The Art and Science of Classification: Phyllis Allen Richmond, 1921–1997

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Abstract

Research during the 1950s in library and information science reflected the intense intellectual foment and fervor of the time. As a master's student of library science at Western Reserve University (WRU) in 1952, Phyllis Allen Richmond found herself at the epicenter of some of the most exciting work being pursued in the field. Her academic career crosscuts diverse areas. She was a champion of library automation, of facet analytical theory, and of the history of science. She always kept the future of classification firmly at the center of her work. This retrospective of the pioneering accomplishments and contributions of a distinguished forty-year career will draw upon recollections, materials at the Case Western Reserve University Archive, and Richmond's own writings.

Overview

> The most beautiful experience we can have is the mysterious. It is the fundamental emotion which stands at the cradle of true art and true science. (Einstein, 1954, p. 11)

Phyllis Richmond was both a scholar and a tireless organizer. (Refer to appendices 1 and 2 for a bibliography and excerpts from her informal essays.) She was also the first female recipient of the Award of Merit from the American Society for Information Science (ASIS, now ASIS&T). In the first twenty-five years of the award only two other women, Claire Schultz (1980) and Pauline Atherton Cochrane (1990), were so honored. In presenting Richmond with the award of merit, ASIS commended her "contribution to

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the understanding of the theory and practice of subject analysis, in general, and classification, in particular" (Phyllis Richmond: Award, 1972, p. 3).

With classification her cynosure and history of science her ground, Richmond's sense of wonder and imagination remained fully intact throughout her distinguished career. Whether writing about the history of science, classification, cataloging, information retrieval, or in the context of one of her many book or conference reviews, Richmond always reminded her readers that their discipline is grounded by and primarily concerned with the interrelationships among people, documents, and technology. Like Janus, god of the past and the future—of beginnings and endings—her work is at once retrospective and predictive. As such, Richmond can provide guidance to those charged with assessing the strengths, failures, and future of our systems of knowledge organization and of the field itself.

This article outlines Richmond's contributions to our field and seeks to establish the continuing importance of her work. There are many ways to take the measure of a person, and it is always useful to gain some biographical context, which is where this story will begin. Next I will look to the broader context of developments in the field before assessing the impact of her work then and now. The remnants of Richmond's personal and professional papers are held at the Case Western Reserve University Archive. These archival papers, Richmond's own writings, and oral history interviews with Pauline Atherton Cochrane (Cochrane, 2001/2002) serve as the foundation of this inquiry.

History of Science

> The universe in which we live is apparently open and genuinely infinite, both infinitely big and infinitely small. Data, laws, methods, theories in all fields are partially and imperfectly known. On one hand, the possibility of discovery seems unending. On the other hand the use of creative imagination appears limitless. (Richmond, 1963e, p. 396)

Phyllis Allen Richmond was born in Boston in 1921, but she spent her early years in Rochester, New York. She decided to attend Mather College at Western Reserve University (WRU) after learning that a relative, Elijah Porter Barrows, had been a professor at the school during its early days when it was located not in Cleveland, as today, but in Hudson, Ohio (Richardson, 1983; CWRU, n.d.). Upon her enrollment at WRU, Richmond undertook a course of study in undergraduate history just as the Mather Alumnae Historical Association donated a large sum of money to support a number of lectures and seminars in the history department. First in the series was a week-long seminar on the history of science in seventeenth-century England given by Dean Marjorie Nicholson of Smith College, and Dorothy Stimson, dean and professor of history at Goucher College. Richmond enrolled in this seminar and wrote an essay, entitled "Problems Connected with the Development of the Telescope, 1609–1687," that received the Alumnae

Association prize and was published in *Isis* (Allen, 1942/1943). It was an auspicious beginning to Richmond's academic career in the history of science (Siney, 1998). Both her undergraduate degree (1943) and master's degree (1946) were awarded with honors from Western Reserve University. In recognition of her outstanding scholarship and in support of her doctoral study at the University of Pennsylvania, Richmond was offered an American Council of Learned Societies fellowship at Cornell (1947) and a Bennett fellowship (1948) at the University of Pennsylvania. She made remarkable progress in her studies and graduated in 1949 with a Ph.D. in history and philosophy of science.

Her dissertation, *Americans and the Germ Theory of Disease* (1949), has received appreciative attention recently as scholars revisit the reasons why the American medical establishment clung so tightly to the miasma theories of disease long after they had been rejected on the Continent (Tomes, 1997). Richmond occasionally explored this theme in articles throughout her career, and she frequently drew on history of science themes when writing for other disciplines. Richmond never taught in this subject area as academic positions, once so plentiful, had become scarce by 1949. Instead, after graduation she served as curator of history at the Rochester Museum of Arts and Sciences and briefly as research assistant to the director of Johns Hopkins' Institute for the History of Medicine (Richardson, 1983, p. 1).

Library and Information Science

> If a discipline is defined by the nature of its problems, then library science must be the discipline to end all disciplines. We have more problems per square head than almost any other field. (Richmond, 1977, p. 115)

In 1952 Richmond left her research position at Johns Hopkins and returned to Western Reserve University in Cleveland, Ohio, to attend library school (Williamson, 1999, p. 186). These were heady times at WRU (which became Case Western Reserve University [CWRU] in 1967). Jesse Shera was just settling in for his first year as dean. In 1955 the heavily funded Center for Documentation and Communications Research (CDCR), founded by Shera, James W. Perry, and Allen Kent, was established at WRU. With a mission to provide "[a] continuing program of research directed to the discovery and development of new or improved methods and procedures for organizing, disseminating and utilizing recorded information to meet the ever-increasing demands from science, industry and allied fields,"[1] the center injected courses in documentation and information retrieval into the WRU curriculum.[2] With a new home in the Freiburger Library (Hanson, 2001) and Shera as the editor of *American Documentation,* the School of Library Science proved to be a place of unsurpassed opportunity for Richmond. During her time at WRU, Richmond cultivated a deep appreciation for classification, and Jesse Shera proved an able mentor. She declined,

however, to enroll in the new Ph.D. program that was established in 1956 stating, "Enough, Four degrees are enough." (Richardson, 1983, p. 2).

