Supplementary Essay

Innovation Diffusion: Implications for the CART Curriculum

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Abstract: To determine how best to deliver the necessary education and information resources concerning automation, the author examines the limited demographic information about the archival profession as well as theories about the nature of professions generally and how they adapt to change. In particular, the author draws on Everett Rogers's theories about innovation diffusion and Cyril Houle's analysis of professional work settings to reach conclusions about archivists as learners. The archival profession appears to have reached Rogers's early majority stage, during which one can expect rapid acceptance of new technologies and greatly increased demand for assistance in applying them.

ONE OF THE FIRST AND MOST OBVIOUS questions anyone will ask when trying to develop an educational program is "Who are we trying to teach?" We want to understand the targeted students' personal and academic strengths and weaknesses and how they prefer to learn. When trying to teach a rapidly evolving subject like automation and its impact on archival practice, in which there are as many questions as answers, we also need to understand how the target audience reacts to change and how best to introduce innovations and new ideas in a useful, nonthreatening way.

Archival Demographics

The most straightforward technique is simply to ask for specific information: what academic degrees the target group holds, what they already know about automation, and what resources they have to pursue additional education. Short of conducting our own survey of the archival profession in the United States, we must rely on existing demographic data, compiled primarily through the 1989 survey of members of the Society of American Archivists (SAA).[1] Although somewhat limited for our purposes, it nonetheless allows us to draw some conclusions about the primary audience.

Paul Conway's analysis of SAA's 1989 survey showed that 60 percent of the society's members were more than forty years old, which means that they probably had little or no exposure to computers in college, at least as undergraduates. Many archivists probably entered their careers before even electric typewriters were in widespread use, much less the desktop computers so commonplace today.

It is harder to generalize about the formal automation-related education of younger practitioners. Most recent college graduate are superficially "computer literate." They

are comfortable using a personal computer or the equivalent at least for basic word processing and for typing term papers. But Leon Stout, for one, has noted that this "literacy" does not necessarily include any understanding of the operation of large networked or mainframe computers, for example. Thus there remains a significant gap between basic computer literacy and the level of understanding necessary for evaluating complex record systems or implementing new technologies for archival applications.

Conway also found that one-third of the respondents entered archival practice with an MLS degree, a figure that has remained fairly constant for more than a decade. We can probably assume that those who did so, at least in the last five to ten years, had significant exposure to automated applications, at least in a library context, and that some of this experience is transferable to archival practice. The simple fact is that in graduate school there is not much formal training related specifically to archival automation. Timothy Ericson found only a handful of such courses in his analysis of the 1991 SAA education directory. At the same time, he noted that fifty-two job announcements in the *SAA Newsletter* specified automation-related qualifications. It was, in his words, the "single most sought after qualification."[2]

Nature of Professions

Given the limits of relevant demographic data about our profession, a broader look at what is known about the characteristics of professions can be useful in understanding how best to meet the current needs of archivists. Especially helpful are studies of how professions adapt to change and how

[1]Paul Conway, "G.A.P. Track: Membership Survey Results," *SAA Newsletter* (January 1992): 3, 9.

[2]Timothy Ericson, "'Abolish the Recent': The Progress of Archival Education," *Journal of Education for Library and Information Science* 34 (Winter 1993): 25–37.

individual practitioners adopt new practices.

Archivists as a group are still uncertain about how we measure up as a profession. Several archivists have written insightful analyses about whether we should be considered a profession at all and whether we might be better characterized as a craft or discipline, analyzing what each of these might mean to our own self-worth and place in society. Most of these articles have focused on the credentials issue and on the pros and cons of certification.[3]

This analysis adopts Cyril Houle's definition. He views a profession "not as a vocation in which a fixed level of achievement or certain standards have been or have to be attained, but rather as an ideal state toward which many occupational groups are striving."[4] This definition rightly emphasizes the dynamic aspect of continual adaptation to change and the need for constant learning throughout one's career.

Reactions to Innovation and Change

Everett Rogers is considered the preeminent analyst of how groups of all kinds, including professions, adapt to change. His *Diffusion of Innovations* is considered the classic work in diffusion research, a subfield of communications research that examines how innovations are introduced and spread through various kinds of social systems.[5] In trying to define what archivists need to know about automation and how to teach them, we are, of course actually trying to help the archival profession absorb and cope with a whole range of innovations and new ideas.

