

The Impact of the Library “Intrapreneur” on Technology

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INNOVATION, CREATIVITY, AND entrepreneurship are words which describe one of the most important organizational development and management trends of our time. The concepts they represent permeate “pop-management” literature and attract the interest of scholars, business philosophers, and management commentators (*see* Marcae, 1976; Naisbitt, 1982, pp. 145-49; Drucker, 1985; Kiam, 1986; Miller, 1986; Warner, 1987). Practitioners examine the ideas for their potential to encourage change and distinction in organizations. For example, the theme of the ACRL for 1987-88, promoted by Vice-President/President Elect Joanne R. Euster (1987), was “Fostering Creativity and Innovation.” She launched the year by inaugurating an “Innovations” column in *College & Research Libraries News* and capped the year with her president’s program at the ALA 1988 Annual Conference in New Orleans on “Creativity in the Workplace: From Conception to Application.” There are even specialized centers for the study of creativity, innovation, and entrepreneurship. The Center for the Study in Creativity, State University College, 1300 Elmwood Ave., Buffalo, NY 14222-1905, fosters ideas and information for understanding and using personal creativity, for facilitating creativity in others, and for structuring situations for innovation. The Center for Entrepreneurship, Wichita State University, 008 Clinton Hall, Campus Box 147, Wichita, KS 62708, is committed to promoting an environment that encourages private enterprise and seeks not only to preserve, but also to enhance entrepreneurial activities and risk-taking.

But in organizational settings the concepts are often difficult to apply. Even though people may have a desire for looking at new ways to

put resources to work more productively, they are often frustrated by situational constraints, as well as the obstacles inherent in a would-be innovator's personality or ability to engage in a problem-solving process. A creative thinker in an organization who does come up with an innovative idea is often blocked from acting on it—i.e., kept from being an entrepreneur and kept from purposefully working to see that a creative idea becomes reality. An independent entrepreneur, on the other hand, would simply sidestep roadblocks in personally planning, financing, building, and managing a new enterprise designed to meet a particular need. Entrepreneurship in the traditional sense does not fit well in the thinking of bureaucratic organizations.

But most of the characteristics identified with entrepreneurial behavior *will* work in organizational life with a little accommodation and adaptation of the concept. Knowing how to innovate in an organization is a key to embracing entrepreneurship, and having a model to work from will lay out a pattern for action. First, in order to bridge the gap between the denotation constraints of the term *entrepreneur* and its application, a new concept was developed by Gifford Pinchot in 1978 and coined as "intrapreneurship." His ideas are popularized in *Intrapreneuring: Why You Don't Have to Leave the Corporation to Become an Entrepreneur* (Pinchot, 1985), and they were given international exposure in a 1982 *Economist* article (Macrae, 1982). Pinchot develops the thesis that organizations can encourage a climate wherein the entrepreneurial spirit will survive and an intrapreneurial environment will thrive. Intrapreneurs, however, must be "empowered" to act on problems and implement ideas with organizational support and funding. In Pinchot's philosophy he explains how organizations and intrapreneurs can interact to mutual benefit.

Pinchot's ideas are geared for application to research and development in industrial and corporate life, and librarians may find them at first a little alien. But they are wrong to dismiss them without some serious reflection on how they might be adapted. For example, Pinchot (1985) defines an intrapreneur as:

Any of the "dreamers who do." Those who take hands-on responsibility for creating innovation of any kind within an organization. The intrapreneur may be the creator or inventor but is always the dreamer who figures out how to turn an idea into a profitable reality. (p. ix)

He adds to this definition the ideas of "sponsors" (those who assist in removing or tempering organizational barriers) and "protectors" (those in higher levels of authority who approve and protect) (pp. 143-62). And without funding, intrapreneurial ventures are nearly impossible, so his concept of "intracapital" (a timeless discretionary fund for which the intrapreneur is responsible and from which money is available to turn dreams into reality) is designed to meet the need (pp. 276-98). In the corporate world, intracapital would be earned and built as a timeless fund through successful intrapreneurial ventures; in the

nonprofit sector, intracapital must generally come from set-aside budgets, grants, or other external funding.

