

6

How Can Work Tools Shape and Organize Technical Communication?

SUMMARY

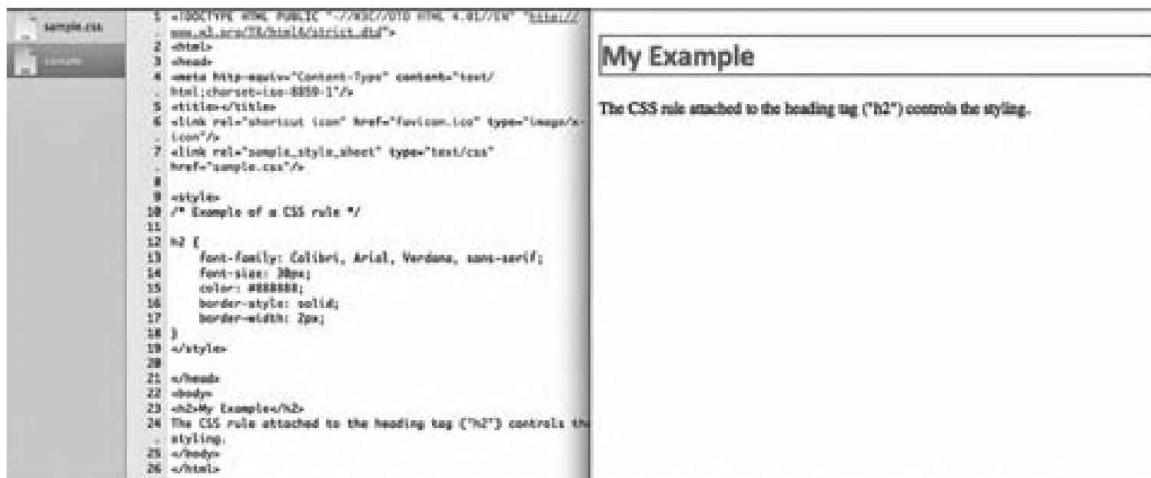
In this chapter, I discuss how tools mediate the work of technical communication, by shaping and organizing how writers conceive of and carry out their projects. Technical communication is a tool-oriented profession. Technical communicators not only write about tools but also use tools of their own. To write procedures for tool use, technical communicators need to understand the user's tasks and the functional capabilities of the tools used. Less frequently, however, do technical communicators consider how their own tools affect their work, by reinforcing a way of thinking about a task until it feels natural. Being aware of how tools shape and organize technical communication will help readers of this chapter become both more effective and critically conscious technical communicators.

INTRODUCTION

Nancy is a technical communicator at a midsize software company. She, like everyone at that company, is responsible for following a style guide. The guide reinforces standards for more than just aesthetic reasons. Information formatted according to approved style rules is more usable for a variety of internal and external audiences. When these audiences take the content they are given, they know that it can be readily adapted for or transformed into other kinds of texts that serve a variety of functions.

Nancy has been tasked with updating her company's style guide, a task occasioned by the company's decision to adopt a content management system (CMS) for use by all divisions responsible for producing various kinds of product documentation, such as user guides and training materials. This CMS relies on cascading style sheets (CSS), sets of instructions for communicating with document readers, Internet browsers, and printers about how documents should be styled when shown or printed (see figure 6.1).

The situation Nancy faces is that other divisions have already adjusted to using CSS and those changes are reflected in their local style guides.



The screenshot shows a browser window with two panes. The left pane displays the raw CSS code for a file named 'sample.css'. The right pane shows the rendered HTML output with the heading 'My Example' and a note explaining the CSS rule applied to it.

```
1 <!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN" "http://www.w3.org/1999/xhtml/xhtml-dtd.dtd">
2 <html>
3 <head>
4 <meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />
5 <title>My Example</title>
6 <link rel="stylesheet" type="text/css" href="favicon.ico" type="image/x-icon" />
7 <link rel="stylesheet" type="text/css" href="sample.css" />
8
9 <style>
10 /* Example of a CSS rule */
11
12 h2 {
13   font-family: Calibri, Arial, Verdana, sans-serif;
14   font-size: 30px;
15   color: #888888;
16   border-style: solid;
17   border-width: 2px;
18 }
19 </style>
20
21 </head>
22 <body>
23 <h2>My Example</h2>
24 This CSS rule attached to the heading tag ("h2") controls the
25 styling.
26 </body>
27 </html>
```

Figure 6.1. Sample CSS. Style information between `<style></style>` tags on left is rendered in the screen on the right.

