

Everything you know is wrong: Understanding technology, scholarship and librarianship in a world of ubiquitous information access

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Abstract: The original value proposition for libraries rested on information scarcity. People went to libraries because that was the only place to obtain needed information. In today's world, information is abundant—we are inundated with information. And that information appears in a wide variety of formats, is stored in non-traditional places, and raises issues around trustworthy data. Anyone with internet access believes they are an information professional, capable of expertly researching any topic. Where did our expertise go? How are our roles changing? What does scholarly publication, research data, and knowledge management have to do with librarianship? How have search paradigms changed? This is a time for re-learning the things we thought we knew, a time to question how we do things, but never to question our commitment to fundamental library values.

Text: Back when libraries chained their books to the wall and a lending library was unheard of, librarians were the elite. People had to come to us. Information was contained in books; journal articles were scholarly; and the tabloids available for sale

outside the library were frequently filled with mistruths. In that respect, some things don't change.

The model of coming to the library for information persisted for centuries. Only the arrival of the Internet changed that model. Information scarcity has been supplanted by information abundance. We are no longer the gatekeepers. We've lost our elite status. Now that information is ubiquitous and search is commonplace, everybody thinks they're an information professional and an expert searcher.

As we confront this new reality, we need to understand the technologies that will shape and re-shape our search experiences. In fact, it's not so much that "Everything you know is wrong"—that actually seems a bit harsh—but that we need to learn to unlearn the things that are no longer true and we need to relearn skills in the context of newer technologies.

Most of the technologies driving changes in search are related to Artificial/Augmented Intelligence (AI). AI encompasses a number of different, but related and intertwined technologies. It could be algorithmic writing, where newspaper articles are written by machines rather than people, or pattern recognition, where the ability of machines to find patterns in massive compilations of information far outstrips a human's ability.

The technologies we need to understand include:

- Cognitive computing/Cognitive search
- Semantic search/Intelligent search
- Machine learning/Deep learning
- Predictive analytics/Text analytics
- Internet of Things

These technologies enable such functionalities as determining the intent of a search, presenting a conversational and contextual user interface, analyzing search results for meaning and "aboutness", normalizing personal and company names, disambiguating

between words like "plant" that have multiple meanings (manufacturing plant; green plant that grows), learning from the billions of searches performed on the web and in subscription databases, using deep neural networks, predicting outcomes, creating learning dashboards, "reading" contracts to identify anything out of the ordinary, noticing patterns in texts, and grabbing data from the sensors that are popping up just about everywhere. Some actual uses of AI can be found in Gale's Digital Scholar Lab, the indexing by Google of Life Magazine, the "did you mean" and "others searched for..." suggestions from ProQuest and others, and the many voice technology-driven assistants such as Echo and Alexa.

Not all innovations stemming from AI are benevolent, however. The possibility for mischief exists, which we see when the data fed into algorithmic search, machine learning, or text analytics is flawed or biased. Deep neural networks can produce "deep fakes" that put someone else's words into a prominent person's mouth, making it appear that they said something they didn't, perhaps even the opposite of what they believe.

In an era of ubiquitous information, why do we need libraries and why do we need librarians? We know that everything is not on the internet and that we can make the invisible visible. A strong component of our value is our values. We need to understand new technology to evaluate how they fit with our values as a profession.

At the same time, we need to realize that much of what we know is, indeed, in today's world, obsolete. Boolean logic doesn't work in the classic sense on the web. The structure of information has changed as unstructured data becomes the norm. Information professionals are accustomed to being in control, but new AI technologies remove much of that control. Big Data analysis, by definition, must be done by computers, because our human brains are too small to cope.

We confront a crisis today. A distrust of experts leads to trusting what you feel rather than what others have researched and proved. Deliberately faked scholarly research to

expose predatory publishers backfired and contributed to the overall waning belief in the value of libraries and librarians.

In these perilous times, it's helpful to remember what Ester Leddecka said after winning gold medals in both the alpine skiing and the snowboarding events at the 2018 Winter Olympics. "It takes different muscles," she said. The same is true for librarians as we move from searching one database to another, from using web-based sources to subscription items, and from taking on new responsibilities. Inherent in using different muscles is the openness to acknowledging that what we know may be wrong and the willingness to unlearn and relearn. Embrace technology, experiment, go with what works, and throw out what doesn't.