

Developing Knowledge, a Book Review of *The Language of Work*  
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**The Language of Work: Technical Communication at Lukens Steel, 1810 to 1925**  
Carol Siri Johnson. 2009. Amityville, New York: Baywood. [ISBN 978-0-89503-384-0.  
200 pages, including index. \$49.95.

Carol Johnson has penned an engaging discourse tracing the forms and impact of technical communication in one family-owned industrial complex, Lukens Steel. She provides a brief and thorough background of technical communication related to metal and metallurgy, before proceeding with a descriptive synopsis of the idiosyncrasies of this particular company. Then she delves deeply into the story told by the written artifacts of the company and analyzes them through the perspective of technical communication.

Throughout the book she clearly demonstrates how communication, at all points in the period being studied, transfers and creates knowledge and contributes to the progress of the company and the industry. In her words, “The changes that are documented in this book occurred when large numbers of people from different groups began using writing as a method of problem solving and creating new technology” (p. 15).

Lukens Steel began as Brandywine Iron Works and Nail Factory. Dr. Charles Lukens leased the mill and land from his father-in-law. Dr. Lukens added the manufacture of boiler plate, “In 1818 Lukens rolled the first boiler plate in America” (p. 41). Before this time, the boiler plate used to make the boilers for steam engines had

been imported from Europe. This successful addition of boiler plate to Brandywine's products proved prophetic. The company remains at the forefront of the iron and steel industry. "At the time of this publication, the plant is being operated by ArcelorMittal, the world's largest global steel corporation" (p. 54).

Unfortunately, Dr. Lukens died of a fever in 1825. His widow, Rebecca, determined to keep the business operating. She was largely responsible for the unique form of management that Lukens employed: a cross between progressive technology and conservative management and maintenance. "Lukens Steel was a family-owned corporation for over 188 years" (p. 54). Rebecca successfully ran the Brandywine Iron and Nail Factory from 1825 through 1847. She set precedents of communication and record keeping which led to the availability of the volume of technical communication artifacts which Johnson used to produce this unique archaeological, multidisciplinary contextual analysis of Lukens Steel.

Johnson asserts that correspondence was the key to much of Lukens Steel's success. She states, "Simple letter writing was a sufficient form of technical communication to run the business for 60 years" (p. 66). These letters conveyed technical specifications for specialized orders fulfilled by the company. Lukens continued to lead the industry in technical developments, and all of the technical documents necessary to do so were accompanied by correspondence. Rebecca's son-in-law, Dr. Huston, and his son Charles Lukens Huston participated in the rich discourse of the developing steel industry. They were influential regarding standards, participated in the professional organizations of the day, and published their work. Each was granted many patents for their continuous innovations as they sought to produce better and more

reliable products. Correspondence provided asynchronous communication which aided the process of the development of products, standards, and ongoing communication. “As the entire works became more literate, the form of communication that became most prevalent remained correspondence (p. 183).”

In addition to correspondence, illustrations, sketches, and drawings were instrumental to Lukens ongoing success. Handwritten correspondence often included a quick sketch to illustrate a particularly intricate technical idea. Johnson states “Charles Lukens Huston often “thought in drawing” and many sketches are on his letters and notes as he designed new configurations of machinery for the mills” (p. 122). She goes on to state, “Drawings had nearly the same effect as intimate, tacit knowledge exchange, but they could be sent across distances, used at different times, and shown to multiple people” (p. 122).

In 1885 Lukens obtained a typewriter. “Typing made accurate and rapid written communication possible” (p. 99). Johnson spends a good bit of time stressing the impact that the typewriter and the accompanying knowledge worker, the stenographic typist, had upon the creation of knowledge at Lukens Steel. While the typewriter made in-line sketches difficult, the benefit of making Charles Lukens Huston’s atrocious handwriting legible easily offset this drawback. Drawings continued to accompany the written discourse, just on separate pages, instead of in-line. Johnson states, “Without the assistance of this new type of literate and detail-oriented worker [the stenographic typist], communicating complex technology by prose would not have evolved as rapidly or as efficiently” (p. 104). She goes on to say, “The stenographer typist was the midwife of technical communication, able to take the spoken words of the subject-matter experts,

regardless of their level of literacy, and render them clear and understandable. Writing had taken a central role in the organization” (p. 150).

Another technical communication characteristic of Lukens Steel was that the communication continued to evolve. New forms of record keeping were added to the processes of daily work and older forms were adapted, analyzed, and integrated.

“Lukens’ ability to produce and track this amount of detailed information contributed to their ongoing success as manufacturers of high-quality specialized steel” (p. 136). Their technical communication via record keeping and analysis led to knowledge development. “The difference between them and their competitors was that Lukens never stopped trying to analyze the processes. The first step in this ongoing analysis was to keep written records” (p. 81).

Technical communication at Lukens Steel was continually growing and augmenting collaboration and knowledge development; but the management record keeping did not progress as well. This is quite ironic since accounting record keeping was among the earliest accurate record keeping. Eventually Lukens employed management consultants to help with this problem, and the management report became integrated into Lukens’ vast diversity of technical communication artifacts.

Johnson describes many technical processes important to the development of corporate and technical communication. She portrays the historical progression of writing from quill and ink, through dictation to a stenographer typist, and even addresses e-mail. She discusses early forms of duplication. Letterpress books allowed a single copy of an ink document to be kept as a record. Blueprints allowed multiple copies to be

created. Next, carbon paper provided a means of copying documents before the advent of photocopy machines.

The book is filled with illustrations. Everything from early sketches of developing ideas that became patentable to early photographs of the Lukens facilities is included. These illustrations are very helpful in bringing the history to life and understanding the analysis that Johnson provides. The pictures of car record books, puddle-mill journals, loose tonnage sheets, and so forth provide strong visual evidence of the vast amount of data that Lukens accumulated on a day to day basis. These and other pictures of notes and logs bring reality to Johnson's conclusions such as, "Ultimately being able to track the defects in the steel and trace them to their sources required work that could only take place by using writing and quantitative data analysis as tools" (p. 93).

Lukens Steel epitomized knowledge management. They participated in benchmarking by sharing knowledge with other companies, even borrowing one another's supplies and equipment. They were active in communities of practice such as trade organizations. Lukens did not limit these activities to just the top management but also engineers and master mechanics. "Lukens Steel knew how to gather information" (p. 181).

Lukens efforts to produce quality steel in a reliable manner involved cross-functional teams composed of line workers, chemists, engineers, and management. The efforts and contributions of each of these were necessary. Their communications progressed from pre-discursive to discursive, from individual to individual, from

individual to group, from group to field, culminating in a “web of shared knowledge, which continued to grow over time” (p. 183).

“Lukens Steel Company did not need an extensive advertising campaign because, as specialty steel makers, they knew their customers and their customers knew them” (p. 173). This statement illustrates the unique position Lukens held regarding public relations. They built upon this understanding by producing historical profiles and articles in trade journals.

This is a fascinating book which illustrates many technical communication theories in terms of the history of one company. Everything from knowledge management to collaborative cross-functional teams to public relations is illustrated. “...The emergence of technical communication at Lukens Steel demonstrates how technical information became so complex that it had to be contained in documents rather than people” (p. 56). Johnson has produced a very readable book which conveys amazing information. It is short and concise but simultaneously portrays the inherent value of technical communication in the development of an industry which is both a technical and an economic powerhouse. The book truly illustrates Johnson’s closing remarks on page 190:

Thus, the study of technical communication can illuminate areas of the world that are still hidden by the camouflage of the commonplace. By studying these areas we can take more responsibility for our engagement with our world as it actually is, rather than as it should be.