Now that the company is making a full-scale change toward the adoption of a CSS-enabled CMS, Nancy must consider how the change will be reflected in the companywide style guide. To do so, she must consider how CSS will shape and organize the practices of technical communication in order to understand the role of the style guide.

The first step is for Nancy to learn about how CSS shapes practices of writing. That knowledge, in turn, will shape her understanding of the kind of shaping and organizing work that the style guide must do in response to the capabilities introduced by CSS. As different tools alter what writers are capable of doing in a text, the company's style rules must change to control the use of those expanded capabilities and to reinforce valued practices of writing. For example, one entry on bulleted lists, in an older version of the company style guide, says "Insert a 0.25" space between the bullet and the start of the list item. Follow each list item with a semicolon." This rule, Nancy assumes, specifies the look of the list item because the writers at the time acquired tools capable of controlling the spacing to that degree. Changes in tools then prompted changes in the style guide. So in the current revision, the entry must now account for the capabilities of structured writing and CSS. It might now read, "For 'To Do' bulleted lists, use a checkmark instead of a round bullet. Follow each list item with a semicolon." It is also possible that the rule could disappear entirely, depending on how much control the CSS leaves to the writers. This issue and others like it are prompting Nancy's investigation of CSS and related technologies.

Before returning to this scenario, I will briefly discuss the importance of tools in technical communication and present a vocabulary for talk-

ing about the influence of those tools. From this literature, I develop a heuristic to assist readers in investigating tools, their histories, and their impacts on actions and interactions in a given context. I then demonstrate the application of this heuristic in order to show how those tools collectively shape the motives driving the style-guide revision and how they organize the approach that Nancy takes to the task.

LITERATURE REVIEW

To examine the shaping and organizing influence of tools, we need to be clear about the nature of that influence. A cause-and-effect structure, in which the introduction of a tool precedes and appears to affect technical communication, is too simple and more problematic than helpful. The problem is that a cause-and-effect structure isolates a tool as the source of a given effect. But technical communication is too complex and comprises so many actions and interactions that are historically, culturally, and technologically situated, that such a simple formulation is not possible. Understanding the influence of tools requires us to examine the larger context of tool use. We will first consider how technical communication is a tool-mediated field, then consider how tools actively shape the work of technical communication, and finally recast that activity as “mediation” and discuss ways to study it.

TECHNICAL COMMUNICATION IS A TOOL-MEDIATED FIELD

From its origins in land grant universities and engineering schools at the turn of the twentieth century (Connors 1982) and its development during the wartime and postwar eras of the twentieth century (Kynell 1999, 148), technical communication has been a tool-centered field. On one hand, technical communicators are users of tools. Steel-tipped pens, typewriters, carbon paper, and photocopiers have, without question, changed the practices of written communication (Yates 1993, 21–64).

On the other hand, tools are the topics of technical communication. At the heart of the field, some argue, is a responsibility to accommodate readers to tools within contexts of use (Dobrin 1983, 242). Yet technical communicators are more than technicians, skilled writers who objectively unveil the workings of a tool. They have a responsibility to understand that tools are not neutral, that tools are built to serve a purpose, an ethic that resides in the social context where they are used (Sullivan 1990). Tools have politics, which is to say that they guide people to interact with one another and with their environments in ways that serve particular social values (Winner 1989, 22). Sometimes these politics manifest as blatant value statements, such as when a city chooses a park-bench design that discour-

ages the homeless from congregating in city centers. At other times, the statements are morally ambiguous, such as computer-aided design software that requires us to seek the assistance of someone skilled at reading the outputs.

TOOLS SHAPE ACTIONS AND INTERACTIONS

In sum, we can say that a tool shapes both the practice of technical communication and the social interactions that technical documents foster. It may appear strange to attribute such influence to tools, until we consider a broader definition of the term, one that shows both the plenitude of tools around us and the subtle ways that they alter our perception of the world.

Lev Vygotsky offers a broad definition of tools that reveals a connection to writing. To Vygotsky (1978, 7), tools are a broad category of objects that includes texts, signs, and written language, in addition to more traditional tools like keys and chisels. His work suggests that tools influence mental processes, by shaping the activities in which tools are employed. For example, a set of sticks helps children learn to count, but over time, those children learn to substitute words and signs to serve the same function. “The sign acts as an instrument of psychological activity in a manner analogous to the role of a tool in labor” (52). It has an “organizing” function (24) by which it shapes and extends thinking beyond what a person might otherwise be capable of without the tool (39). This definition gives us one way to understand the kind of shaping and organizing that tools do.