There is room in these concepts and definitions for librarians and nonprofit library organizations. Librarianship needs intrapreneurial managers and staff who are dreamers. Libraries need people who can break with tradition and act to develop new roles and responsibilities, secure risk capital, co-opt emerging information technologies and develop new ones, and figure out new ways to make libraries essential in an information-based society. But how can a library step beyond the age of printed formats, traditional archival management, and bibliographic service to new ways of controlling, managing, and providing access to information? How can dreamers be given a chance to innovate in developing and implementing worthwhile ideas? How can a library introduce flexibility to fixed budgets, bureaucratic decision-making, delimiting policies and procedures, and rigid management processes? How can librarians learn intrapreneurial behavior? How can library organizations be encouraged to support the behavior?

In 1986 this author explored some of these issues and described certain librarian intrapreneurial behaviors (Cottam, 1987). The characteristics identified define librarian intrapreneurs as people who are both capable of seeing possibilities and acting on their ideas. They describe energetic, driven people who want to get things done, as well as people who are self-confident and secure in their knowledge, skills, and abilities as library practitioners.

A second survey by the author in 1987-88 sought to identify specific libraries and librarians who have used intrapreneurial activity to affect technological development. Inquiries were sent to the directors of eighty-six selected libraries, most of them members of the Association of Research Libraries. The selection was arbitrary but was based on the author's familiarity with the institutions or the directors. The letter described the intent of the survey and requested that a self-addressed, stamped postcard be returned with the name, title, and phone number of a staff member who might fit an intrapreneurial profile. Twenty-three directors responded, with fourteen sending possible contacts for the study. The response is considered favorable in view of the following description and the assumption that intrapreneurism in libraries—as defined or practiced—is just beginning. Documenting case studies of existing examples will help the profession understand its potential.

Some characteristics of intrapreneurism in libraries may be that staff members have been allowed to bypass line authority and encouraged to take calculated risks in pursuing the development of innovative concepts and applications. Staff members who have behaved as intrapreneurs may have come up with a good idea in which they had unflagging belief; focused on results (rather than activities) in acting on their idea; sought collaboration, teamwork and administrative support to solve problems or build a program outside of hierarchical reporting lines; directly applied technical knowledge and skills to solutions; stayed flexible and adaptable within the organization; worked well beyond normal hours to realize a dream; understood the big picture as well as the parts

of the organizational environment; viewed change realistically but optimistically; tolerated and worked within bureaucratic constraints with a knack to get around roadblocks; or assumed personal responsibility and accountability for an initiative. (Adapted from the survey letter, November 3, 1987)

Several directors took exception to the idea of intrapreneurism and questioned the assumptions in the above definition. One respondent wrote, "the library administration supports this type of behavior in its normal procedures. It was even suggested (in considering the inquiry) that crazy ideas might receive better hearing than more traditionally sound ideas." Another wrote: "One of the real problems, of course, with intrapreneurship is that we administrators tend to welcome them when they are successful and castigate them when they are not, or when they create problems or conflicts with general library goals." Rather than embracing intrapreneurial activities, a few directors described their preference for innovative organizational approaches which use management groups, project teams, and independent, problem-solving committees to improve dialogue and communication, enhance motivation, prompt insight, and overcome bureaucratic obstacles.

Irene Hoadley, director of the Sterling C. Evans Library at Texas A & M University, described her perspective more fully.