Early Automation Effort

> [M]ay I suggest that we borrow the motto of the Royal Society of London: *Nullius in verba*—nothing in words. (Or interpreting seventeenth century parlance into twentieth century idiom. Don't tell me how systems function—show me.) (Richmond, 1977, p. 115)

After her graduation in 1956, Richmond found employment at the River Campus of the University of Rochester. She remained at the University of Rochester for the next fourteen years and corresponded frequently with Shera during this period. Richmond held a series of positions at Rochester, first as a serials cataloger at the Science Libraries from 1955 to 1960, then as supervisor of the same libraries from 1961 to 1966. These were the years in which the library world was on the verge of automation. The Council for Library Resources was established with Vernor Clapp at the helm in 1956, the year of Richmond's graduation. Its heady mandate was to put emerging technologies to use in libraries. A major project supported by the council began in 1965 with the Massachusetts Institute of Technology (MIT) Intrex (INformation Transfer and Retrieval Experiments) conference, with its objective of fostering interdisciplinary communication between engineers, scientists, and information workers. The conference led off what were to be for the council several very frustrating years of funding without effect, as ultimately Project Intrex achieved almost nothing (Burke, 1996, 2002). It was not until 1966 that MARC (MAchine Readable Cataloging) was standardized by Henriette Avram's team at the Library of Congress and not until 1972 that "the true networking" began with online delivery of MARC via Ohio College Library Center (OCLC) (Richmond, 1981c, p. 24).

Today, opinion remains divided as to the reception given to the introduction of computers and automation initiatives by American library staff. Were librarians irrationally afraid of science and technology or Luddites in disguise? Did those who heralded technological solutions put the machine first and fail to adequately comprehend the complexities of the library (Rayward, 2002)? How best to solve the "information problem?" Many who considered themselves part of the American documentalist movement were openly critical of the lack of response and enthusiasm given by library staff to early information systems (Williams, 1997). Shera captures the situation with his usual wit in his *Automation without Fear:* "[I]t is now the 'little black box'; which is the *bête noir* of the library profession—the *diabolus ex machina* that is the recipient of professional scorn, the Pandora's chest from whence all evil swarms. One can opine that future generations, having learned to live happily with automation, will search out other scapegoats to censure" (1966, p. 84).

Richmond's work at Rochester during these early years of exploration in library automation served as excellent preparation for her next post. In 1966 the University of Rochester created the position of information systems specialist expressly for her. This gave her the role of overseer during the automation of the University of Rochester libraries. Shera's experiences with the technologies then in use at the CDCR and his eventual and bitter disappointment with the research direction at the CDCR taken by Kent and Perry alerted Richmond to the potential of rough water ahead. In a letter to Alan Rees (a faculty member at WRU and head of reference at the CDCR), Shera sums up his experience of the CDCR and the Comparative Systems Laboratory (CSL) established at the CDCR in 1958:

> The rest of the story you have pretty much lived through yourself. But I should add here that for the years when Perry and Kent were around the Center never really did what I wanted it to do . . . Perry was sold on his own system, telegraphic abstracts, semantic codes, role indicators, and the like, and I never could get him onto the track I wanted. Nevertheless . . . Perry made a very important contribution in those early days, by showing the complexities of the field, the importance of linguistics, etc. etc., so I have no real regret about the move I made in setting up the Center. But it really was not until you fellows initiated the Comparative Systems Laboratory, that I saw the Center really doing what I'd always wanted it to be. [4]

Maintaining contact with Jessica Melton and Alan Rees, who were active members of the Comparative Systems Laboratory long after Kent and Perry decamped and until activities there ceased (Richmond, 1970c), Richmond was very sensitive to the sorts of difficulties that might arise from the conflicts between the differing needs of system users, funding agencies, and technologists that had from Shera's point of view bedeviled the CWRU projects. She was also well aware of the added complication of working with system designers who were often unaware of the needs of any of these other groups.

Her appointment as information systems specialist was a natural outcome of all that she had been doing in the ten years since her first appointment at the University of Rochester libraries. We begin to see her outline rationale for the importance of automation as early as 1956, as she highlights the monetary and temporal costs to faculty and library staff that resulted from the use of separate catalogs for each science library. We find her speculating on ways in which operations could be streamlined and automated so that faculty and staff could readily and quickly locate needed materials (Richmond, 1956, p. 315). This early work served as an introduction to her later efforts for producing an innovative series of computer-generated book and serial catalogs between the years 1963 and 1968.[5] Richmond had ready access to IBM tabulating equipment as early as 1962 through the University of Rochester computing center. Her efforts attracted the attention of those

seeking to provide automation solutions for American libraries. Eastman Kodak, for example, contacted her early in 1959 to encourage her to seek a grant to fund the development (with their assistance) of a micro-card system. She wrote to Shera telling him that she declined the offer.[6] Too often she found the tests of such systems inadequate because little care was taken "to eliminate the flaws that normally accrue . . . from the operation of variable factors." In her opinion, system tests yielded questionable results far too often due to a persistent failure to state conditions, variables, and criteria for success and because of a propensity to test essentially incompatible systems (Richmond, 1966b, p. 23).

