

Research Article

HyperRAD: A Case Study in Developing Electronic Manuals for Archives

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Abstract: This case study describes an experiment to compare the use of the printed paper-based version of the Canadian *Rules for Archival Description* with its hypertext prototype, *HyperRAD*. The results of the experiment revealed no statistically significant differences in user efficiency or effectiveness or in user preference for either tool. The article concludes with some recommendations for further development.

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OVER THE LAST FIFTEEN YEARS, computers in archives have become commonplace tools employed to improve administrative activities and to increase access to archival holdings. As Anne Gilliland-Swetland noted, "The changes wrought by the computer in archives have accelerated since early 1980s, . . . as a result of the increasing availability to archivists of affordable microcomputers with off the shelf software (wordprocessing, spreadsheet, database management system) and expanding storage capacity for use in administration and description of archives."¹ In addition, the development of the MARC AMC format in 1983 has enabled archivists to use bibliographic data bases, such as RLIN and OCLC, to expand access beyond their own institutions. More recently, the growth of the Internet and Internet access tools like Gopher and Mosaic software have provided opportunities for enhanced remote access to archival materials.² Without question, archivists are using computers. However, they are using them predominantly to automate isolated tasks such as creating finding aids and cataloging collections. While archivists are working toward automated access to their holdings, the majority of archival functions remains semi-automated—manual, labor-intensive activities still relying on a series of paper-based tools.

Throughout much of the 1980s, corporations began to migrate from standard paper manuals to on-line documentation. Initially, on-line documentation was oriented toward the software-development environment for

the creation of more effective on-line Help files and manuals. The notion of on-line documentation quickly invaded the print world as business and government saw it as a way to reduce bulky manuals to a cheaper format that offered not only more effective and efficient access to the content but also less-expensive and more timely distribution.³ The information professions have been slower to adopt on-line documentation, as demonstrated by the number of manuals that remain in printed textual form in archives, libraries, and record management units.

Within a fully automated archival system, the printed paper-based tools that are commonplace today could be available in an electronic form, completely integrated into the system. No longer would archivists need to thumb through procedural manuals and technical standards to seek a piece of needed information. In particular, the descriptive process that employs a myriad of manuals and standards could benefit from efficient access provided by context-sensitive help. An initial step in this direction is one project funded by the Canadian Council of Archives to examine the feasibility of converting the Canadian archival descriptive rules, *Rules for Archival Description (RAD)*,⁴ to an electronic format.⁵

This paper describes the evaluation of the project's prototype, *HyperRAD*.⁶ We

³Robert Hamilton and Dennis Hamilton, "Online Documentation Delivers," *Datamation* 36 (1 July 1990): 45–50.

⁴Bureau of Canadian Archivists, Planning Committee on Descriptive Standards, *Rules for Archival Description* (Ottawa: Bureau of Canadian Archivists, 1990).

⁵A full feasibility analysis of *HyperRAD* is contained in Elaine G. Toms and Wendy M. Duff, *HyperRAD: An Automated Text Retrieval Hypertext Prototype for the Rules for Archival Description*. Final Report, prepared for the Canadian Council of Archives, August 1993.

⁶For a review of the development of the prototype, see Elaine G. Toms and Wendy M. Duff, "HyperRAD: An Hypertext Application for the Effective and Efficient Use of the *Rules for Archival Description*," *Archivaria* 34 (1992): 252–265.

¹Anne J. Gilliland-Swetland, "Archivy and the Computer: A Citation Analysis of North American Archival Periodical Literature," *Archival Issues* 17, no. 2 (1992): 96.

²For a description of an interesting account of mounting finding aids on the Internet, see Dan Cantrell, "From MARC to Mosaic: Progressing Toward Data Interchangeability at the Oregon State Archives," *Archives and Museum Informatics* 8 (Spring 1994): 4–12.

wanted to test the efficiency and effectiveness of *HyperRAD*, compared with its paper format version, *RAD*. To do so, we asked three questions:

1. Is *HyperRAD* as effective as *RAD*? That is, can naive (first-time or inexperienced) users create accurate descriptions? How many errors are made?
2. Is using *HyperRAD* as efficient as using *RAD*? That is, can naive users create accurate descriptions more quickly? How many minutes does it take to do a description?
3. Do naive users prefer either format?