There can be a definite hierarchy and still be creativity and innovation....Fostering creativity and innovation must be a part of the environment for it to occur. It must be a part of the fabric of the organization, and it must be encouraged in all staff, not just a few select people. Having pockets of creativity will create spot improvements while what is needed are ideas and concepts that contribute to the organization as a whole. Ideas must not only come from the bottom, they must also come from the top because that is a part of creating the environment. When the staff know that the director and assistant directors have ideas, many of which never get very far, that provides more encouragement for them. Another way of encouraging such an environment is by encouraging teamwork. Most major activities in the Evans Library are done by committees. It takes time, but people learn to work together and they feed on each other's ideas. This also includes letting individuals take on special assignments either for short or even longer periods of time....I do not want staff to bypass line authority or be completely independent. I want the organization to help nurture their innovations, not be separate from them. I want a strong organization, not a few bright spots in an overall dull organization. (I. B. Hoadley, personal communication, April 18, 1988)

Intrapreneurship, however, is not contrary to this point of view. It is an orderly way of looking at opportunity for innovation. Solving problems, developing new ideas, and managing projects that transcend tradition and organizational constraints is intrapreneurial activity, and the following cases reflect its potential in the area of technological development.

AN INTERLIBRARY LOAN RECORD-KEEPING SYSTEM

In 1982, William Van Arsdale, then the head of the William Robertson Coe Library Reference Department in the University of Wyoming Libraries and responsible for interlibrary loan (ILL), believed a new microcomputer-based ILL record-keeping system could be developed to

replace the old card records and files. The manual files were cumbersome and required excessive amounts of staff time to maintain and use, even though they included essential ILL information. Copyright requirements had overburdened the staff and the record-keeping system, and at the end of each year the need to glean the file for activity data required several days of work from every staff member in the ILL unit.

For over a year the idea of developing a new automated system was frustrated at every turn: there was no sponsorship from superiors, there were no discretionary funds available, administrative sentiment was not convinced that an automated record-keeping system was necessary, and those in authority felt the idea probably would not work.

Van Arsdale persisted, and in 1983 there was an administrative change, and, after some discussion, he was encouraged to try to develop his idea. Funds were set aside for a microcomputer and peripherals, as well as for a contract with a local computer programmer to work with a team of people in the libraries to develop the program. There were no committees, no consensus building, and no reluctance to take a little risk. There was minor opposition from some staff members, but the idea had promise and others believed the idea would work.

The project proceeded to develop outside of the libraries' traditional hierarchy and organizational constraints, and today there is not one system but two: ILLRKS (borrowing record-keeping system) and LILLRKS (loaning record-keeping system). The ILLRKS program keeps track of copyright information, tracks costs, automatically handles OCLC requests through downloading, manages files (file number, patron data, main entry, OCLC transaction numbers), generates mail-ready ALA requests, prompts "forgotten requests" or requests which are not being filled, and generates statistics quickly in any time frame. The LILLRKS program keeps track of all loans by type of material (photocopies and books, as well as unfilled requests and charges), automatically maintains and loads into the program pending requests from the OCLC ILL system and prints a working log, shows borrowing library by code, prepares overdue notices ready for a window envelope, maintains active and inactive files, interfaces with a remote branch campus library ILL office, and produces statistics and management information on demand. (The systems are now marketed by Arnold Library Systems, Box 3912 University Station, Laramie, WY 82071.)

Reflecting on the ILL systems during a personal interview with the author, Janet Carlton, now the head of the ILL Department, noted: "There are plenty of good ideas from staff and administrators, but getting the ideas past the bureaucratic review, analysis, approval and just plain politics to the working level is the challenge." Those who worked on the project believe there are five main reasons why it succeeded: (1) the administration was open to the idea and willing to sponsor and protect the project; (2) people on the project were encouraged to think, dream, and act outside of normal organizational and

administrative processes; (3) the project was supported with funding, equipment, and staff; (4) the people on the project believed they had a better idea and were determined in their ability to develop it; and (5) the team felt "lucky" to have had a bright and perceptive consultant to work with the project.