To say that a tool shapes an activity means that with a tool, one sees and approaches that activity differently than without. For example, when creating a website, one might approach the task differently with a simple text editor than with a graphical HTML editor. Although the result may be the same, a text editor draws the designer’s attention to marked-up lines of text, while the HTML editor draws attention to the rendered design, which is a different object of work. The tools support different views that foreground one activity (visual design) over another (coding).

A more common way to describe how tools shape and organize activities is to say that they “mediate” those activities by imposing a structure on them (Hutchins 1997, 338). Hutchins offers the example of a checklist that mediates the act of shopping. The checklist presents shopping as a series of simple activities (i.e., items to purchase) combined with the conventional checklist form (e.g., checking off completed items). Items to purchase are the activities to be checked off, and in this way, the checklist mediates, shapes, and organizes shopping. The same list also potentially

constrains the act of shopping by limiting purchases to only those items appearing on the list.

While tools may have the potential to mediate, people must still decide to use them. They must recognize that the tool could provide some useful mediation, and when people recognize a tool's potential, we say that they have perceived an affordance (Norman 2002, 1999). James J. Gibson (1986) originally used the term *affordance* to describe a tool's "action possibilities" or the potential to be used in service of a given task, in a given setting. For example, a maul may afford splitting wood, but only if the user is able to perceive that use and is motivated to take advantage of that affordance. A component of both Gibson's and Norman's definitions is that the ability to perceive affordances is socially situated, shaped by a desire to participate in an activity that is particular to a given community.

Tools shape our actions in ways that enable us to enact our affiliation with those communities. In other words, people perceive and take advantage of a tool's affordances within a social activity, often with the aim of participating in it. Insofar as a tool mediates the actions of an individual, it also mediates that individual's interactions with other people (Ihde 1991, 96, 102). Returning to our example of the HTML editor, before using the tool the technical communicator might have relied on colleagues to assist in the development of the website. Now those work relationships may not be necessary. Or the relationships may be altered, creating different kinds of professional dependencies or conflicts, given how information is presented and shared.

Tools shape not only the appearance of the information but also the ways in which others can use it. Users with different backgrounds and specializations use the same information for different purposes (Winsor 2001), enabling complex, distributed, multidisciplinary teams to work together. Even the material form that information takes can enable social interactions to take shape or to degenerate, as Sellen and Harper (2002, 110) discovered when observing the importance of paper slips to air traffic controllers as literal reminders of aircraft movements in and out of different airspaces. What begin as mediating interactions between people and their tools become mediating interactions between other texts and people the farther out we trace the effects.

STUDYING MEDIATION

Analyzing mediation is not easy because there are few direct causal relationships to track. What is needed, instead, is a broader scope of analysis that accounts for the mediating influence of tools on individuals as well as the ripple effects throughout a social setting.

One useful approach comes from activity theory, which advocates understanding the mediating influence of a tool in a larger historical and cultural context. The activity theoretic approach considers a community and its rules, structures, and divisions of labor (Cole and Engeström 1993, 8) when trying to understand mediation. How does a person formulate an objective and recognize the value of a tool for meeting that objective? The process both influences and is influenced by community norms, rules, and relationships. Engeström's (1993) use of activity theory for describing how tools like digitized medical records mediate the operations of a health clinic provides an engaging example.

Engeström begins by describing a changing economic reality for health care in Finland, where one particular clinic recognized a need to see more patients, spend less time per patient, and still maintain a high level of overall care. Digitized medical records were thought to be a way to respond to the rule of seeing more patients for shorter amounts of time by systematizing both the input of patient information and the access of it. There was an impact, however, on the community norms. Because the clinic started to see more patients, it became harder for them to schedule appointments, resulting in more urgent-care requests, to which doctors responded by doing less listening to patients' nonmedical explanations of their conditions and relying instead on the standardized medical information about the patient captured in the digital record. Further, the increased demand for physicians meant a need to break down the typical doctor-patient relationships (division of labor) by distributing the patient burden across more of the medical staff, some of whom had little to no history with the patients and so needed to rely even more on the medical records. One of Engeström's points is that a change in tools does result in a different kind of mediation, one that might stand in unexpected conflict with the values of the community where it is introduced.

