, video) and ideally produce and modify components in different media
Rhetorical expertise and technical aptitude	Collaboration	Share content. Write collaboratively within documentation teams and across other teams, locally and globally. Leverage different tools for online collaboration
Rhetorical expertise and business knowledge	Business analysis	Analyze business needs and gather requirements. Employ appropriate research methods and facilitate effective communication. Conduct gap analysis. Develop business cases that make strong value propositions
Rhetorical expertise and business knowledge	Management	Manage large projects. Create budgets and process maps and apply metrics

Note. CM = content management.

Adapted from personal e-mail correspondence with J. Gollner, J. Hackos, and C. Robidoux (March 29–April 1, 2011).

XSLT = Extensible Stylesheet Language Transformations; DITA = Darwin Information Typing Architecture; DTDs = Document Type Definitions.

place where future TC leaders are trained, but many of these programs have not kept pace with changes in the content industry (Gu & Pullman, 2008; McDaniel & Steward, 2011; Spilka, 2009). A more reciprocal relationship between the academy and industry is necessary for ensuring that curricula and programmatic goals and outcomes align with industry changes and support the variations of symbolic-analytic work that we want students to be equipped to perform in future work environments. Students who plan to be engineers, marketing specialists, programmers, or other professionals who write will also benefit from an increased awareness of the impact that CM has on all aspects of the product life cycle and on all people involved in designing, documenting, managing, and using a product.

At the field level, a more reciprocal relationship might be cultivated through more opportunities for academic and industry professionals to converse at our respective conferences and in our respective publications; we might look to the Academic Special Interest Group (SIG) of the Society for Technical Communication (STC) as one model for building that relationship. Since 2011, the SIG has successfully brought together academic and industry professionals to discuss the implications of industry trends for TC programs through its Partnership Preconference at CPTSC. Providing more opportunities for each group to expand their skill sets could also have a positive impact on TC practice and training. Our academic organizations, such as ATTW and CPTSC, might collaborate, for example, with CM consultant organizations to establish a professional-development exchange program. In this program, the academic organizations could offer workshops and Webinars on topics of interest to industry peers, such as research methods or curriculum development; in exchange, CM consultant organizations could offer workshops and Webinars to academic peers on topics such as topic-based authoring, information-experiences modeling, and multi-channel publishing. These academic and industry organizations already offer such professional development opportunities to respective members, so setting up this program might initially be a matter of encouraging participation and overcoming access and time challenges.

Our field as well as individual programs might also look to McDaniel and Steward's (2011) proposed academe–industry curriculum model as a starting point for adapting TC program goals and curricula. The model is based on a holistic view of systems design that includes “interactive and intelligent documentation” (p. 202). The model presents four new foci for our curricula: computational interactivity, multidisciplinary education, collaborative internships, and business management and leadership (pp. 210–211). Many of our programs already offer successful internship and

mentorship programs and encourage students to take courses in other disciplines that support symbolic-analytic work. Our programs might work with industry partners to further develop two areas of the model: computational interactivity and business management and leadership. Advisory boards could offer a forum for such collaboration as could online communities established for the purpose of exchanging ideas on course design and curricula and programmatic goals and outcomes.

In addition to focusing on ways that academic and industry professionals might work together to ensure that students are gaining skills essential to performing rhetorical and symbolic-analytic work in CM contexts, a praxis-based, collaborative model for TC education must focus on ways in which theory can inform and improve existing practices and processes. A strong theoretical background will help students critically apply these skills to the various technological, cultural, and rhetorical exigencies they will face in CM contexts. Theories about rhetoric of technology, technology transfer and diffusion, information design, user-centered design, activity, actor networks, genre, and human-computer interaction may be particularly informative. Activity theory, for example, can be a useful tool for understanding the diffusion of CM technologies as highly contextualized, mediated processes. Activity theory can help future leaders of CM initiatives assess cultural dynamics in their organizations and how these dynamics are shaping or will likely shape people's perceptions of and responses to diffusion projects. Students who learn different ways that theories can be used to examine and improve practice will be more reflective and effective leaders in CM contexts.

Finally, a praxis-based, collaborative model might focus on opportunities to expand notions of audience and better align the activity of audience analysis with rhetorical work in CM contexts. When TC academics talk about audience, they tend to talk about intended or potential readers or users of texts—on the relationship between the writer, the audience, and the purpose for the communication. A more productive way to talk about audience might be in terms of audience touch points in the content strategy framework and content lifecycle—the various phases of development (i.e., creation, review, management, and delivery) through which content moves in an organization (Rockley & Cooper, 2012, p. 89). *Audience touch points* are the different audiences that shape the design and use of content in the different stages of the content strategy framework and the content lifecycle. These audiences include customers and users, managers and C-level executives, and all cross-disciplinary team members or content stakeholders, from information technology to engineering to marketing to training to

technical publication. Audience analysis and business-needs analysis (stages 1 and 2 in the content strategy framework) form the foundation for all decisions concerning the potentiality of texts and other digital content. Talking about audience in terms of audience touch points in the content strategy framework and content lifecycle is one way that we can help students understand and examine exigencies for audience analysis in CM contexts. It is also a way for academic and industry professionals to talk productively about the different audiences that shape how content is produced and consumed and how technical communicators might best analyze those audiences.

TC Research

For years, TC academics have been calling for a research agenda centered on questions that grow out of practice; these questions, they argue, should be driving our empirical research, the results of which should be used to improve practice (Blakeslee, 2009; Blakeslee & Spilka, 2004; Mirel & Spilka, 2002; Rude, 2009). For example, Blakeslee and Spilka, in surveying 20 prominent researchers in the field, found universal agreement that researchers need to investigate more research problems that industry considers important and that these investigations should lead to guidelines and best practices for the field. The authors called for more available forums of exchange and collaboration between academics and industry professionals. For various reasons, little has changed since these calls, and the field still struggles to develop and sustain a reciprocal relationship between research and practice.