Rogers uses a bell curve to illustrate how innovations are introduced into a social system and are then adopted by members of the group in a predictable sequence. Distributed along the bell curve, in the order in which they begin to use the new idea, are five categories of individuals: "innovators," "early adopters," "early majority," "late majority," and "laggards." (See figure 1.)

The "innovators" at the front end of the curve are "active information seekers" who first become aware of an innovation through wide-ranging contacts and information sources outside their own social system. They introduce the new idea into their own group and the innovation is then evaluated and adopted by each successive class of adopters. Innovators are often viewed as deviants by other members of their own social system, the people with the "crazy new ideas," but they play a crucial role as the gatekeepers that break the system's boundaries and import new ideas.

While innovators are described as venturesome, the next class, "early adopters," are seen as respectable. They are the opinion leaders of the social system, the role models for the field and whom others consult for advice when considering new ideas or practices. In effect, they have the ability to turn the innovator's "crazy idea" into

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[3]Richard J. Cox, "Professionalism and Archivists in the United States," *American Archivist* 49 (Summer 1986): 229–47; William J. Maher, "Contexts for Understanding Professional Certification: Opening Pandora's Box?" *American Archivist* 51 (Fall 1988): 408–27.

[4]Cyril O. Houle, "The Comparative Study of Continuing Professional Education," *Convergence* 3 (1970): 3–12, quoted in Elizabeth W. Stone, *Continuing Library Education as Viewed in Relation to Other Continuing Professional Education Movements* (Washington, D.C.: American Society for Information Science, 1974), 14.

[5]Everett Rogers published the first edition of his book, *Diffusion of Innovations* (New York: Free Press of Glencoe, 1962). In 1971 he coauthored, with F. Floyd Shoemaker, a substantially revised second edition which was published under the title *Communication of Innovations: A Cross-Cultural Approach*. The third edition, with Rogers as the sole author, was published in 1983, again substantially revised. This summary was prepared from the third and last edition.
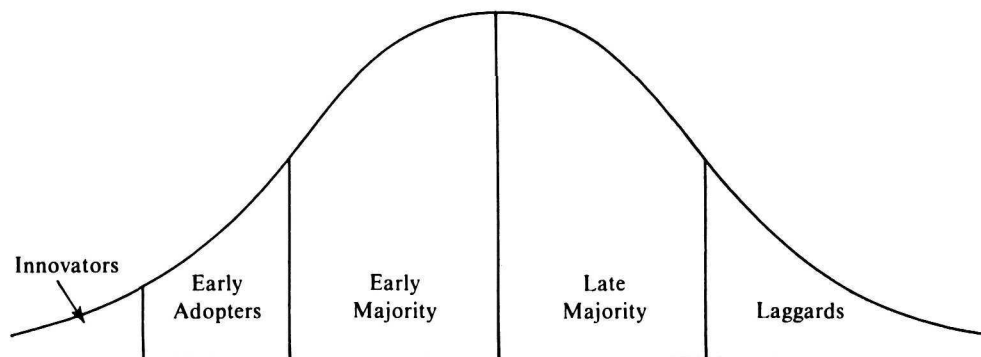
Figure 1. Five categories of innovation adopters. (Adapted from Everett Rogers, *Diffusion of Innovations* (New York: Free Press of Glencoe, 1962), p. 247.

something that is comprehensible and workable within their own social system. The early adopters provide subjective evaluations of an innovation so that others coming later in the adoption curve can weigh its merits. Early adopters are well integrated into the interpersonal networks operating within a social system, and it is largely through these connections that news of the new idea spreads.

Rogers describes a critical juncture that occurs when 10 to 25 percent of a group has adopted an innovation. At that point, the line is crossed between early adopters and "early majority," and the rate of adoption accelerates rapidly. It can be argued that the archival profession in the United States crossed that line, at least for electronic records, sometime in the late 1980s. This would explain the explosion of concern among those who could be called the early majority. On the techniques side, for innovations like the use of the USMARC format, the profession may have passed that line two to three years earlier, demonstrated by the rapid growth in the number of institutions providing input to the Research Libraries Information Network (RLIN), for instance. This has already and inevitably led to a demand for better education and training and, more broadly, for

better sources of information and means of communication about how these automation-related innovations affect archival work.