Richmond published widely in the library literature about her experiences with computers (Richmond, 1963a, 1963b, 1963d, 1966a), available automation products (Richmond, 1967), possible solutions (Richmond, 1970a, 1970b), and research possibilities (1976b), and she encouraged library staff to be proactive in finding and implementing solutions for the future (Richmond, 1981a, 1981c). Often these articles were reprinted in textbooks and presented at conferences she helped to organize so that information workers from all walks of life could follow her clearheaded advice at each stage of the path to automation.

Richmond's extensive experience and hard-won expertise—gained by her leadership in early automation efforts—resulted in requests for her to write survey articles about the state of automation. In an article from 1981, for example, she discussed three main areas of success in automation: OCLC networking made possible by the use of MARC, increased use of online bibliographic databases, and the development of the computer-supported catalog. Yet, she indicated that all was not yet peaceful, "While these activities do not necessarily mean that library automation has reached the stage of universal acceptance with enthusiasm, it is now more a case of 'when' rather than 'whether'. From the literature one might assume that all the major problems of computers in libraries have been resolved. This is not exactly the case" (Richmond, 1981c, p. 28). Richmond does not lay the blame for this unrest solely on the librarians: "Automation in the library has been rather left out of the grand design for computerization. . . . The library is still waiting. In fact, in most academic institutions, with a few notable exceptions, automation has come in via a network or consortium and independently of the local computer center" (1981c, p. 29). She refers to the continuing problems "connected with the forced 'marriage' of libraries and [local] computer centers" (p. 29) as unresolved mainly due to the difficulties of creating working relationships between the library and computer center. Her final observation is telling: "It is depressing, after fifteen years, still to find so little cooperation" (p. 29). Richmond hoped that this grim situation would be resolved by the falling prices of computer technology by the end of the 1980s, which would enable libraries to afford their own computing equipment (Richmond, 1981c, p. 29).

As mentioned above, Richmond's perspective was that of one keenly aware of the common and all too frequent misunderstandings that occurred between both computer specialists and information workers. She sees a bright side to the neglect by the former of the latter, however:

> In a way, however, the less-than-happy relationship between academic libraries or library schools with their computer center is a blessing in disguise, because it points up a factor that has not really been considered to any great extent. . . . Realization that the specialist should be prepared to program. Actions to implement proposals for improvement should originate with the person who sees both the need and opportunity. Explaining what one wants to do to a programmer is very time consuming and requires a very high degree of rapport. With simulations of library situations, librarians alone have the background to ensure that all possible factors are considered in trying to determine the possible effects of changes before they are made. What programmer would be able to wake up in the middle of the night and remember a vital but forgotten detail of a library operation? (Richmond, 1981c, pp. 29–30)

Richmond often expressed her opinion that librarians and school teachers urgently needed to learn how to program, for these individuals alone possessed the knowledge necessary to build complete, robust, and effective systems. "Programming for librarians should be centered on the computer as an 'information-seeking device' rather than as a calculator" (Richmond, 1981c, p. 31). She looked forward to a future full of "hope not fear, and which will bring computer access to all bibliographic tools needed in the reference process from a single terminal," as is more or less the situation twenty years later (Richmond, 1981c, p. 29).

Concern with "user friendliness" and "transparency" run throughout her writings about automation. Richmond hoped that the growth of computer languages such as Smalltalk and Dynabook that "make use of the way the human mind recognizes patterns . . . related to research in cognitive psychology" would enable information professionals to easily learn to program (Richmond, 1981a, p. 89). This marks another common denominator in her work—a tendency for foresight and predictions about the future. Central to all of her undertakings is a clear concern to find ways to promote communication and connections between cognate areas of interest.

Leadership in Classification

> It is the job of classification to show the waxing and waning of ideals as well as ideas, since the spirit of the times, its Zeitgeist, adds dimension to any aspect of the sum total of human knowledge. (Richmond, 1963e, p. 396)

During the early 1950s members of three loosely affiliated international groups, the British Classification Research Group (CRG), the North American Classification Research Study Group (CRSG) and the Indian Library

Research Circle (LRC),[7] all sought to promulgate the facet analytical approach to knowledge organization made most famous by the work of S. R. Ranganathan (1937/1957). In so doing, they hoped to find the means to deal with the limitations of hierarchical classification systems such as the Dewey Decimal Classification. Aware of the increasing inadequacies of knowledge organization systems made evident by the steadily burgeoning flow of documents and the proliferation of specialized schemes for special libraries, they sought workable practical solutions (Classification Research Group, 1955; Richmond, 1963c, pp. 55–56; Richmond, 1969).