AN AUTOMATED LIBRARY INSTRUCTION PROGRAM

Susan L. Perry, the Olga Meyer and Alice Meyer Buck Librarian at Stanford University, shared the details of an intrapreneurial program developed by Deborah Murphy (S. L. Perry, personal communication, November 23, 1987). The project "BiblioMania" was developed in collaboration with the Faculty Author Development Program set up by Stanford's Academic Computing office. The product is a software game for use with a Macintosh (512K, single disc drive, mouse) microcomputer to teach students how to select periodical indexes appropriate to their needs and then locate periodicals in the Stanford University Library. The project was supported in part by a grant from the Payson J. Treat Fund for Library Program Development, a Stanford University Library fund used to encourage innovation and change through the testing of new ideas or approaches. The financial support is a good example of intracapital funding.

Designed to be more than just a rote computer assisted instruction package on how to use periodical indexes, BiblioMania simulates the Stanford campus environment as much as possible using text, graphics, and sound. Although a player needs to follow a set series of steps to complete a game, the program allows flexibility and freedom to explore the complex steps involved in a library research process. The game is played by deciding on a topic to research, choosing a periodical index, selecting terms to search in the index, making a list of likely articles from the index, using Socrates (the online catalog) to determine library serial holdings, and using a campus map to identify the libraries in which to find the periodicals.

The continuously available, self-contained program cycles an "attract mode" across the screen of a public Macintosh near the reference desk to entice students to play. The game format itself is a cross between a standard mac program and a video arcade game, and a score is kept during play. An automatic "time-out" feature returns the program to the attract mode if someone leaves in mid game. To reward completion of a game, a voice simulation utters congratulatory words and a high score graphic appears on the screen giving high scorers the chance to create a personal logo.

According to Deborah Murphy (personal communication, June 30, 1988), now the data archives reference librarian at the University of California, Santa Cruz, the project succeeded for several reasons: (1) the administration turned her loose with "great and abiding trust" to apply her energy and drive to the project; (2) there was freedom to think and

function creatively—few constraints were placed on the project; (3) essential funding was received to pay for equipment and the programmer on the project; (4) Murphy was not concerned about rewards or failure; rather, she was goal oriented, self-motivated, enthusiastic, and determined to develop a creative idea into a product with great potential; (5) the project was "lucky" to retain the right programmer; (6) Murphy received invaluable support and help from other library staff members who acted as a sounding board for new ideas in the project; (7) the interest of the library in technology promoted ties with automation experts across the campus; and (8) a catchy name for the project, BiblioMania, probably did a lot to market the concept. ("BiblioMania" is now a copyrighted product available through Kinko's Academic Courseware Exchange. The latest catalog is available from Kinko's Service Corporation, 255 West Stanley Ave., Ventura, CA 93001.)

TECHNICAL INFORMATION SERVICES

The Purdue University Libraries, formerly directed by the late Joseph Dagnese, cite a number of intrapreneurial projects (J. M. Dagnese, personal communication, November 11, 1987). Among them is an electronic bibliographic database on lodging and travel. "The Lodging and Restaurant Index" database, designed and authored originally by Judith Nixon, Consumer and Family Science Librarian at Purdue, has gone beyond being a local resource and is now a cooperative venture between the libraries of Cornell University, the University of Wisconsin-Stout, and the American Hotel & Motel Association's (AH&MA) Consortium of Hospitality Research Information Services (CHRIS), a program of the AH&MA Hospitality, Lodging and Travel Research Foundation. (Further information is available from Omar Akchurin, database editor, AH&MA, 1201 New York Ave., N.W., Washington, DC 20005; Katie Lawrence, director, School of Hotel Administration Library, Statler Hall, Cornell University, Ithaca, NY 14853; or Phillip Sawin, collection development officer, Library Learning Center, University of Wisconsin-Stout, Menomonie, WI 54751.)