The activity theoretic position that mediation be understood in the context of a social setting of action could just as easily explain other mediated interactions, such as how scientists use shared data sets to participate in distributed research projects, or how people signal affiliation with a particular group through distinctive and conspicuous use of mobile phones.

While activity theory is helpful for analyzing a social setting and its influence, this perspective can be enriched by another that considers how the social comes together, holds together, and takes on the appearance of reality (Jonassen 2004, 110). From actor network theory (see Latour 2005), I borrow the idea that tools develop historically, by connecting with and incorporating other tools. At different moments in a tool's development, it reflects the needs of the people who enacted earlier tool designs. Tools

have histories, and by reading a tool's history one can understand how that tool has shaped an activity over time and how those mediating influences persist in the accumulated design. Summarizing both kinds of mediation discussed in this section: "The use of tools is an evolutionary accumulation and transmission of social knowledge, which influences the nature of not only external behavior but also the mental functioning of individuals" (Kaptelinin, Nardi, and MacCaulay 1999, 32).

Through their designs, tools accumulate knowledge and perspectives that have situated value. For example, the units of measurement etched on some navigational instruments reflect valued ways of measuring the world, marking locations, and plotting courses that developed historically and gradually became default frames for the world when they became crystallized in maps, alidades, software, and other instruments used in modern navigation (see Hutchins 1995). In this case and others, the perspectives afforded by tools reflect some values to the exclusion of others. The next section considers how these ideas can be investigated with a heuristic.

A HEURISTIC FOR ANALYZING TOOL MEDIATION

There are many questions one could ask about tools and how they mediate, but to develop the social and historical account described here, we can look to activity theory and actor network theory for inspiration.

Activity theory suggests that all tools are situated in a social activity, a goal-oriented task, through which one participates in a community. A person uses all manner of tools as well as mundane artifacts like clothing, to do something within the context of a community, even if all that person is attempting to do is fit in. Given the factors that motivate a person to use a tool, certain operations and functions will be more apparent because of their immediate applicability. Sometimes these operations and functions are perceived informally, and at other times they are directly identifiable in the tool's interface. How to understand these operations is the first question in our heuristic.

How do the concepts and operations associated with a tool mediate a user's understanding of a given task? Visually, we might present the point as in figure 6.2.

Tool use, seen from the perspective of the user, is only part of the picture, however. Activity theory reminds us that tools also mediate how users relate to other people. In other words, the tools shape not only the individual's work but also that person's relationships with others. From this expectation, we get our second question.

How do the concepts and operations associated with a tool mediate social

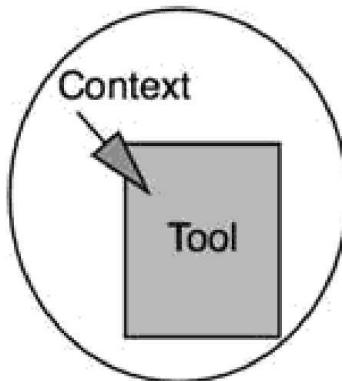


Figure 6.2. Tools are always situated in contexts of activity.

relationships occurring around it? This question leads us to understand more about the people who are in the context surrounding the tool being examined (i.e., the circle encasing the tool in figure 6.2). What motivates them to interact as they do?

Turning attention to the tool itself, activity theory and actor network theory both tell us to look for design histories. Activity theory tells us that tools change in significance and meaning as they become associated and disassociated with particular contexts and tasks. Actor network theory tells us that some tools grow by linking together tools (and contexts of activity) over time. For example, mirrors are tools, and lenses are tools, and the microscope, which followed in a temporal sense, links together both under the operation of the microscope. This observation leads to our third question.

What is the tool's design history, and how does that history influence current uses of the tool? With this question, we engage in a little historical detective work, trying to determine the origins of the tool under examination. What other tools does it link together? Are there particular skills or expertise associated with those underlying tools that are now folded into the interface of the new tool? Are there operational or functional assumptions carried forward through the tool's design? For example, as we will see, the CMS carries forward the functional assumption that texts are made up of modular chunks of text that can be manipulated in isolation. We can add design history to our visualization (figure 6.3). Early on, the tool started as separate tools that gradually linked together into more complex tools. The spheres of activity associated with those tools also started to merge.