In a 1957 letter to Shera, Richmond discussed her interest in locating "the publications of the ASLIB CRG [Classification Research Group] in London. Perhaps we can get something of this sort going on over here."[8] It is likely that Richmond was well aware of Shera's correspondence with Ranganathan since the late 1940s and of his familiarity with the many classification projects of the CRG members. Shera, then an assistant professor (1947–52) at the University of Chicago's Graduate Library School, first wrote to Ranganathan in 1949 in response to Ranganathan's recommendation in support of a Mr. S. Parthasarathy's application for admission to the University of Chicago Graduate Library School. In this letter Shera also discussed Ranganathan's receipt of a Rockefeller grant to fund a series of visits to libraries and information centers in the United States. Shera advised Ranganathan on an extensive itinerary that included public and university libraries that had library schools.[9] Shortly after this, Shera sent an unpublished draft of his review of the second edition of the Colon Classification. Though the letter that accompanied it is missing, Shera retained a copy of the review. In it Shera notes that

> On this side of the Atlantic, the Colon Classification has been viewed with a suspicious skepticism that has largely obscured the many merits that the scheme possesses. . . . In England, by contrast, where the urge to classify library book collections came relatively late, Ranganathan's schematicism has been received with much greater sympathy and enthusiasm. There the Colon Classification has not only gained vigorous and active support, but it has actually been adopted by some libraries. But in the United States popular enthusiasm for the Colon system has been further impeded in two ways. Superficially, the esoteric terminology of the scheme has discouraged an objective appraisal of its merits. The serious student of library classification soon discovers that . . .
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> [H]e [Ranganathan] is actually using his terms with the greatest accuracy and precision. . . . The average American librarian, on the other hand, regards library classification as little more than a location device to guide him to the position of a particular title on the shelf. . . . Fundamentally, however, the real barrier to the understanding of the Colon Classification arises from the fact that it is founded in a philosophical orientation that is foreign to our own theories as to what a library classification should be. Early in his professional career, however, Ranganathan recognized that all human knowledge is composed of

> a relatively few basic subjects which may be arranged, combined and interrelated in an almost infinite variety of ways. Thus, about 1925 as a student of Berwick Sayers, he began to lay the foundation for a scheme that would provide complete flexibility, or in his own words 'infinite hospitality'. . . Ranganathan himself has likened it to a Meccano set the standard pieces of which may be assembled in a number of ways to construct many quite different mechanical objects. . . . It is manifestly impossible in a severely limited space to do full justice to the scheme, [here Shera refers the reader to "The colon classification and its approach to documentation," a chapter in Bibliographic organization (Shera and Egan, 1951).] But perhaps enough has been said to show that Ranganathan has departed from the usual concept of bibliothecal classification and by freeing it from the book as the physical unit of classification has taken an important step in directing attention toward the need to examine the "concept" or "information unit" as the more effective basis for the arrangement of bibliographic materials. . . . The reviewer does not mean to imply that American librarians should immediately begin the relettering of their books with the Colon notation, but he is convinced that Ranganathan is blazing a pioneer trail along which future theorists of library classification must follow, and that if we fail to heed his markings we may very soon lose ourselves in the ever deepening forests of contemporary print.[10]

In January of 1952, in a long-delayed letter that bears the title "Intellectual co-operation" and references "your letter of 6 Nov. 1951," Ranganathan wrote to both Shera and Margaret Egan about "Intellectual co-operation":

> Your own document explains in a way why you have resonated with the Colon Classification. . . . Our lines of thinking have detached themselves away from the traditional petrifying blind land into which classificatory and bibliographical thought had been driven—after all but by a tradition of but half a century. I had been delaying my reply in order to complete my study of your memorandum of 5 June 1951. . . . Parthasarathy and myself are interested in your pleasant suggestion that our group of workers [in the Library Circle] and yours should keep in touch with one another. Anybody who reads your memorandum and my Classification and Communication or some of my later articles in the *Abgila* will immediately see that we are working in the same sector of knowledge. . . . I am nowadays developing the idea of 'Research-work-in-series'. In the past, due to lack of facilities for communication and presented barrier of various kinds, research in the world has been running 'in parallel'. While work in-parallel can enrich research to some extent—in so far as it brings in the aroma of different personalities—it becomes wasteful and the wasteful almost amounts to the criminal in the great need there is today to turn research to the service of humanity. Your suggestion really emphasizes the need for 'work in series'. It is splendid. . . . I would be most happy if as a minimum we keep each other informed of the progress of our work. Perhaps you may be able to find even more productive means of co-operation. For, at your end is found Foundations which are generous in their outlook and care for research in fundamentals. You can harness some of these beneficent forces to intensify and make more intimate the way in which we can

> work together. [Ranganathan tells Shera about contacting Dr. Paul Hoffman, the leader of a delegation from the Ford Foundation then visiting India, to ask for help with funding library research. He explains that such work has no funding in India and is conducted by people, like himself, on a purely honorary basis.] . . . [R]esearch in our particular field is not evaluated in our country. I do not blame the country for it. For our work is even more fundamental than the work of the fundamental sciences. Its return can only be even more deferred. A nation which is struggling to find money to keep body and soul together . . . is not likely to . . . look ahead to fundamental research . . . and see the value which is likely to flow from work of this fundamental nature. It is in this realistic diagnosis that I drift with my Library Research Circle without any bitterness towards anybody. But there is no denying that any help which comes from any direction will be like drops of rain on parched-up earth. That is why I wrote to the Ford Foundation. But the only reply that I had was the laconic one that it would receive consideration (Unpublished letter from S. R. Ranganathan to J. Shera and M. Egan, January 26, 1952).[11]

That Shera and Ranganathan enjoyed a long and close association is indicated by the fragments of correspondence that survive. In 1959 Shera invited Ranganathan to join *American Documentation*'s board of editors (Shera, 1959, p. ii). In 1964 Ranganathan invited Shera to become a member of the board of *Annals of Library Science.* [12] and in 1970 invited him to give a series of lectures at the Documentation Research and Training Center (DRTC) in Bangalore (Shera, 1970).[13] Undoubtedly this association also served to cement Shera's support of the fledgling CRSG, headed by Richmond and Atherton, due in no small part to Ranganathan's description of his own Library Circle:

> One informal voluntary organization which has been set up at my end which can both absorb what you radiate and radiate to you something substantial from this end, is the Library Research Circle. It has no rules except that, when we meet, all our thought should be turned on Library Science. . . . The only subscription is four or five hours of time to be given on Sunday afternoons for joint pursuit. . . . The object of our Circle is to promote "team-work-in-series" in doing research in Library Science.[14]

In late 1958 Richmond posted an announcement in *Library Resources and Technical Services:*

> Feeling that classification, particularly as applied to documentation, is growing in importance; a group for discussion and research on the subject is being formed. Such a group has been active in England for some time. Those interested in joining should contact Dr. Phyllis Richmond, University of Rochester Library, Rochester 20, New York." (Richmond, 1958b, p. 236)

One of the first respondents was Pauline Atherton (now Pauline Atherton Cochrane) and thus began a lifelong friendship between the two women

as they provided integral leadership to the fledgling CRSG (Cochrane, 2001/2002, pp. 32–36). At the time Cochrane was the assistant director of the Documentation Research Project at the American Institute of Physics (Wheeler, 2000, p. 200). Other respondents included Benjamin Custer, editor of the Dewey Decimal Classification (DDC); Ralph Shaw, then a professor at Rutgers University; and Werner Ellinger, then senior subject cataloger at the Library of Congress.[15]

In a 1959 editorial in *American Documentation,* Shera's pride in the fledgling CRSG is evident:

> We have expressed our great admiration, not entirely tinged with envy, for the excellence of the work of the Classification Research Study [*sic*] Group in the United Kingdom. Therefore we are particularly pleased to be able to report that, almost single-handedly, Mrs. Phyllis A. Richmond of the University of Rochester Library has brought together over fifty kinspirits . . . interested in advancing the study of classification (Shera, 1959, p. ii).

As 1959 came to a close, Richmond spearheaded an effort to create a reading list in classification theory that would "serve as an introduction to the recent literature of classification research . . . it is hoped that a closer acquaintance . . . may inspire 'or goad' readers into developing original ideas of their own" (Richmond, 1959, p.1). Shera, after reviewing a draft copy of the list, made the following recommendation "Shouldn't you include Ranganathan on the reading list?"[16] Richmond continued to add to the CRSG reading list over the years because she observed that "so much interest has been shown in classification during the last decade that it seems very unlikely that the two most recent great systematizers, Bliss and Ranganathan, have said the last word for the twentieth century in this field" (Richmond, 1970d, p. 1). This list included publications of CRG and CRSG members and served to highlight related work in cognate areas such as psychology, communication, and system analysis (Richmond, 1970d). Members of the CRSG also oversaw the creation of the CRSG traveling loan collection, which was housed at WRU within the Special Libraries Loan Collection and today resides at the University of Toronto.[17]

The group met in open rooms at the national conferences of the American Documentation Institute (which later became the American Society for Information Science—ASIS, now ASIS&T), the American Library Association (ALA), and the Special Libraries Association (SLA). Richmond's recollections of the CRSG are of an informal organization "with no visible means of support" (Richmond, 1963c, p. 58). Cochrane tells of people crowded into meeting rooms, sometimes seated on the floor, freely discussing the problems they were encountering with the information systems they were either creating or wrestling with at their places of employment (Cochrane, 2001/2002, p. 27; La Barre, 2004). Those who remember these meetings all agree that these moments—stolen from the bustle of the national con-

ferences of larger and more mainstream organizations—created a place for information workers in the academy, government, and business to talk about the problems that inevitably arise during the interaction of people, documents, and technology.

Facet Analysis

> The future of generalized classification depends in large part upon man's ingenuity. So far there has been no limit in the capabilities of the human mind, and there seems, therefore, to be no justification for the view that classification as a way of organizing knowledge is dead merely because the philosophic approaches used so far have led to blind alleys. It is time to look for new approaches. (Richmond, 1963e, p. 401)

No doubt the discussions in the CRSG helped Richmond to formulate and to sharpen her understanding of the importance of facet analysis in the classification process and as the basis for new approaches to knowledge organization. Nevertheless her interest in facet analysis and faceted classification began as early as when she was a master's student at WRU. In her 1954 article, "Some Multi-Plane Classification Schemes," she discussed the havoc wrought upon Dewey Decimal Classification (DDC) and the Library of Congress Classification (LCC) schemes by the growth of knowledge over time. Indicating an admiration for the work of Bliss and his creation of a classification "adaptable to anticipate changing needs in subject emphasis," she lauded those systems that are "especially designed to show relations among fields in order to provide some logical place" for new knowledge such as the Universal Decimal Classification (UDC) and the Colon Classification, though she faults them for being "over-elaborate for most practical purposes." (Richmond, 1954, p. 61).

In an interesting conjecture, Richmond postulated that schemes like the DDC and LCC were prevented from adequate handling of composite subjects due to the fact that they work on two-dimensional planes. She proposed a creative series of poly-dimensional schemes designed to deal with poly-hierarchies and complex subjects. She illustrated how this might be done using, for example, Sarton's bibliographic classification scheme (used in the critical bibliographies published in *ISIS* from 1946 to 1952) or by graphically visualizing Aristotle's conception of the universe as a series of homocentric spheres with epistemology at the center (Richmond, 1954, p. 68). In her later work we see her demonstrating classification theory using three-dimensional visualizations (Williamson & Richmond, 1975). It is interesting to note the similarity between the illustrations for this 1975 article and current work such as the Visual Thesaurus (see http://www.visualthesaurus.com) and connectionist models with their nodes and links.