Rogers asserts that the most effective communication—about new ideas or anything else—occurs when two individuals share certain attributes (beliefs, education, and social status) and are members of a common subculture with its own vocabulary and norms of behavior. This is simply common sense. We have probably all found that it is easiest to understand a new idea that may affect the profession when the idea is presented by another archivist. In the absence of an archival source, an archivist may go next to library or other information-related professionals for an explanation before venturing out to completely unrelated sources.

The ability to absorb new ideas from sources outside one's own social system depends on which adopter group one belongs to. The individuals at the front end of the curve can more easily take ideas from outside and reinvent them for their own circumstances. In framing our educational delivery systems strategies, we might try to think of formal ways to bring these "innovator" and "early adopter" archivists into contact with members of other social systems who share common interests but may

offer alternative approaches. We may look to closely related groups, such as librarians, records managers, and museum professionals, but we should also look to those farther afield, such as telecommunications and information technology researchers, legislators, and specialists in organizational dynamics.

We also need to respond to the quite different needs of the "early" and "late majority." Innovation researchers have found that these two groups learn most effectively from individuals who are part of their own subculture. This argues against the often heard suggestion that archivists could get basic computer training at their local community college or from some other generic source. We can and should deliver specialized educational opportunities to our own members and adapt curricula from external sources to meet our members' particular needs.

Rogers also describes five separate stages that an individual (in any of the bell curve categories) goes through in deciding to adopt an innovation:

Knowledge, when first exposed to the new idea.

Persuasion, when forming an opinion on whether the idea is good or not.

Decision, when choosing whether to adopt it.

Implementation, when putting the idea to use.

Confirmation, when affirming that the choice was a good one or discontinuing because it was not.

Certain kinds of educational offerings are best suited to delivering the information needed for each stage in this decision process. Stage 1, knowledge, or exposure to the idea, is easy to accomplish at short-term workshops, in papers at annual meetings, in newsletter articles, and other such surroundings. These sources provide short bursts of information, at a relatively general level of specificity, aimed at a diverse audience. Most important, this initial stage

can and must be repeated over and over again because the group of adopters ready to receive new information at any particular time is always changing. For example, publishing a news article in year X, which falls months before the late majority is prepared to absorb and understand its contents, means that they miss the message altogether. The article needs to be printed the following year and maybe again the year after that if it is important that the message reach its audience. This process also explains the continuing demand for (and justifies the continued availability of) the types of introductory information provided in workshops on basic computer concepts and in the new CART leaflet on automating the archives.

Stage 4, in which the individual implements the new idea, can also be facilitated through formal training, using longer workshops or on-site staff development opportunities. Correspondence courses (by mail or online) might also help individuals work through the implementation stage by providing a mentor and a structured process to follow.

The information gathering and evaluation necessary for working through the intervening stages 2 and 3, persuasion and decision, are harder to address through traditional classroom-type instruction. In these stages, one needs to hear the opinions and experiences of many people, not just one instructor. A model like the National Association of Government Archives and Records Administrators (NAGARA) institutes for state archivists, however, where lengthy conversations are encouraged among peers as well as between earlier and later adopters, provide a better arena for the necessary exchanges of information.

Individuals in stages 2 and 3 also require substantial amounts of written material and other sources of information. NAGARA's interest now in developing a clearinghouse on electronic records and its mid-1980s project examining the need for a general

information clearinghouse really are efforts to *try to address such needs.* The characteristics of the intermediate stages also underscore the need for a service like the Archives Library Information Center (ALIC) provided by the National Archives library.