Rules for Archival Description: The Paper Format

Rules for Archival Description (RAD) was published in 1990 by the Bureau of Canadian Archivists to standardize the descriptive process and products in Canadian archives. Not unlike the structure of *Anglo-American Cataloguing Rules (AACR2)*⁷ *RAD* contains rules for describing specific types of media, as well as rules for creating access points and establishing name headings. (See “*RAD* Contents” and “Chapter 1 - Contents” boxes in Figure 1.) Rules are mnemonically numbered; initial digits indicate the medium (or chapter) and the remaining digits indicate descriptive area and data element (also illustrated by the title proper in Figure 1). There are provisions for describing each area at the fonds, series, file, and item levels.

Figure 1 contains an example of how the manual is used to describe the title proper for a textual record. As illustrated, archivists access the rules first by type of media and then by relevant descriptive area or element. They normally access the area by

stepping through the various tables of contents and/or by browsing the text. Examples (not included in Figure 1) appear with each rule to illustrate its usage. A time-consuming aspect of using the manual is the need to consult a myriad of both general and specific rules for each data element in both the media-specific chapter and Chapter 1, as indicated in Figure 1, as well as rules in different parts of the book simultaneously. As do most paper manuals, *RAD* contains a number of aids to help archivists efficiently locate relevant rules; these include *see* and *see also* references, mnemonic rule numbers, and typical textual guideposts, such as headers and chapter titles. At present, *RAD* does not contain an index.

Rules for Archival Description: The On-Line Format: *HyperRAD*

HyperRAD, the electronic prototype of *RAD*, was created using hypertext, a format used by many on-line documentation systems. Readers navigate through the text by using menus, links, and hot keys rather than by the normal, page-by-page, linear method.

Users access the rules by means of a user interface, a hierarchical menu structure based primarily on *RAD*'s tables of contents from the paper format (see Figure 2). Unlike the paper format, these menu choices contain brief explanations or scope notes to guide the user to the appropriate section. Each unit of information has a unique title that serves as a key access point (as illustrated in the three boxes in the lower right corner of Figure 2). This menu structure enables archivists to access relevant rules for a particular element directly, eliminating the need to browse text for pertinent rules.

Figure 2 shows the process used to describe a formal title proper for a textual record. In addition to the links illustrated, other links access related rules in other chapters and the appendices. Archivists can also move forward or backward through

⁷Michael Gorman and Paul W. Winkler, eds., *Anglo-American Cataloguing Rules*, 2nd ed., rev. (Ottawa: Canadian Library Association, 1988).