Richmond does not shrink, however, from criticizing the faceting work of Bliss and Ranganathan. She found their cumbersome systems of notation

to be the Achilles heel of modern classification. She painstakingly notes and summarizes in many of her writings (for example, Richmond, 1958a, pp. 208–211) the work of Eric Coates, Brian Vickery, Bernard Palmer, and A. J. Wells (all members of the CRG). This continual highlighting of the work of the British CRG members is an often-used strategy throughout her writings. It is likely that Richmond, like so many in North America, found the work of Ranganathan inaccessible, both literally and figuratively, but found firm traction with the practice grounded in theory that exemplified the projects conducted by the members of the CRG. At the time, few library schools were teaching about Ranganathan and Bliss. When I asked Pauline Atherton Cochrane about how pervasive awareness of faceted theory might have been during the 1960s she replied,

> I think it had seeped into the Chicago and Case Western, and to a certain extent the Columbia and the Maryland library schools, I wouldn't say any of the others because most people teaching cataloging and classification said, "everything you need to teach is being done by the Library of Congress, why do we need to teach anything else?" Phyllis realized that there was a need to teach people about classification and about subject analysis. She used what she was learning from reading Ranganathan and the Brits. (Cochrane, 2001/2002, p. 21)

It is most likely that Richmond first met Ranganathan at WRU in 1959 while both were attending the International Conference for Standards on a Common Language for Machine Searching and Translation, at which Ranganathan presented two papers.[18] In 1961 in an article on classification, when Richmond begins to examine its future, we can see that the work of Bliss and Ranganathan—as reflected in the CRG—has begun to assume an enduringly central position in her thinking about classification. It is the emphasis upon "relationships between concepts instead of strict hierarchical delineation of them" that, in her view, makes the Bliss Bibliographic Classification and Ranganathan's Colon Classification exemplars that pave the way for modern classification theory (Richmond, 1961, p. 35). Richmond directed those readers who sought a firm grasp of facet analysis and faceted classification to the work of the "London Classification Research Group" and the publications of their constituent members. Most often, Richmond referred to Brian Vickery's manual for the construction of faceted schemes (1960). Vickery himself had sent her a prepublication draft for inclusion in the files of the CRSG traveling library (Richmond, 1961, p. 35). Citing the publications of the CRG becomes the pattern of references in many of her other publications on classification (for example, see Richmond, 1961, 1963e, 1970d, 1977, 1981a, 1988).

For those anxious to experiment with facet analysis or to work with faceted schemes, and for those with limited access to the British publications of the CRG; Richmond also sketched out her own attempts to create a faceted scheme for the history of science. In so doing she attempted to

provide readers with a roadmap for unfamiliar terrain. She made no attempt to contain her enthusiasm for this modern theory of classification, "Suffice it to say, the field at present is wide-open to those who can throw off the notions which have strait-jacketed classification in traditional lines" (Richmond, 1961, pp. 35, 37).

Time and again, Richmond drew attention to the "model of clarity" contained in the "well organized and lucid" manual of faceted classification written by Brian Vickery (Vickery, 1960) and his other publications in classification, information retrieval, and automation. Not content to stop there, we see her in an article twenty years later still attempting to give, in this article as elsewhere, "credit where credit is due" in discussing how the work of the CRG "filled a gap between theory and practice" in such areas as creating "viable [record] formats for use with computers" and "pattern recognition" (Richmond 1988, p. 246). She commends the members of the CRG for their habits of "keeping records of their meetings," the production of "original, well-organized logical systems," and their "work in libraries and information centres where they could innovate and experiment," as well as their "many publications that have appeared in professional journals and conference proceedings" (Richmond, 1988, p. 246).

Her assessments of the limitations inherent in the state of contemporary classification work were clearheaded even as she extolled the virtues of facet analysis. We see this in a 1969 letter to Shera in which she looked back at the classification activities of the late 1950s and 1960s.

> [N]ot too much has been done recently. . . . The 1966 conference that Jessica [Melton of the Comparative Systems Laboratory at the CDCR] and I went to seems to have subdued everybody. Jean Perrault is still holding forth on the UDC, Bob Freeman and Pauline Atherton have done something with mechanizing UDC. . . . The AIP [American Institute of Physics] physicists have come up with a faceted classification that seems to make them happy. The CRG in London is still at it. . . . The linguistics people discovered classification was just as difficult as machine translation. . . . Needham and Sparck-Jones are still at it at Cambridge. We seem to be in a doldrums state. Maybe you can come up with some ideas for new directions. I can't make head or tail of the great volumes of stuff that comes from Ranganathan's school.[19]

Nevertheless, for Richmond the way out of the doldrums state she refers to here was as an adherent of the classification theories of Bliss and Ranganathan. For her, facet analysis and faceted classification were the cornerstone of modern approaches to information, and they could come to their fullest realization via automation. She developed a special interest in PRECIS (PREserved Context Indexing System), developed by Derek Austin. PRECIS was heavily influenced by the work of the CRG and was crafted to provide subject access to the contents of the British National Bibliography (BNB). It was intriguing to Richmond "because it combines classification theory, logical analysis, and careful semantic elaboration" (Richmond, 1976a, p.

242). Awarded a fellowship by the Council on Library Resources (CLR) in 1977–78, Richmond traveled to England to study this system with Austin. After the publication of her lucid introduction to PRECIS (Richmond, 1981b), Richmond was widely considered the North American expert on faceted classification (Williamson, 1999, p. 186).