The last two questions are closely related. They attempt to uncover the broad, distributed network of other tools and people through which the mediating effects of any particular tool will be seen. For example, by using a tool like an MRI, one produces radiographic data about a patient, in a

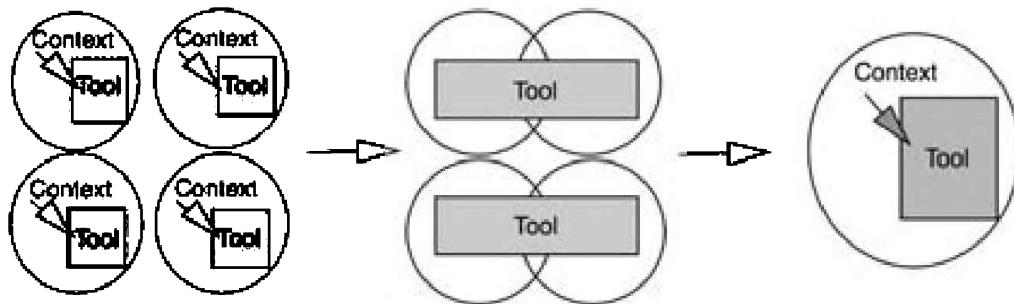


Figure 6.3. Over time, tools and their contexts of activity start to merge.

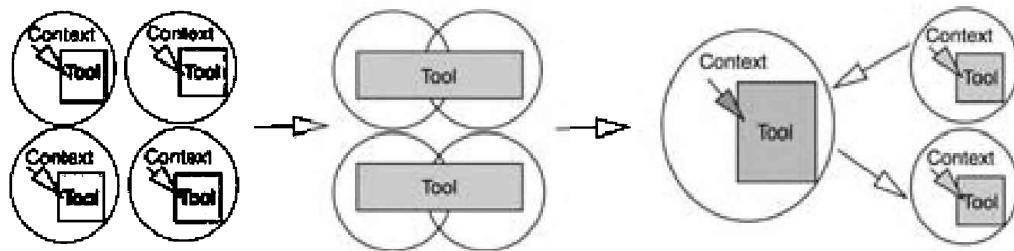


Figure 6.4. A tool's scope of mediating effect includes other people and tools within that context of work.

form that is required for use in certain charts or for display in a particular piece of software. The data also allow medical personnel of different specializations to talk about a patient and coordinate the care they will provide.

To what other tools is this one connected in practice or function? By what means are the mediating effects of a tool formalized and made more stable? To complete the visual that now includes a picture of the tool across time, we can illustrate the distribution of that tool's mediating effects in space—its scope of mediational influence (figure 6.4). In other words, by tracing out the connections to other tools (and to other people and the relationships among them), we can see how a particular tool both shapes and organizes those activities even while its own operation and significance is held steady.

These questions are the focus of the next section, in which our hypothetical technical communicator, Nancy, uses them to understand the mediating influence of CSS and style guides.

APPLYING THE HEURISTIC

By applying the heuristic, Nancy began to explore how CSS mediates practices of technical communication and to trace those effects as they impact the development of a style guide.

How do the concepts and operations associated with a tool mediate the user's understanding of a given task? Nancy's investigations revealed that, early on, the company style guide was a single, comprehensive document used to enforce standards on any text. As the company became more distributed and diversified and the range of texts increased, there was a growing realization that one style did not fit all needs and that some divisional styles might need to take priority, while inheriting a look and feel from a common set of style standards. Through conversations with colleagues responsible for promoting content management in their divisions, Nancy came to realize that CSS had two important operational qualities that filtered into those divisions' style guides.

One concept was the cascade, the ability for a single document to have different styles attached to it, prioritized depending on the output. For example, the author of a document may assign a style sheet that specifies the look of `` (i.e., an unordered or bulleted list) and `` elements (i.e., bulleted points), but the user may apply a different, local, style sheet that overrides some style elements. Originally, prioritizing the application of different style guides was accomplished informally as different divisions decided when to apply the company style guide or their own local style guides. With the adoption of CSS, such cascading capabilities invited technical communicators to see their texts as having a greater range of potential uses and styling considerations.

Another concept that appeared to have influenced technical communication was that styles are inherited, referring to how style characteristics are passed on from parent content elements to child content elements. For example, an unordered list `` contains list items ``. The unordered list is the parent element, and the bullet points are the child elements. Styles associated with the `` parent element, such as font, are inherited by the `` child elements.