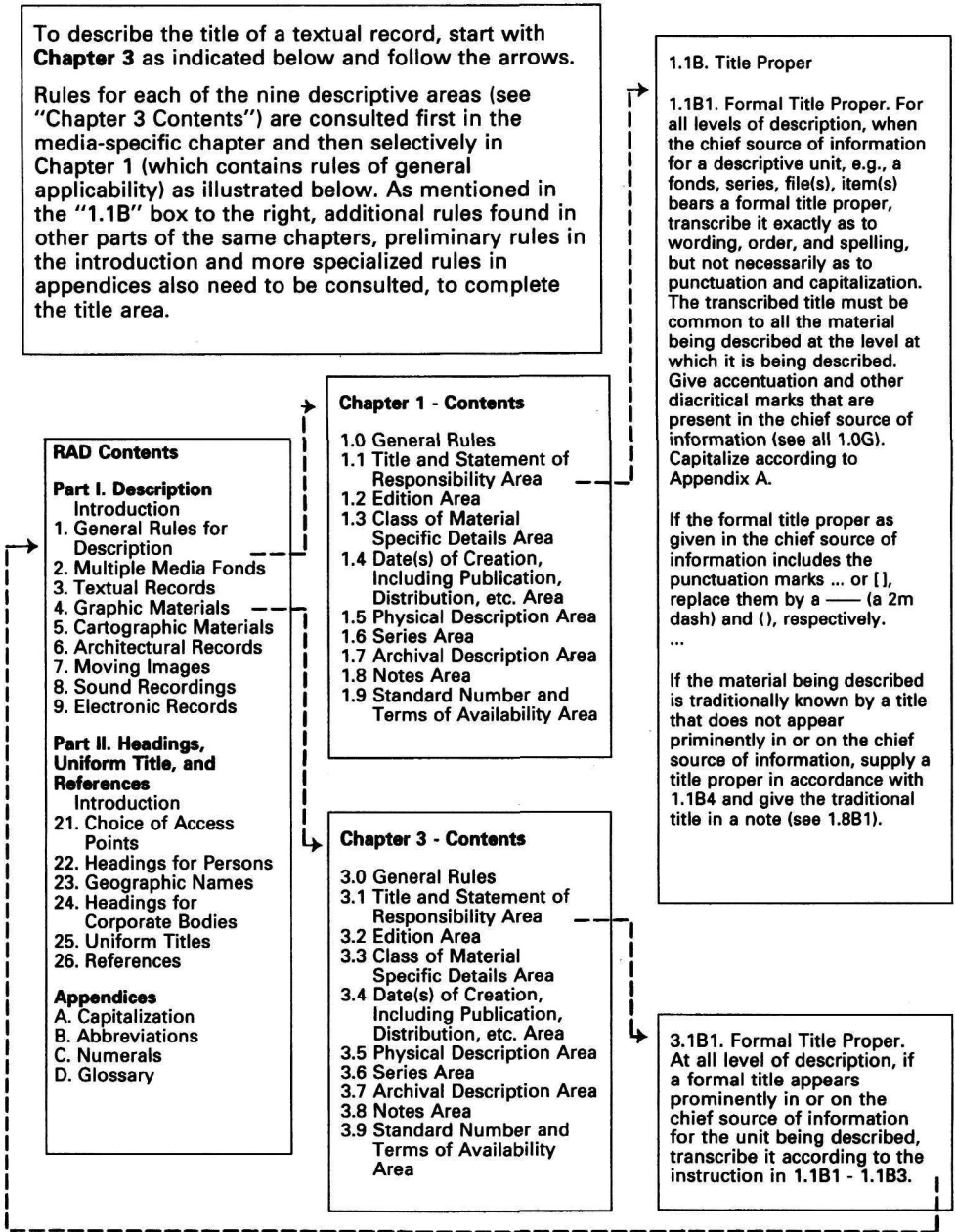


Figure 1. Title rule selection in RAD. (see instructions in box at upper left)

the document because *HyperRAD* partially retains *RAD*'s sequential arrangement, although this organization is not explicit. The need to refer back and forth between rules, however, is reduced in *HyperRAD*. Rules that repeat information are melded, and the

rules are presented as a single package of information, not as two or three separate sections. (Compare the first part of the "1.1B1" and the "3.1B1" boxes in Figure 1 with the "Formal Title Proper" box in Figure 2.) Furthermore, empty rules that