For Richmond, faceted classification was the embodiment of the art and science of classification because it exemplified the inductive scientific method and because of the central importance placed upon the synthesis of conceptual knowledge. Faceting injected "new life . . . into the area of classification" as "scholars . . . and specialists . . . turn their attention to classification as a means of bringing order out of the chaos" (Richmond, 1976a, p. 242). Richmond was fond of using Herbert Simon's (1962) parable of the watchmakers Tempus and Hora as a way to illustrate the differences among classification systems. Each watchmaker had the task of assembling a watch with one thousand parts. Tempus put his together as a unit, but if he was interrupted before completion the partially finished watch fell to pieces. Hora used a collection of subassemblies, so that if interrupted, only a subsection would be lost. According to Richmond, the DDC, UDC, and LCC follow the example of Tempus. Each seeks to elucidate the true order of the universe of knowledge in a single general outline, which grows increasingly outdated over time and thus becomes an imperfect reflection of the actual state of knowledge. The CRG's work, however, with the creation of depth classification for special collections, follows the model of Hora. With the creation of a faceted classification for each major class, flexibility and mutability reign (Richmond, 1988).

Return to Case Western

One final aspect of Richmond's career deserves mention here. During the course of Richmond's fourteen years at Rochester, Shera never let go an opportunity to attempt to entice her to return to the Case Western Reserve University as a professor. She resisted such blandishments until 1966, when she agreed to a temporary position teaching cataloging courses during Margaret Kaltenbach's sabbatical, but she returned to the libraries at Rochester when her teaching duties concluded. In 1970, however, the year of Shera's retirement as dean, Richmond consented to join the faculty at WRU. The few documents that remain in her personnel file indicate that she most often taught courses in cataloging and classification, but they make no mention of her research activities. Richmond served as acting dean in 1979 and again 1982–83. She was appointed dean from 1983 to 1984 and exchanged that title for professor emerita upon her retirement at the close of that academic year (University personnel, n.d., 7PI).

Her love of teaching ran deep. In addition to serving on the faculty at CWRU, Richmond served as a visiting professor at Syracuse University in 1969 and at Columbia University in 1986. In recognition of the superb

quality of her instruction, she was awarded the Margaret Mann Citation from the American Library Association in 1977:

> Dr. Richmond is that rare instructor who brings to her students not only a theoretical knowledge of cataloging and classification, but also knowledge derived from her practical experience and scholarly background. She brings to her teaching the ability to represent complex topics with clarity and wit and to gently and subtly prod her students into doing more than they ever thought they could do with comments on their work that are always perceptive, pertinent and constructive. (Moore, 1977, pp. 381–82)

Conclusion

Avid birdwatcher, lover of cats, ham radio operator, and collector of stamps and shells, Richmond died in 1997 from complications of Alzheimer's disease. Throughout her distinguished career, whether talking about the Library of Congress Classification or the Anglo-American Cataloging Rules (AACR), faceted classification or library automation, Richmond sought to build bridges between cognate areas within and outside of library and information science. It was not unusual for Richmond to refer in the context of a talk or article to Cutter, Bliss, Bradford, and Chomsky. Or to draw a conjecture that weaknesses in the DDC are reflections of Gödel's proof and Heisenberg's uncertainty principle (Richmond, 1977, p. 107). Or to contrast early work with the computer language SmallTalk with Ted Nelson's work with Xanadu and Aitchison's Thesaurofacet (Richmond, 1981a). At all times, she maintained a keen awareness of then current work in classification. Her work serves as a constant reminder that the focus of library and information science should be upon the interrelationships among documents, technology, and people. She continually emphasized the importance of commonality over difference. Her spirit of keen inquiry and emphasis upon open communication remain the hallmark of the true nature of interdisciplinarity. She created vehicles like the CRSG so that people from different disciplines could find common ground and begin to talk to one another. Her example must not be forgotten as we push beyond the familiar boundaries of our discipline.

Appendix 1: Bibliography of Phyllis Allen Richmond

This is by no means an exhaustive listing of the work of Phyllis Allen Richmond. Only some of her many book reviews, notes, and opinion papers are listed. Her work is organized by subject and alphabetized by title within each category.

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Appendix 2: Informal Writings of Phyllis Allen Richmond given to Pauline Atherton Cochrane

These excerpts are drawn from a little yellow notebook containing writings and sketches by Phyllis Richmond that was given to the author by Pauline Atherton Cochrane. It is inscribed "*Argonauta,* Sanibel Island, March 1964." Richmond wrote these journal entries while vacationing on Sanibel Island with Cochrane and in response to Cochrane's request to ponder some of the important concepts of life. Cochrane remembers Richmond as being happiest while vacationing by the sea. The preface is a quote from John Donne.

They who one another keep. Alive, ne'er parted be.

Integer Vitae

The walk that seemed so long in the heat of day is somehow shorter in the afternoon. The sun that beat so hard upon my brow is gentler in his rising and his setting. The same cold stars of home are nearer to me on this tropic isle. Is my mind not master of its setting, and all things good or bad according to its thinking?

Purpose of life

The purpose of life is to live—in love with your friend, in peace with your neighbor, in harmony with your universe so that, by adhering to an ethical code as high as you can sustain, you may in kindliness, understanding and

compassion, survive the buffets and hurts of life with a serenity that will be aid and inspiration to others who struggle. No man is an island after he has identified himself. Then he must reach out toward his fellow man as well as to the stars.

