

**“Naming the Complexity”:  
Women’s Experience and the Holistic Assessment of Technology**

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Historians of technology have long recognized that the development of technology can only be fully understood if it is conceptualized as “an integral part of cultural history” (Cappon 1966, p.x). Charles Singer, whose pioneering *A History of Technology* (1955-58), helped establish the history of technology as a distinctive field, asserted that “a history of technology should be clearly related to human history as a whole” (Singer 1959-60, p.306). Still, many historical assessments of technology have fallen short of this ideal, in part because they oversimplify the story by overlooking the diversity of human experience of technology. In the words of the poet Adrienne Rich (1975), they fall short of “naming the complexity” involved in the interaction between technology and the social fabric.

A number of fairly recent historical treatments have attempted to capture more effectively the diversity and complexity of human experience of technology by focusing on women’s experience. Bush’s “Women and the Assessment of Technology” (1983), Cowan’s *More Work for Mother* (1983), Hubbard’s *The Politics of Women’s Biology* (1990), and Stanley’s *Mothers and Daughters of Invention* (1993) are just a few of the works that have illustrated how a focus on women’s experience can lead to richer accounts of the history of technology and to more sophisticated approaches to assessing the human impact of technology.

This paper focuses on a little known account of the impact of technology on women, which was authored by the German feminist Louise Otto (1819-1895). Otto was neither an historian nor an engineer. She was, instead, a journalist, poet, novelist, and social activist. Perhaps most significantly for our purposes, she was an astute observer and a skillful rhetorician. Her book *The Life of Women in the German Empire* (1876) provides a model of an holistic approach to the assessment of technology and furnishes guidance as to how we can grasp yet still manage the complexity involved in the assessment.

In her book, Otto focuses on the specific inventions of the friction match, the sewing machine, and the train. She gives detailed accounts of how these inventions affected women, the household, and society. We learn how these inventions were received, and how they changed people’s lives, their way of working and also thinking. She describes most effectively, often poetically, how for women in particular, the new technologies brought about complex life changes. The technological innovations made keeping house simpler; fewer women were needed in the household to keep it running smoothly. No one had to take on the tedious task of making fire for cooking and for lighting up rooms. Matches were easily lit to make a fire or light a candle, or turn on household gas. The sewing machine allowed housewives to do simple sewing more quickly and efficiently, and thus save time. This, of course, meant that unmarried women who were once an asset to a household became rather a burden, just another mouth to feed.

Also, not as much domestic help needed to be hired to do the daily chores. Consequently, more women were thrust into the workforce, including middle class women who had no households of their own.

Where many discussions of new inventions like the train focus on physical or technical description, Otto focuses instead on the meaning of new inventions, that is, on the ways they change peoples lives and open up new opportunities for shaping the future. She is a wonderful storyteller; indeed, the sub-title of her book is “Memories of the Past with Reference to the Present and Future.” She “remembers” and describes how things used to be before the invention of the train, how women could never travel by themselves because it was too dangerous for them in a horse-drawn coach on lonely country roads. She describes in great detail the tedium of travel and the short distances covered, which still required spending the night in some inn and which also could prove dangerous to a woman traveling alone. Traveling was tedious for anyone, alone or in a group, and because of that, visitors would stay for extended periods of time, putting a burden on the host’s household. Also, the difficulty of travel kept many people at home and resulted in isolation for many small communities.

Otto “tells the story of the past” so effectively that the reader can visualize and imagine what it all must have been like. Then she introduces the new technological innovation and how it is changing lives forever. All the little details from life before the invention take on new meaning. We can experience her awe at the thought that a single woman can get on a train and travel safely to the next town in a relatively short time by the previous standards. Suddenly the world is opening up to people; they can travel in relative ease and see different parts of their own country and other countries. Visitors do not spend so much time visiting a single host, but depart after a few days, putting less of a burden on the hosts’ resources. Women who are now in need of jobs have more opportunities because they can travel to other places in their job searches. Otto’s descriptive detail of the past and the present make for an interesting tension between the two and lead the reader to ponder past, present, *and* the future. Just at that point, as if anticipating the rational progression of the mind, Otto herself speculates about the future.

Because she was a most energetic and optimistic woman who witnessed drastic improvement in daily living in the nineteenth century, particularly for the middle class, her vision of the future is relentlessly positive. She does not anticipate that the sewing machine would also end up in factories and force women and children to work in sweatshop conditions. From her perspective, technological innovations have brought about mainly positive changes for society and women in particular, and so she fully expects that the future and possible new inventions will bring only enlightenment and a better life for all. To Otto, any technological innovation that eases the burden of daily living must also affect the character and soul of human beings. She believes that an easier life makes for a more noble spirit; it gives people the time and opportunity to discover their common humanity and to work for a better world. That is how she lived her life; she was socially active and used her skills as a journalist and her position in society to help others live a better life.

Of course, we view her optimism about the future as totally naïve because we are the future she was writing and enthusing about. We know what has happened since the advent of the industrial revolution, and, while we appreciate the many positive changes new technologies have made in

our lives, we are also aware of the problems and hardships experienced as a result by various groups of people over the last two centuries. Her optimism about the future can be explained by her energetic and positive outlook and by her personal experiences. She was from a middle class family which cherished its daughters and believed in their worth as women. The technological innovations that she witnessed did indeed bring about positive changes in the lives of women and society in general, thus bolstering her positive outlook.

To understand her work fully, we must recognize that she is both reporting and *interpreting* the technical and social changes of her day. In fact, the most interesting aspects of her work are rhetorical and literary. The vivid descriptions that she provides engage her readers' imaginations and *show* them the ways that technology has changed things for the better. She also uses a strategy in which the problems arising from technological change can be viewed as opportunities for women to achieve greater independence and social and economic equality.

Her discussion of the ways that household technology has created both a freedom and a necessity to do things outside of the home is one of the best examples of this strategy in her work, but there are others as well. Her strategy of linking past, present, and future creates a strong sense of momentum and of inevitable, continuing forward movement. Once she has demonstrated the ways that technology has transformed life in some areas, it becomes easier to believe that it might be transformed in other areas as well.

In the end, the most striking aspect of Otto's effort to capture the complexity involved in sweeping technical and social change is the multilayered way in which she approaches her subject and fully engages her readers' imaginations. She looks at new technology in detail, holistically, and concretely and focuses on the many ways in which technology changes people's lives. She attends to both the expected and unexpected impacts of new inventions. She also provides a model for the assessment of new technology in her insistence that it be evaluated in light of social ideals, that is, in light of our vision of where we want to go as a society and as individuals. Her work also demonstrates that effectively capturing the diversity and complexity of human experience of technology is an act of imagination as much as of observation.

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