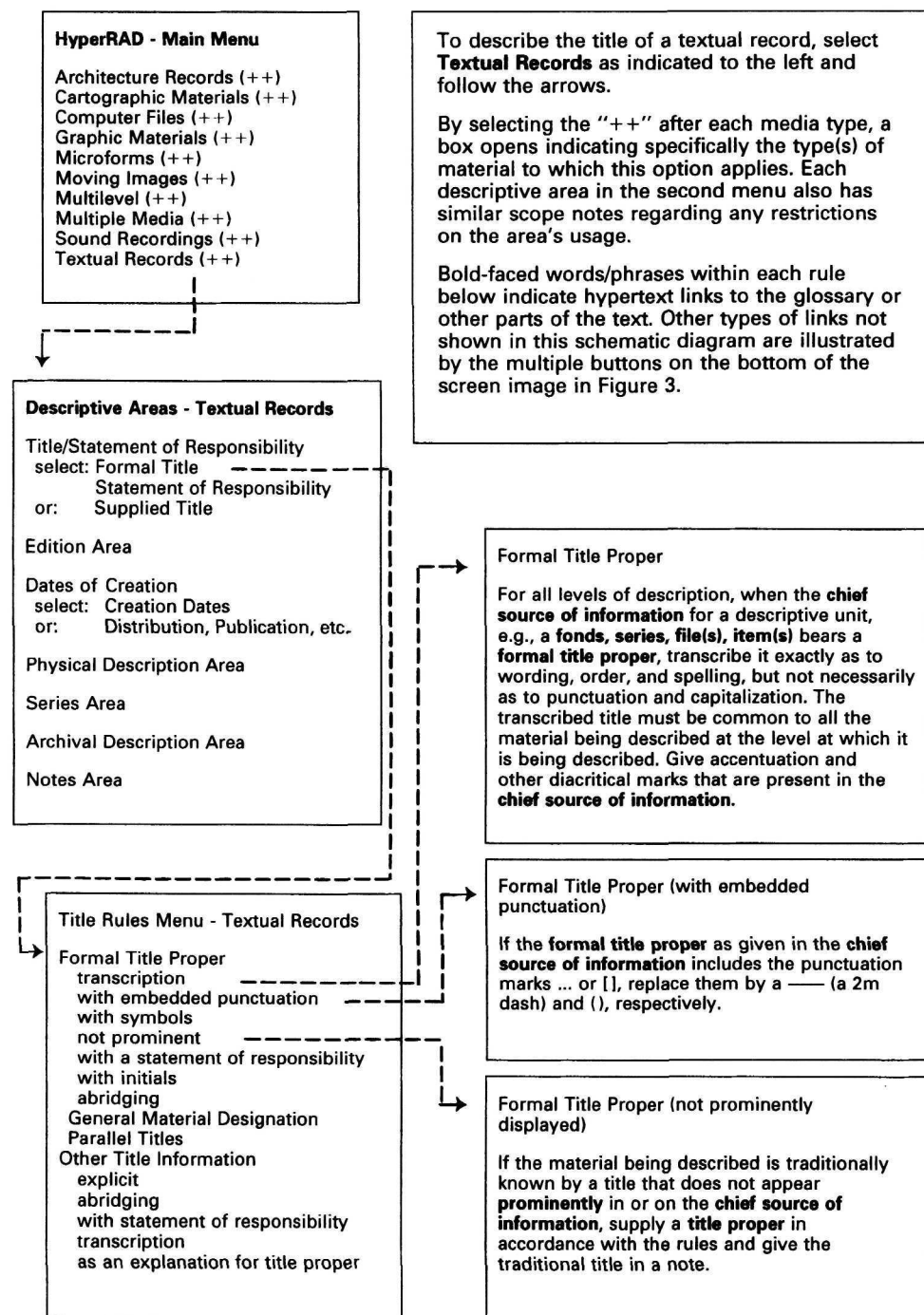


Figure 2. Rules for title selection in *HyperRAD*. (see instructions in box at upper right)

serve only as *see* or *see also* references in a paper-based text have been replaced with links, and all rule numbers have been deleted. *RAD*'s multipart rules (like "1.1B1" in Figure 1) are divided into many separate rules and are accessed individually, as illustrated by the three boxes that start with "Formal Title. . ." in Figure 2.

In addition, *HyperRAD* provides a variety of navigational aids and cues via buttons, as illustrated in Figure 3. The bottom-line button bar facilitates forward and backward movements, displays a graphic chart of the hypertext structure, gives quick access to the main menu and the media-specific menu, supplies a series of Help screens, and provides a quick exit from the system. On the second-to-last line is another button bar that is context sensitive to the data element; this bar provides access to data element/area menus, as well as to the rules for capitalization and to numerals for the specific element/area. These buttons assist archivists in locating relevant information on a "need-to-know" basis.

Comparisons of Text with On-Line Formats

The results of previous studies comparing the performance of an electronic document with its printed paper equivalent are mixed. Ben Schneiderman, for example, compared the performance of a Hypertext-based data base on the Holocaust, and he found the paper version faster for simple fact retrieval but no different for complex queries.⁸ This result was confirmed in a later study involving a maintenance man-

ual.⁹ In contrast, D. E. Egan and colleagues found, in their SuperBook evaluation, that SuperBook users were considerably more accurate than were the paper book users.¹⁰ More recently, Laura Leventhal and colleagues compared both formats using an encyclopedia, HyperHolmes.¹¹ This project concluded that electronic document users were marginally more accurate, while the paper medium users were marginally faster.