More than just concepts, cascades and inheritance represented operations that these division heads valued and that Nancy's company now wanted to ingrain as habits of thought about how writing is practiced. These technological assumptions were what Nancy needed to uncover in order to build them into the company style guide.

Nancy also recognized that problems associated with enforcing style rules would be circumvented in CSS, which would substitute the need to compel writers to follow the rules with the very functionality of the tool itself. Writers wouldn't need to be reminded to follow the style guide. They would need only use their writing tools.

How do the concepts and operations associated with a tool mediate social relationships occurring around it? Delving into the company's historical

records, Nancy learned that as the company expanded, diversified, and spun off subsidiaries, the desire for consistency intensified. Consistency helped manage distributed units of the company by facilitating the flow of documents and information. Later, concerns about consistency grew, concurrent with rapid development and change in writing tools that made it easier to manipulate visual design and layout. Nancy knew that style guides fostered consistency by passing down style rules, but now that work would be delegated to forms, templates, macros, and CSS rules. In a large company like hers, these delegations of style rules to technologies would become necessary for enforcement that is more consistent and reliable than editors might provide (see Hart 2000, 12, 14).

Before computers could check consistency, the responsibility fell to writers and editors. As the company produced more documents, the cost to vet them rose. Around this time, the company style guide started referring to forms and templates, which lowered the cost of enforcing stylistic consistency by reducing the number of style decisions writers could make. Responsibility for adhering to style rules started to fall back on the writers and their templates, relieving editors of some responsibility. With this shift in responsibilities, Nancy recognized, the editors and writers could develop different working relationships.

In addition to being costly to enforce, style guides were also costly to produce. Early versions were printed, copied, and bound in limited numbers. Conceivably, the limited availability of the style guide effectively consolidated the distribution of that knowledge within the company. Those with access to the style guide were those who could speak about the rules most authoritatively. So responsibility for interpreting and applying the rules fell to them. While the ability to produce and distribute style guides electronically helped lower production costs, CSS will improve cost savings by embedding style rules in the writing tool's interface. A downside, however, is that this move will divorce writers from a consideration of stylistic concerns, which are a necessary part of a document's rhetorical effectiveness.

What is the tool's design history, and how does that history influence current uses of the tool? Nancy's initial consideration of how CSS-enabled content management affects social relationships led to her observation that while the company had long used style guides, at some point in the past the function of those guides started to merge with CSS itself, which had merged with structured authoring tools. Puzzling out this complex mediation required Nancy to investigate three parallel histories: structured writing, CSS, and a local history of style guides at her company. Only

by seeing how each came about could Nancy see what they had become in sum.

A brief investigation of the history of CSS revealed that tagged and structured content could be traced to the development of standard general markup language (SGML) in the 1970s, which facilitated the development of HTML in 1989 (Turner 2008). HTML developed out of a desire to create structured content for the web; in doing so, it conflated structure with style, a problem addressed by the development of CSS in 1993 (Bersvendsen 2005). CSS merged back with SGML just before the adoption of CSS1 standards in 1996. At the time, it was proposed that CSS could be applied to SGML, meaning that the styling rules could be applied to specific content objects or overridden, depending on the output. CSS2 standards introduced the ability to reuse structured content and to style content dynamically, based on its destination (Lie and Bos 1998; Bos et al. 2008).

This abbreviated technical history clearly showed how characteristics of older technologies were preserved and enacted in CSS. In particular, CSS works with and anticipates structured content. It assumes a need to keep content separate from style. This observation alone would impact the work that Nancy's style guide would need to accomplish. Companies found SGML and HTML worth adopting because they served their values at the time. Once adopted, use of those tools uncovered problems or shortcomings that helped spur the development of new tools like CSS, which improved on the existing tools but still worked within the framework of mediation established by them. What this technological history further suggests is that by adjusting a style guide to account for the influence of CSS, Nancy would also need to keep in mind the mediating framework, values, and assumptions the style guide itself has inherited from its precursors.

The earliest style guides Nancy could find date to the 1970s. In them, there was little explicit mention of document design and layout. Instead, the overwhelming focus was on creating consistency by controlling expression (see Blair 1970, 1). The style guides contained little discussion of layout, and when it was addressed, its importance was downplayed or treated as falling outside the realm of a writer's concern (see Lee 1970, 3). The focus on expression over layout was partly due, Nancy surmised, to the limited range of layout choices available to writers. Much of that work would have gone to specialists.

