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Acquiring Minds Want To Know: A Glimpse of Paradigms

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No Abstract

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Acquiring Minds Want To Know

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A GLIMPSE OF PARADIGMS

by **Joyce Ogburn**

The concept of the paradigm, as generally cited in the literature, derives from the work of Thomas Kuhn in the 1960's. Kuhn, an historian of science, set out to explore how science, and scientists, actually worked. Kuhn found that scientific activity tends to be governed by a set of principles, a world view and a common methodological approach to problem solving. Kuhn names this commonality a paradigm. Paradigms define the practice of normal science and the problems which are to be solved.

Kuhn also noted that the education of scientists plays a crucial role in supporting and reinforcing the prevailing paradigm. Budding scientists are taught by example and with proscribed solutions to scientific problems. Competing methods are not taught. This educational approach allows new scientists to enter into the scientific community with the same methods and approaches of their colleagues. In other words, they are able to practice normal science.

In addition to explaining the practice of normal science, Kuhn attempted to understand how science changes over time, especially through so-called revolutions. He believed that science changes as anomalies accumulate through normal science, to the point where the paradigm is no longer applicable to the problems at hand. This change precipitates a crisis in the science, which is followed by a paradigm shift. During the shift, one paradigm is rejected and replaced with another. The shift should truly be a revolution, where there is a complete break in research traditions, and where normal science is radically transformed.

Since a revolution has occurred, the two paradigms (the previous and the new) are completely incompatible and, in Kuhn's words, incommensurate. After the shift, scientists can no longer

operate in the same manner as before and can no longer envision problems in the same light. Additionally, in this model, there is no cumulation or progress in scientific knowledge, though there may be overlap in terminology.

Kuhn stipulates the following characteristics for a successful paradigm:

1. The paradigm must serve to resolve the crisis.
2. It need not explain all anomalies, but it is usually an improvement on the previous paradigm.
3. One should be able to use the paradigm to make predictions.
4. A paradigm should be aesthetic, its explanation simpler than that of its predecessor.
5. Often a generation of change is required before a paradigm is accepted.
6. The choice of a paradigm is not always rational; it is not always possible to know what constitutes the better of two paradigms, and the choice of paradigm may be a leap of faith.
7. A paradigm need not be true. The concept of theory is different from that of a paradigm. Theories can be proved or disproved, while paradigms are not subject to proof or verification. Theories may also come and go during the duration of the paradigm, and a theory accepted under one paradigm may be subject to question under another.

A familiar example of a paradigm in the sciences would be that of evolution by natural selection. Although evolution as a concept was beginning to be adopted in the natural sciences before 1859, it was Darwin's articulation of the mechanism of natural selection in *The Origin of the Species* that allowed evolution to become the backbone of scientific research and teaching in the biological sciences. It was also Darwin's model that helped both to sever the ties between church and science and to put aside the notion

of progress being inherent in change.

Kuhn explicitly states that the paradigm concept is not applicable outside of the hard sciences. A paradigm applies to scientific research activity. He saw disciplines outside of the sciences as preparadigmatic. In his view, the social sciences have no paradigms, as they are governed by competing ideas and an educational system that encourages divergent, rather than convergent, thinking. He argues that different modes of research and thinking compete within social science disciplines and that normal science, the process by which a paradigm is amplified and reinforced, is not practiced.

Kuhn's work has received its share of criticism and praise over the years. Kuhn himself has written more detailed explanations of his original thesis. Criticism has centered on three aspects: 1) the vagueness of the concept of a paradigm, 2) the noncumulative nature of scientific achievement, and 3) the apparent "dullness" of normal science.

The philosophers and historians of the very disciplines Kuhn says are governed by paradigms have been the more critical and the less accepting of Kuhn's work. Many have accepted the general idea of a paradigm as a world view, but have rejected Kuhn's concepts of normal science and the noncumulative aspect of scientific work.

Social scientists have adopted the paradigm concept with vigor. Social scientists (and I include librarians in this rubric), often use the term paradigm as a convenient label to replace theory, philosophy, or methodology.

Library science arguably belongs in the social sciences. The original impetus for the subject of this column was the recent talk of a paradigm shift from ownership to access.

The reader may wish to examine the paradigm concept very closely before adopting this meaningful and powerful concept to trends in librarianship. At

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the end of this column is a bibliography of sources which may help illuminate the problem of the paradigm.

Read a few and then ask these questions of yourself:

••• Can we reconcile Kuhn's vision

with the practice of librarianship?

- What if we conceded that librarianship, as a social science, an applied field and service profession, could have a paradigm?
- What might the paradigm look like and how would it operate?
- Are changes in librarianship truly paradigmatic, or changes along a continuum?

The Kuhnian concept is so compelling that it begs to be read in the original works and this condensation does not do it justice. I urge you to read his works and then decide yourself. You may choose to reject Kuhn's definition of a paradigm and apply the paradigm concept to explain general changes and philosophies in librarianship. But ask yourself whether by rejecting Kuhn's concept we have gained or lost something in the process and whether

our power of explanation has been magnified or diminished.

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