It appears from previous research that each format has its own unique advantages. In most studies, however, subjects were looking for factual answers to specific questions. With a manual, the user may be looking for a specific piece of information but is often trying to determine how to accomplish a task. Of the studies cited here, only Marchionini and Schneiderman used a technical manual. In our test we replicated the operational environment in a laboratory setting to determine how effective and efficient *HyperRAD* would be in the descriptive process. This study tested not only the users' abilities to locate relevant information but also their abilities to apply that information.

Methodology

We used two different methods in the experiment. We designed a combination between- and within-subjects experiment to compare the performance of naive users using the printed paper *RAD* and

⁹The study of maintenance manuals for electronic equipment, conducted by Larry Koved, is described in Gary Marchionini and Ben Schneiderman, "Finding Facts vs. Browsing Knowledge in Hypertext Systems," *IEEE Computer* 21 (January 1988): 70-80.

¹⁰D. E. Egan, J. R. Remde, J. R. Gomez, T. K. Landauer, J. Eberhardt, and C. C. Lochbaum, "Formative Design-Evaluation of SuperBook," *ACM Transactions on Information Systems* 7 (January 1989): 30-57.

¹¹Laura Marie Leventhal, Barbee Mynatt Teasley, Keith Instone, Diane Schertler Rohlman, and John Farhat, "Sleuthing in HyperHolmes: An Evaluation of Using Hypertext vs. a Book to Answer Questions," *Behaviour & Information Technology* 12 (May-June 1993): 149-64.

⁸Ben Schneiderman, "User Interface Design and Evaluation for an Electronic Encyclopedia," in *Cognitive Engineering in the Design of Human-Computer Interaction and Expert Systems*, edited by Gavriel Salvendy (New York: Elsevier, 1987), 207-23.

Formal Title Proper					EXAMPLES				
<p>For all levels of description, when the chief source of information for a descriptive unit, e.g., a fonds, series, file(s), item(s) bears a formal title proper, transcribe it exactly as to wording, order, and spelling, but not necessarily as to punctuation and capitalization. The transcribed title must be common to all the material being described at the level at which it is being described. Give accentuation and other diacritical marks that are present in the chief source of information</p> <p>◀EXAMPLES▶ ➡</p>					Student and Academic services management (series title, transcribed from file classification plan)				
					Personnel management (subseries title, transcribed from record schedule)				
					Signing authority (file title, transcribed from file folder)				
					Report of the Royal Commission on National Development in the Arts, Letters and Sciences (file title, transcribed from title page of draft report)				
Text	Formal	Supplied	Capitalization		Abbreviations		Punctuation		Source
<<<	Menu	Media	Review	Exit	Map	Search	Notes	Help	>>>

Figure 3. A HyperRAD Screen Image.

HyperRAD.¹² We wanted to compare how users differed when using both tools. We also used a questionnaire with follow-up discussion to determine individual preferences.

Materials. An archivist working at the Public Archives of Nova Scotia created two single-page narrative descriptions of fonds, based on actual documents in the holdings (see Appendix A). Students used blank sheets for recording their answers, and they consulted either the printed paper *RAD* or the *HyperRAD* installed on workstations at the School of Library and Information Studies, MicroLAB, Dalhousie University, Halifax, Nova Scotia. In addition, students answered an open-ended

questionnaire about their problems and preferences.

Participants. To compare the performance of naive users applying *RAD* and *HyperRAD*, we needed a group of users with some knowledge of archival description. Ten students enrolled in the graduate-level archives course at the School of Library and Information Studies, Dalhousie University, were recruited as participants in the experiment. The students had completed a one-term course in using *AACR2R* but had received only two elementary lectures on archival description. All were proficient in the use of computers. Some had experience using hypertext software and mouse-driven software. Each student was paid a nominal amount for participating, but all were eager because one of their course assignments was the preparation of an archival description.

Procedures. Prior to the start of the experiment, students received a brief demonstration of the software. The ten students were randomly assigned to one of two five-person groups. We wanted to maximize the

¹²The experiment used naive subjects because *HyperRAD* was designed on the assumption that “many of these difficulties which confront the novice user unfamiliar with a formal set of instructions for archival description can be ameliorated by the use of hypertext software.” Elaine G. Toms and Wendy Duff, “*HyperRAD*,” p. 252. This experiment wanted to test that assumption.

use of the participants without prejudicing any single format. Hence, each student used both formats and both fonds-level descriptions, but the two groups used the formats in different order, as illustrated in Table 1.