But there is new evidence of strong interest and momentum from academic and industry professionals alike to make this relationship work. For example, building stronger academia–industry partnerships to improve both education and research was a central theme at recent annual meetings of the CPTSC and the STC Academic SIG. Likewise, at the 2012 CIDM Best Practices Conference, conference participants—managers in ID, training, and support—widely agreed on the need for more empirical research that could be used for problem solving. Conference director JoAnn Hackos urged the research community to conduct more studies that managers could draw on to solve problems, make strong business cases, and improve practice. For too long, she claimed, TC managers have been making decisions based on intuition rather than on data; too many documentation practices have been followed because of tradition rather than research. With the exception of a few content strategy trade books, decision makers in CM

contexts have had limited access to research-based guidelines and models for solving complex content strategy and ID challenges.

The results of an informal survey on research needs that was conducted at that 2012 CIDM conference and a follow-up survey completed by 190 professionals in industry and 54 in academia point to four research areas of priority for industry: content strategy, metrics and measurements, user behavior, and process and practices (Benavente, Rude, Hart-Davidson, & Andersen, 2013). Qualitative studies that examine user behavior on online portals, for example, would help organizations better understand the needs and behaviors of users who access product content. At the moment, organizations largely rely on web analytics data to understand user behavior. Whereas these reports can tell us how often customers are accessing information on a website or what kinds of information they are accessing, they cannot tell us why customers interact with this information the way that they do or whether the information actually helps them achieve their goal. What is clear from these surveys and the discussions that took place at the conference is that CM presents rich opportunities for new empirical research.

Given the strong interest in and momentum to support more research and practice connections, now is an opportune moment for academic and industry professionals to build a mutually beneficial, shared research agenda. A first step in this direction might be for each group to aim toward better representing each other's work in its respective publications. Our journals and book series, for example, might encourage researchers—academic and industry professionals—to submit work that grows out of the research needs of industry, such as the four areas identified in the CIDM survey. Doing so would increase the relevance, value, and reach of scholarship in the field, and it would create opportunities for more dialogue between the two groups on issues of concern to both. Academic researchers might also consider publishing more in leading practitioner publications, such as *The Content Wrangler*, *TechWhirl*, and the *CIDM Best Practices Newsletter*. Articles useful to industry professionals for problem solving would be well received and widely read.

A second step in this direction might be for academic and industry professionals to work together to overcome challenges in conducting empirical research. Our struggle to conduct research that grows out of practice is in part due to the various challenges that academic researchers face in carrying out empirical research. Some of the biggest challenges, Blakeslee (2009) found, were that researchers did not have the necessary institutional and departmental support and recognition (identified by 82% of survey

respondents), time (73%), and funding (54%; pp. 135–136). Obtaining access to research sites can also be a challenge (Rude, 2009). Gaining institutional and departmental support and recognition for empirical research is perhaps the most difficult challenge to overcome, and a solution to this challenge requires extensive debate at all levels within the academic community. But this debate is important to have because without incentives to conduct empirical research and disseminate the results in non-peer-reviewed venues, the field will continue to struggle to develop and sustain a reciprocal relationship between research and practice.

Solutions to issues of funding, time, and access are more immediately actionable and academic and industry professionals should collaborate on developing and implementing these solutions. To start, they need to set up an infrastructure to support collaboration. This infrastructure should include a forum for the ID community to communicate its research needs to the research community. Interested researchers would then need a process for submitting a proposal that makes a strong case for how their proposed research project would address such needs. ID managers would also need some kind of streamlined process for making a strong case for research to upper level management. The CIDM is currently working with a handful of TC researchers on an ambitious academy–industry research initiative to develop an infrastructure such as the one I have described here (for details, see Andersen, 2013). The organization is also exploring crowd funding as a potential model for supporting empirical research. In July 2013, the CIDM published as part of a pilot project a call for research proposals for funded (up to US\$20,000) studies; its hope is that such crowd-funding efforts for good proposals will result in full funding from the ID community. What the research community can do now to help with this infrastructure effort is to contribute on LinkedIn to the CIDM subgroup Academic/Industry Collaboration. This online community, set up by Hackos, provides academic and industry professionals a space to discuss research priorities and possibilities, hiring needs and challenges, and other topics for which such discussion could lead to problem solving and productive action.

Conclusion

Rhetorical work in topic-based ID contexts, particularly those producing intelligent content, looks quite different from rhetorical work in document-based ID contexts. Our field, which continues to find its core value in the rhetorical tradition, must adapt accordingly. Calls for ways

to better align TC education and research with practice are certainly not new but never has the need been so urgent. More than a decade ago, Tebeaux (2003) decried the field's lack of socially useful teaching and research. She warned that its current direction "could ensure its lack of relevance and thus power" (p. 21) and that if we do not respond to the communication needs of industry, TC will "become another humanistic discourse whose research and teaching carry little weight beyond the academy" (p. 42).

Increasingly, managers of ID teams are expressing their frustration with what they see as an extreme shortage of qualified job applicants. Further, CM thought leaders are calling content strategy a new field of practice that has emerged as a direct response to the need for those working in CM contexts to be trained in topic-based writing, information design and architecture, and other knowledge and skill areas essential for solving complex information problems. These two examples speak to how our field is increasingly perceived by those outside of academia. Our relevance and power, as Tebeaux (2003) predicted, is contingent on our ability to respond—and adapt—to the communication needs of industry. A more praxis-based, collaborative framework for the field holds great promise for forging new intersections between theory and practice, the academy and industry, and TC and other fields that have a stake in CM.

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