Rogers indicates that the use of interpersonal networks is a crucial part of the persuasion and decision stages. In a relatively small profession like the field of archives, where most practitioners are spread out in one- and two-person shops, individuals find it very difficult to participate in and maintain these kinds of networks. Clearinghouses are also notoriously hard to administer and usually short of support. However, the possibilities offered by the new listservers that have begun operating among archivists and allied professionals are encouraging, and if we think creatively, we may find other solutions. We need to listen to those who are beginning to talk about how communication is changing and think about how we can use these technologies to our benefit.[6]

Strengthening the formal and informal connections with these other groups is critical. SAA forms one subculture in and of itself, within which archivists evaluate and adopt new ideas. But archivists also operate as parts of at least two larger subcultures: information professionals and cultural resource administrators. One can see in something like the MARC format that an innovation can be adopted first in very specific form by small, homogeneous social systems (librarians, archivists, photo curators) and then in a more generalized or broadly applicable form by larger, more heterogeneous, collective systems (in this case through format integration).

Professional Work Settings

Other insights are offered by Cyril Houle in his analysis of professional work settings. He describes five such settings within which professionals operate:

Entrepreneurial Practitioner organizes, operates, and assumes risk for work done, offering direct service to clients.

Collective Practitioners work with group of colleagues who share in goal setting, organizational, and operational procedures.

Hierarchical Practitioners employed by institution whose basic mission is identical with that of the profession.

Adjunct Practitioner uses expertise in service of institution whose basic mission is different from that of the profession; carries some special social protection.

Facilitative Practitioner no longer actively engaged in work of occupation itself but aids and advances its progress (professional school, voluntary association, government bureau, publishing house, foundation, research laboratory).[7]

We could probably characterize the work settings of most archivists as either collective (historical societies or special collections within university libraries) or hierarchical (state archives, the National Archives). Managers in any kind of institution inherently hold hierarchical positions. Business archivists are probably in adjunct settings, whereas SAA staff, grants administrators at the National Historical Publications and Records Commission (NHPRC) and the National Endowment for the Humanities (NEH), and most consultants work in facilitative settings.

Houle observes that "the need to adjust

[6]Avra Michelson and Jeff Rothenberg, "Scholarly Communication and Information Technology: Exploring the Impact of Changes in the Research Process on Archives," *American Archivist* 55 (Spring 1992): 236–315.

[7]Cyril O. Houle, *Continuing Learning in the Professions* (San Francisco: Jossey-Bass Publishers, 1980): 97–99.

to change is particularly acute when a professional moves from one kind of work setting to another or leaves active practice to become a facilitator.''[8] One can speculate that the growing demand for automation training is occurring because a large number of archivists are undergoing a shift—major or minor, conscious or unconscious—from one work setting to another. More are becoming managers of technical specialists rather than executing work themselves, therefore bringing more into hierarchical settings. More significantly, if the predictions are true that electronic records will best be dealt with as noncustodial materials, then increasing numbers of archivists will serve in adjunct capacities, advising and overseeing archival information held by nonarchival organizations.

Houle reinforces Rogers's argument that individuals learn best from other members of the same profession. He calls the special dynamics at work within professions ''colleagueship'' and notes that it can be exploited in developing strategies to increase educational opportunities. ''People who have been acculturated by a common process usually enjoy the quickness and intimacy of discussion that results from a shared background.''[9] In other words, it is easier to learn from someone who shares your professional identity, vocabulary, and culture that from someone who is an ''outsider.''

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[8]Houle, *Continuing Learning in the Professions,* 103.
[9]Houle, *Continuing Learning in the Professions,* 112.

Conclusions About Archivists as Learners

The reaction within the archival profession to changes brought about by automation offer a classic example of Rogers's diffusion-of-innovation model. As a group, we appear to have reached the early majority stage, during which we can expect rapid acceptance of new technologies and a greatly increased demand for assistance in applying them, specifically through education and improved information resources.

Strong continuing education programs are especially critical because many working archivists received their formal education before the widespread use of computers and because the constant evolution of technology will require continual updating of knowledge and skills.

It is easiest for most members of a profession to communicate with and learn from their colleagues. In addition, innovation is most readily absorbed through the process of reinvention, a process in which the innovation is adapted to meet the peculiar circumstances and requirements of the new group. Therefore the CART Learning Objectives can best be conveyed to archivists by other archivists. Only the innovators and some early adopters—those at the front end of Rogers's bell curve—are fully equipped to absorb new ideas or techniques from sources outside the profession. They provide a service to the bulk of archival practitioners by reinventing and interpreting what they have learned for use in our own field.