Existence

Why are we here at all? Life is such a struggle for all its creatures. The sea before us is full of things eating or being eaten. The minister says, "Most of us are having a hard time," and no doubt everyone in the congregation thinks, "That's me." At the same time, "life is the sum total of forces which resist death." We regard death as the end of everything because it is the end of life as we know it. Yet after death we are not lost to the universe because nothing is ever lost. We become a part of the earth, a part of the infinity of the universe.

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Notes

1. Press release, Case Western Reserve University Archives (CWRUA) 45A 1:5.
2. WRU program brochure for documentation specialists, CWRUA 45A 1:1.
3. Papers of Phyllis A. Richmond, CWRUA, 27DD9, Shera, Jesse, Correspondence (Incoming and Outgoing), 1953–1977.
4. Unpublished letter from J. Shera to A. Rees, May 21, 1970. University personnel, n.d., 7PI Shera.
5. (May, 1963), Short title catalog of books in the Geology-Geography library, University of Rochester (computer produced). (April, 1964), Selected list of scientific periodicals in the libraries of the University of Rochester. (April, 1964), Short title catalog of books in the Physics-Mathematics-Optics-Astronomy library. University of Rochester (March, 1965), Short-title catalog of books in the Life Sciences library, University of Rochester. (November, 1965). Science Libraries consolidated short-title catalog of books and journals, University of Rochester. (January, 1966), Selected list of scientific periodicals in the libraries of the University of Rochester. (May, 1967), Science libraries consolidated short-title catalog of books. (October, 1968), Union list of serials: Education, Science, Medicine in the libraries of the University of Rochester as of October 15, 1968.
6. Unpublished letter from P. Richmond to J. Shera, July 4, 1957. Papers of Phyllis A. Richmond, CWRUA, 27DD9 1:4.
7. Little has been written about the Library Research Circle (LRC). The January 26, 1952, letter from Ranganathan to Shera contains an extensive description of the activities of the group. (Papers of Jesse Hauk Shera, CWRUA, 27DD5, 10:3). A handwritten note in Calvin N. Mooers Papers, CBI 81, at the Charles Babbage Institute, refers to "newsletters" of the LRC (Folder: Classification research notes [1950], CBI 81, 17:49) as described in *Current Research and Development in Scientific Documentation* no. 3 (April, 1958), p. 23–23; no.

4 (April, 1959), p. 18–19; no. 5 (October, 1959), p. 24–25; no. 6 (May, 1960), p. 37–38; no. 7 (November, 1960), p. 33; no. 8 (1961), p. 38–39. These are in actuality brief references to current activities and publications of the group including an article by S. Parthasarathy (1952). References in *Current Research and Development in Scientific Documentation* continue through 1969: no. 10 (November, 1961), p. 64–65 ; no. 11 (October, 1962), p. 113–114; no. 12 (1965), p. 83; no. 13 (1964), p. 125–126; no. 14 (1966), p. 241–242; no. 15 (1969), p. 217. S. R. Ranganathan (1962) also mentions the work of the LRC, CRG, and CRSG.

8. Unpublished letter from P. Richmond to J. Shera, July 4, 1957. Papers of Phyllis A. Richmond, CWRUA, 27DD9 1:4.
9. Unpublished letter from J. Shera to S. R. Ranganathan, November 25, 1949. Papers of Jesse Hauk Shera, CWRUA, 27DD5 10:3.
10. Unpublished manuscript. Colon Classification. CWRUA, 27 DD5 10:3
11. Unpublished letter from S. R. Ranganathan to J. Shera and M. Egan, January 26, 1952 .Papers of Jesse Hauk Shera, CWRUA, 27DD5 10:3.
12. Unpublished letter from S. R. Ranganathan to J. Shera, February 26, 1964. Papers of Jesse Hauk Shera, CWRUA, 27DD5 10:3.
13. Shera was one of many speakers invited to participate in the Sarada Ranganathan Lecture series over the years from 1966. Pauline Cochrane was the lecturer in 1970.
14. Unpublished letter from S. R. Ranganathan to J. Shera and M. Egan, January 26, 1952. Papers of Jesse Hauk Shera, CWRUA, 27DD5 10:3.
15. Richmond: Personal correspondence file September–November 1958. Papers of Phyllis A. Richmond, CWRUA, 27DD9 1:1.
16. Unpublished letter from J. Shera to P. Richmond, December 5, 1959. Papers of Phyllis A. Richmond, CWRUA, 27DD9 1:4.
17. The Bibliographic Systems Center (BSC) was originally a collection of classification systems maintained by SLA and formally established in 1924 as the "Loan Collection of Classification Schemes and Subject Heading Lists." SLA transferred the "Loan Collection" outright to Western Reserve University in 1965. Western Reserve University renamed the collection the Bibliographic Systems Center in 1966. In 1975 this collection, containing classification schemes, thesauri, subject heading lists, and indexes, was transferred to the University of Toronto. (Richmond to University of Toronto, December 26, 1975, unpublished document n.d.; Exhibit in support of historical note: The development and growth of the BSC: CWRU pp. 13, 14. University of Toronto, Faculty of Information Studies, Inforum: The Integrated Library and Information Studies Laboratory).
18. "Classification and Retrieval—Problems for Pursuit" and "Classifying Indexing and Coding", preprints issued in advance of the International Conference for Standards on A Common Language for Machine Searching and Translation, 1959, Cleveland, Western Reserve University and Rand Development Corporation. Papers of Jesse Hauk Shera, CWRUA, 27DD5 10:3.
19. Unpublished letter from P. Richmond to J. Shera, February 12, 1969. Papers of Phyllis A. Richmond, CWRUA, 27DD9 1:4.

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