A second and unrelated venture has developed into the very successful Purdue Technical Information Service (TIS) coordinated by Gordon Law, head of the Management and Economics Library. Developed as a collaborative program between the Purdue Schools of Engineering and the libraries, with funding from the Indiana Economic Development Council, the TIS provides:

- dial-up access to the Engineering Information System (EIS), a computerized catalog and index to the Siegesmund Engineering Library which includes the tables of contents of thousands of engineering books in the collection;
- document delivery of sources found in the EIS;

- dial-up access to the Purdue Libraries Unified System (PLUS), the Purdue online public access catalog; and
- full client-centered professional information service.

Law explains the project as an outgrowth of the need to generally broaden the service role of the university libraries (G. Law, personal communication, July 1, 1988). His personal interest in the needs of technical information users "external" to the university fueled the initiative in an action-oriented way. He talked with people in Indiana and made connections with the corporate and engineering world around the state. He learned what corporations require to meet their information needs and how the Purdue University Libraries could respond using technology and a professional information service.

According to Law, response to the service has been exceptional and demand is beginning to outstrip the ability to meet the need. "A lot of luck was involved" in securing funding from external sources, he said, but "the recognition of the need to expand and adjust to new user groups—a vision of the administration to broaden the role and scope of the libraries—made the difference in how the project was supported and protected." His own vision, coupled with his abiding belief in the project and the following significant factors, led to the continuing development of the TIS: (1) there was support for the concept and the project in the university at the vice-presidential level as well as from the library administration; (2) Law was given freedom to act in developing the initiative as long as he kept the administration informed; (3) the creative energy, along with responsibility and accountability for the project, rests with Law; (4) essential funding was secured to acquire the technology; (5) Law's motivation was primarily goal inspired, achievement motivated, and oriented to personal satisfaction with his success in the project; (6) the project won the respect and acceptance of other staff members as a university libraries program rather than a personal project; and (7) the need for the TIS and its services and products pointed to the probability for success, and risk was minimized. (Further information is available from Gordon T. Law, Jr., Management & Economics Library, Krannert Building, Purdue University, West Lafayette, IN 47907).

AN AUTOMATED U.S. DEPOSITORY ITEM NUMBERS DATABASE

Margaret T. Mooney is the remarkable head of the Government Publications Department at the University of California, Riverside, and a notable intrapreneur. In 1984 she launched the "Depository Item Numbers Database" project and more recently began an experimental project with the electronic transfer of the automated database (M. T. Mooney, personal communication, June 8, 1988). Of the latter, Mooney (1988) writes:

This project, representing a pioneering attempt on electronic transfer of in-house databases between libraries, involves the participation of twenty

depository libraries (9 academic, 9 law, and 2 public libraries) from across the United States. The project began in February 1988 and will be conducted for a six-month period.

The Depository Item Numbers Database project is a creative idea implemented to enhance the control and management of depository collections (M. T. Mooney, personal communication, June 8, 1988). By converting the bibliographic information pertaining to depository items to machine-readable form, the database can be used to exercise powerful controls over the collection, resolve cataloging problems, automate the processing of depository shipments, and eliminate time-consuming manual files. With its multiple access points and Boolean search capabilities, the database serves as an effective tool for both collection development and technical processing activities, and Margaret Mooney reports that "potential applications of an automated item numbers database are literally limitless." The database contains bibliographic information for all active depository item numbers distributed (not just those selected by U. C. Riverside), which gives it universal applicability for all depository libraries. The impact of Mooney's intrapreneurism on this technological development is significant, and her outlook illustrates the intrapreneurial spirit and model. Here are excerpts from her own self assessment of her intrapreneurial behavior (M. T. Mooney, personal communication, June 8, 1988).