Throughout the 1980s, the company style guide expanded to include guidelines for controlling layout and visual design, while retaining a strong focus on controlled expression. Around this time, the company started to

expand, spin off subsidiaries, and open international offices. Documents now had national and international audiences. The resulting translation and localization needs required increased control over variation in expression and layout (see Blakely and Travis 1987, MPD-63).

The style guides also reflected changes in tools. As word processing and document design technologies grew in sophistication and availability, technical communicators at the company had control over a larger range of stylistic features (see Lalla 1988, WE-176).

A style guide from the 1990s revealed significant shifts in emphasis, away from specifying detailed rules of usage and style to focusing on templates (see Caernarven-Smith 1991, 140–142) and style rules for genred sections of common documents—for example, overview sections, feature lists, examples, and screen captures (see Washington 1991, 554). In other words, the focus shifted to content types to which different style rules might be applied. The significance of the shift, Nancy recognized, is that it reflected a motivation to see documents as structured content, a perspective afforded by structured writing tools that would come to be associated with CSS, developed around the same time.

Later in that decade, style guides started to show tighter integration with CMSs by referencing document type definitions (DTDs), or rules specifying how structured content was to be assembled for different document types. Increasingly, Nancy noted how the style guides explicitly and implicitly referenced structured writing tools, even deferring to them as some of the enforcement of style rules was rolled into their overall functionality.

As content migrated to the computer screen and to the Internet, the style guides started to reflect the importance of localized styles (see Dalton 2002, 529; Rude 2002, 139), and guidelines for controlling the appearance of text started to address lingering problems with poor on-screen legibility (see Nichols 1994, 436).

By early 1998, the documentation division started using structured writing tools with CSS capabilities. A revision to their local style guide later that year revealed reliance on CSS for applying style rules automatically (see Perkins and Maloney 1998, 25). Style enforcement continued to move into the interface as CSS1 standards allowed writers to attach style sheets to content types.

By 2000, the integration of style guides with tool interfaces appeared well established, as visualized in figure 6.5. Submerged in the interface, style rules implicitly guided writers, while shaping the product that emerged (see Hart 2000, 12, 14). The separation of style from content also appears to have facilitated company adoption of single-sourcing, outputting the same

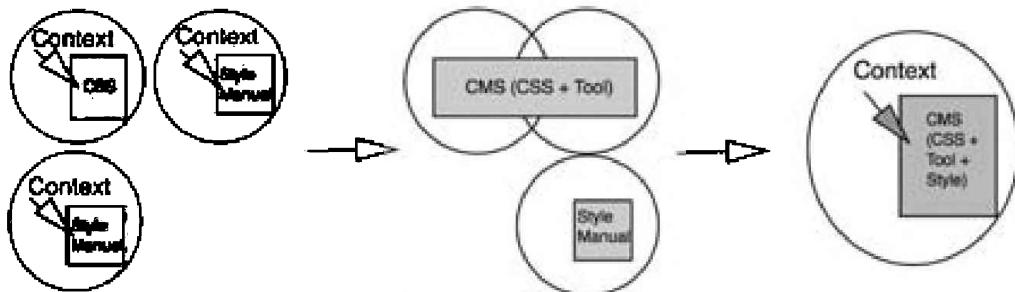


Figure 6.5. Tools that were once separate gradually became embedded in the CMS interface.

content into multiple document types, each with its own style sheet (see O'Neill 2002; Quesenberry 2001, 3).

To what other tools is this one connected in practice or function? Implicit throughout the historical record of changes in the company's style was the changing technological landscape in which the writers worked. First was the increase in personal computing, which ensured the ready availability of sophisticated word processing and document design tools, and which likely led to a general increase in the number of texts that people produced and in the number of interactions happening around those texts. Personal computers were also convenient points for enforcing style rules. Second was the development of networking technologies (e.g., e-mail, video conferencing) and network infrastructures, which made it easier for the company to diversify and globalize. As the effects of both were being felt, the values of consistency and cost savings were highlighted in ways that encouraged adoption of technologies like CSS.

Each of these technological developments connects to another in some way. While some tools influenced how technical communication is practiced at the company today, other tools had a broader mediating effect on the context in which technical communication now occurs. The increase in personal computing power and sophistication gave Nancy's colleagues the ability to make more stylistic choices. Corporate diversification and globalization created new opportunities for distributing the labor of technical communication. Both factors increased the threat of inconsistency that could then be addressed via CSS, instead of through an ever-expanding company style guide. Tools work within networks of tools and humans that are temporarily aligned toward a given end. Mediation is an effect of the network rather than of a single tool, and Nancy was starting to see clearly how technical communication at her company is practiced across this assemblage of tools.