Before beginning the description, the group using *HyperRAD* was given ten minutes to become more familiar with the package.

The tests were conducted simultaneously in two separate rooms. When all students in both groups had completed the first task, the groups changed places. At the start of each test (or for the *HyperRAD* users, after their software orientation), each student received the narrative description of the fonds and a blank sheet. Everyone started at the same time, but no time limits were set. The students recorded when they finished the description. At the end of the experiment, participants completed a questionnaire about their personal perceptions of the two formats; they then met as a group with the investigators for a debriefing. One investigator recorded the comments, while the other led the discussion.

An impartial judge, an expert in the use of *RAD* and in archival description in general, graded the completed descriptions. He established a grading scheme, totaling a maximum of one hundred points and based on the descriptive areas prescribed by the manual; that scheme appears in Table 2.

In addition, the judge deducted points for information placed in the wrong category, as, for example, if the immediate source of acquisition note was labeled as a custodial history. The Notes, Scope and Content, and Title areas were assigned higher scores because information necessary for an accurate description was not immediately obvious from the narrative description. For example, information for the title had to be composed or supplied, and a note indicating this had to be included in the description. In some examples, scope and content information had to be inferred.

Some information in notes had to be derived—the accrual note, for instance, from information presented in the description, instead of copied.

Results and Analysis. From the results, we analyzed two dependent measures of performance:

1. Overall grade on the fonds-level description (plus individual analyses of each descriptive element) to indicate the accuracy of descriptions; and
2. The time taken to complete the tasks to indicate the efficiency.

In addition, we assessed the participants' written responses to the questionnaire and their verbal responses in the open discussion. The results of evaluating the descriptions are summarized in Table 3.

The results were analyzed using an analysis of variance. We found no statistically significant differences between the use of *RAD* and *HyperRAD*. Further analyses of each descriptive area indicated no differences in any of these factors either. In four areas, both groups demonstrated the same or nearly the same performance. In the Title area, *RAD* users (72 percent) performed much better than *HyperRAD* users (49 percent), although not significantly. Both groups scored poorly in the Extent and Notes areas, achieving only between 50 and 65 percent.¹³

The archival descriptions that the participants produced contained a variety of different errors. The title and the extent statements presented the greatest challenges. To create a title at the fonds level, the *RAD* requires that the archivist provide the name of the creator of the fonds and the word *fonds*. In the first exercise, 60 percent of the *HyperRAD* users provided the wrong name, and 40 percent did not include the word

¹³As the sample contained only 10 participants, it is unlikely that statistically significant results would be achievable.

Table 1.

Experimental design and group allocation				
	Group 1		Group 2	
Session 1	<i>HyperRAD</i>	Description A	<i>RAD</i>	Description A
Session 2	<i>RAD</i>	Description B	<i>HyperRAD</i>	Description B

Table 2.

Grading scheme for test descriptions	
Area	Highest Possible Score
Title and Statement of Responsibility	15
Dates	10
Extent	10
Scope and Content	25
Biographical Sketch/Administrative	10
History	
Notes	30

Table 3.

Average score for both descriptions (numbers are average scores for each group) per descriptive area. Percentages are calculated based on the maximum possible score for each area. For example, maximum score for title is 15. All <i>RAD</i> users averaged 10.8 or 72 percent (10.8 / 15).		
Item Assessed	<i>RAD</i>	<i>HyperRAD</i>
Title (maximum 15)	10.8 (72%)	7.3 (49%)
Date(s) (maximum 10)	8.0 (80%)	7.7 (77%)
Extent (maximum 10)	6.5 (65%)	5 (50%)
Administrative History (maximum 10)	9 (90%)	8.5 (85%)
Scope and Content (maximum 25)	21 (70%)	21 (70%)
Notes (maximum 30)	18 (60%)	15.5 (47%)
Overall Performance	72.9 (%)	64.8 (%)

fonds. Only 20 percent of the *RAD* users omitted the word *fonds*, and all provided the correct name element. Perhaps the examples, which are presented directly after the rules in the *RAD*, helped the users produce the right title. Those examples are also included in *HyperRAD*, but here they required users to select a button to open the Example window (as illustrated in Figure 3). In the second exercise, which required an open extent statement, all but one of the *HyperRAD* users created a correct title, but 80 percent did not provide an extent statement. This area also

created problems for *RAD* users, with 60 percent omitting it. Some participants (40 percent of *RAD* users and 20 percent of *HyperRAD* users) confused an immediate source of acquisition note with a custodial history. Other errors included missing information, information provided erroneously, and a failure to abbreviate as required.