She assesses herself as a "dreamer who dreams with pragmatic realism" and a curiosity to "seek out and entertain new ideas for improvement." She works "hard to explore the ways to transform them into reality." Through experience she has "learned to be tolerant of ambiguities and uncertainties" with an "eternal optimism" and "courage to forge ahead despite known obstacles." She is not particularly affected by external rewards; her motivation stems from personal satisfaction and achievement. She describes herself as having a "genuine interest and technical knowledge in the area of microcomputer technology," but she denies being a "technocrat." Her technical knowledge, however, has undoubtedly enabled her to take advantage of technology to enhance her professional role and functions. She notes specifically the following insights:

1. she is able to conceptualize projects that are technically sound and feasible;
2. she is able to communicate her ideas intelligibly to computer specialists and consult and work with them effectively to achieve project goals;
3. she is willing to dare to take calculated risk in embarking on pioneering projects;
4. she is able to articulate the value and the potential of an idea and to elicit institutional support; and
5. she is willing to share her ideas and expertise with others in order to develop their interest and knowledge in technological applications

and to invigorate their enthusiasm and support for innovative projects.

Finally, Mooney states that "the symbiotic relationship that exists between my personal goals (or my commitment) as a librarian and those of the organization is a critical element which contributes to my ability to undertake innovative projects within the organization." She seeks to initiate projects which will be satisfying to her, beneficial to her institution, and significant in meeting identified needs. She enjoys the support and sponsorship of the university librarian, which gives her the freedom to think about and explore new areas, a freedom she believes "fosters creativity which leads to innovative projects." (Further information about the Depository Item Numbers Database program is available from Margaret T. Mooney, head, Government Publications Department, University Library, Box 5900, Riverside, CA 92517.)

These four cases illustrate the potential of intrapreneurship, a concept only recently defined and labeled and as yet generally unfamiliar to most librarians. But for people in organizations, intrapreneuring unfolds a way of thinking, understanding, and acting on creative ideas. It serves as a vehicle for developing innovative products, services, or procedures. As the author's work on the concept continues, other intrapreneurs and cases are being identified. (Additional cases are available from the author: e.g., Tony R. Kwak, head of the Learning Resources Division, Biomedical Library, University of California, Los Angeles, is a veritable center of intrapreneurism, including work with instructional technology ["SHOW Program" and "Problem-Oriented Instructional Media"] and management systems ["TIPS Program" and "ILL Invoicing System"]; Malcolm Getz, director of the Jean and Alexander Heard Library at Vanderbilt University, recognizes the intrapreneurial spirit in himself and others and works to foster it [Vanderbilt's "Enhanced Information Access Project" is a pacesetter online public access system]; and Donna Whitson, assistant director of libraries for outreach Services and coordinator for the Wyoming Intermountain Community Learning and Information Services [ICLIS] project, University of Wyoming, is challenging the traditions of academic library service for land grant universities with work on making technological and programmatic connections between informational resources and services and educational opportunities for rural residents. Other case studies are being developed and readers are encouraged to send the names, addresses, and telephone numbers of librarian intrapreneurs to the author.) From the study, guidelines and models are emerging which are useful for planning, designing, and acting on strategies to foster innovation through intrapreneuring. Even now a pattern is apparent; there are some essential characteristics common to library intrapreneurial activities.

—Librarian intrapreneurs share a personal profile described earlier by the author (Cottam, 1987).

- Sound ideas, properly developed and presented, attract administrative support, trust, and encouragement.
- Freedom to believe, dream, reflect and act is a hallmark.
- There is an abiding belief in an idea which, if developed, will meet a need.
- Reasonable funding is made available.
- Other essential organizational resources are available—personnel, facilities, equipment, expertise, and personal networking.
- Staff support is viewed as essential and it is cultivated.
- Failure is not at risk (Cottam, 1988).
- Traditional external rewards—salary and promotion—are not issues.
- The right combination of resource support is often described as "luck."
- The organization is receptive to innovation and productive change.

The cultivation of an intrapreneurial self-concept and spirit will increase opportunities for more successful professional performance. The development of organizational accommodation of the concept will encourage creativity and innovation. The impact of intrapreneurship on technological development can be significant.

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