By what means are the mediating effects of a tool formalized and made more stable? Mediation is situated within a community and its values, rules, and divisions of labor, which are continually changing. Often this means that mediation is a temporary influence, changing as the community changes. The values, rules, and divisions of labor at the company in our example, however, were reinforced by the adoption of structured writing and CSS. Nancy recognized that the widespread adoption of these tools and the tight integration of the tools and their products into various company work practices (e.g., single-sourcing of documentation and marketing literature) stabilized the mediating effects of these tools. The question Nancy needed to ask, then, was who or what are the actors stabilizing those effects? One such actor is the style guide.

A style guide is a tool that mediates writing. Changes in style guides reflect changes in what companies value in their texts as well as changes in the contexts where a style guide might be employed. In some ways, a style guide articulates and reinforces values derived from and reinforced by the tools technical communicators may use. The style guide elevates guidelines on writing, document design, and usage to the level of policy.

A second formalizing effect comes through the ways that precursor tools and their mediating frameworks become enmeshed in the software and other tools that technical communicators use. Today, many technical communicators use some kind of structured-writing tool that either relies on SGML or XML to run DTDs, sets of rules that govern how structured content should be assembled into different text types. CSS is integrated into those tools to mediate the outputs, and those tools become inextricable parts of that interface.

WHY MEDIATION MATTERS

After a bit of investigation and reflection on the role and function of CSS at her company, Nancy learned a great deal that helped explain the function that the company style guide now serves. At the very least, this heuristic evaluation revealed

- why style guides at her company look like they do;
- how those style guides mediated the way technical communicators looked at texts and shared them with their colleagues;
- why tools were adopted, based on changes in the company, and how the features of new writing tools (e.g., embedded and largely invisible CSS rules) served distinct economic exigencies and corporate values; and

- how making changes to a style guide requires an understanding of the kinds of work and social relationships that different writing tools afford.

What Nancy discovered is that the style guide now reinforces the importance of the CMS because of the extent of their integration. Given the company-specific values that derive from producing content in the CMS (e.g., automatic application of style rules, version control, single-sourcing), there are compelling reasons why writers should be encouraged to use the tool. The style guide does its part by deferring authority to the CMS and the embedded CSS, and in this way reveals how the guide is shaped by CSS.

After considering the complicated work that the style guide accomplishes, Nancy can formulate a clear plan for revision. The plan starts with a mapping of the various objectives that the style guide is meant to accomplish. These include standardization of content and form, flexible reuse of content, cost reduction, and improved coordination between divisions in the company. In the process, Nancy will determine what writers, editors, and managers are attempting to accomplish with their documents, what norms govern those practices, and what social relationships are supported through those documents. Further, through interviews with some of these stakeholders, Nancy will determine the role of the style guide as a tool supporting that work and how it does so alongside other technologies like the CMS and its integrated style sheets. By understanding how the style guide works with and through other technologies, finally, Nancy can determine the scope of the rules to be covered, technological concepts that can be referenced, and assumptions that can be made about stylistic choices that will be in the writer's control and those that will not be. The result will be a style guide that is designed to accomplish its various objectives while reflecting the social and technological contexts in which it does that work.

DISCUSSION QUESTIONS

1. Choose a function from a writing tool (e.g., columns or page layouts) and trace a brief history of it. Where did this technology or function come from? What does a person have to understand to know how to apply that function?
2. Using the same example, think of concepts or operations associated with that specialized knowledge. When applied to writing, how do those concepts and operations influence the way you think about a text?

3. Think about a tool that you use in class or at work (e.g., e-mail, a course management system, an inventory control system). With whom do you interact through that tool? How does the tool mediate that relationship?
4. Using the same example, consider what kinds of identities are associated with the users of that tool (e.g., a course management system assumes teachers and students). What kinds of values are associated with those interactions?
5. Based on your reading of the scenario explored in this chapter, does it seem accurate to state that changes in tools caused the changes that Nancy saw in the style guides? Why or why not?
6. What could a technical communicator do, if anything, to be more critically conscious of the mediating effects of tools?
7. What information could one gather to illustrate the influence of tools on technical communication practice?
8. Where might one look for evidence that a particular tool's mediating function is becoming formalized?

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