While it appears that, on the whole, *HyperRAD* users did not perform better than *RAD* users, it is perplexing that *RAD* users performed better in establishing the Title area and that overall neither group

performed as well as expected. Scores of 73 percent and 65 percent are inadequate in an operational environment, but perhaps not unexpected for novices.

On the second measure, *HyperRAD* users completed the tasks faster than *RAD* users, but with no significant difference. On average, *HyperRAD* users finished the description in 50 minutes, while the *RAD* users finished in 53.6 minutes. Three individuals omitted the time taken for one or both records and were therefore not included in the results. Hence, this result is based on data from only seven participants.

What accounts for these results? *RAD*, like *AACR2R*, is a complex volume of detailed rules written for the expert but widely used by novice archivists like those in our study. Users commented on the directly observable difference in browsing capabilities between the printed document and *HyperRAD*. For instance, the students using *HyperRAD* seemed reluctant to explore, but *RAD* users deftly used the visual cues in the printed document to skim quickly through many irrelevant rules to locate helpful information.¹⁴ *HyperRAD* users expected to find word clues in menus to help them access appropriate rules. Moreover, in designing *HyperRAD*, we considered examples as separate chunks of information and moved them into separate but easily accessible windows. The *HyperRAD* users did not always consult these examples, whereas the *RAD* users viewed them with the rule. This difference may explain the poor performance of the *HyperRAD* users when creating the Title and Extent areas. If they had consulted the examples users might have improved their performances.

In addition to the experiment, the participants completed an evaluation form and met to analyze the product. The ten students were evenly divided on the tool they preferred, with five preferring *RAD* and five preferring *HyperRAD*. Not surprisingly, students found *HyperRAD* more flexible than the paper manual. They commented on the difficulty of using an electronic manual with a blank sheet to be completed by hand, and they recommended that an electronic input sheet be used with *HyperRAD*. They also commented on the ability to move quickly through the menus, providing immediate access to relevant information in a way that cannot be replicated in a printed paper-based medium. They also liked the ability to “look at only the relevant rules and not get ‘lost in’ a myriad of irrelevant ones.” Although they commented on improved speed when using *HyperRAD* (compared with *RAD*), this was not reflected in the timed results discussed earlier.

The participants also commented on the consistently formatted screen layout. As one student said, “The layout makes it easy to select the element which you want and the examples that go with the rule.” However, they may not have always consulted the examples, as previously noted. They liked the use of “buttons” for returning to the opening menus or for moving to previous locations, which reduced the problem of getting lost and eliminated the need to go back through many screens. Many found the system’s step-by-step approach to description easy to follow, but not all students agreed. Some users did not recognize the nonlinear aspect of the electronic manual and said they often felt “lost.” Nevertheless, they found the use of multiple windows an effective means of presenting information, even though the limitations of the screen size restricted “page” skimming and scanning, a common practice in the use of the printed manual.

Some of these criticisms of *HyperRAD* can be easily overcome. Students commented on the lack of a complete record illustrating

¹⁴A study of a hypertext information retrieval system discovered that users tended to adopt a structured search pattern when completing specific tasks. Liwen Qui, “Markov Models of Search State Patterns in a Hypertext Information Retrieval System,” *Journal of the American Society of Information Science* 44 (August 1993): 427–37.

how the completed record would appear. Several students mentioned the use of examples in *AACR2R* as a "copy-cat" method of description and said they missed this quality in *HyperRAD*. Because we removed rule numbers, which we judged irrelevant in the electronic form, some students lost track of rule precedents. In fact, in the absence of rule numbers and the order of rules implied by their layout on a page, students did not always consult the rules in the right order. We erroneously assumed that the order of the rules in a menu implied the required order. In fact evidence indicates that users will resort to familiar tasks rather than adopt new strategies promoted by new products.¹⁵ The experiment required the use of an electronic product to create a paper-based description. Matching the form of the manual to the form of the input may be a more realistic approach to testing.

Like *RAD*, to use *HyperRAD* effectively requires a knowledge of archival description; hence, in its current design, it may not be an ideal tool for novices. Why did the participants in this study perform so poorly, yet have so many positive comments? Perhaps performance is correlated to the lack of knowledge about archival description as well as to the use of a new software package. Was the test too difficult and beyond their abilities? These students were beginners, with little or no experience in archives. Did they "learn" how to use the system in this first exposure, or would their performance improve over time? Because the sample size is limited, the results must be judged inconclusive. We cannot conclude that *HyperRAD* is ineffective, nor can we conclude that there are no differences between the two products. Before any conclusions concerning the effectiveness of either product can be made, more testing is required, using a more represen-

tative sample of archivists rather than students.

Future Initiatives

To exploit the capabilities of an electronic manual fully, the manual must be available on a need-to-know basis. *HyperRAD* must be incorporated into the automated archival system, not as a separately accessible package but as a directly integrated part of the descriptive module. For example, each field of a MARC AMC record should be contextually integrated with the rules in the manual for specific descriptive areas, including title, date, and extent.

We envision a system where the descriptive fields are displayed as a series of "boxes" to be completed. When archivists create titles, for example, they should have the choice of filling in the blanks or accessing the Help function with a "button" that links directly to the rules for creating a title. The system should not be static, that is, one that permits archivists simply to look up the rules and return to the input template to enter the title. We visualize a more sophisticated system that works with the archivists to complete the entry almost as an "intelligent assistant," whose suggestions can be ignored or turned off, depending on the level of assistance required.¹⁶ For example, the system should be able to do data validation checks, suggest other rules to consult, and remind about proper punctuation and missing data, such as the errors made by subjects in our

¹⁵Marchionini and Schneiderman, "Finding Facts."

¹⁶A number of researchers are working on developing expert systems to facilitate cataloging using *AACR2*. Roland Hjerpe and Birgitta Olander, "Cataloguing and Expert Systems: *AACR2* as a Knowledge Base," *Journal of the American Society for Information Science* 40 (January 1989): 27-44, and Roy Meander and R. Glenn, "*AACR2* Rules Used in Assigning Access Points for Books in Two Subjects: Implications for Automatic Cataloguing Expert Systems (for Books in Chemistry and Economics)," *Library Resources & Technical Services* 35 (April 1991): 135-40.

experiment. In addition, archivists should be able not only to interact with the manual, but also to examine instructions for coding according to the MARC AMC format, scrutinize examples of previously described fonds that exist in the data base, and be reminded of internal policies or procedures prescribed by the institution.

We see an improved *HyperRAD* in this type of situation integrated with the other descriptive tools, interpretative manuals, institutional policies and procedures manuals, and coding requirements directly linked to a data-entry form. Archivists should be able to navigate these separate manuals without ever leaving their workstations, and they should be able to access simultaneously the key points from all manuals that affect an issue. Currently, archives are hindered from improving the overall efficiency of their work by their semiautomated workplace. As long as they must leave their computer to refer to the myriad of printed manuals that guide their practice, they will remain less productive.

However, before this can take place, *HyperRAD* needs improvements. Based on the results of this preliminary test, we plan to add the following:

1. An example of a complete descriptive record that will be immediately accessible from anywhere in the system, with the example varied according to the type of media being described
2. Explanatory phrases about menu items, which will provide a brief description about the item, e.g., scope
3. Explicit indicators for the sequential order of rules
4. An electronic input template to mimic a real-world situation

In addition, the test mechanism will also be revised. Finding a large enough supply of knowledgeable archivists (either novice or expert) is no easy task. Most centers in Canada have limited numbers. However, future tests will need multiple replications

to assess *HyperRAD* properly, especially its long-term use. We plan to continue using narrative descriptions of fonds, but we will ensure that all descriptions require the same level of detail and the same types of rules. In our preliminary test, one description used optional rules. In addition to the descriptive test, we also want to determine how users perform in handling problem descriptive situations that are extraordinary to the normal descriptive process. In this test, participants will not be working through a description from start to finish. Working archivists will be asked to devise a list of ten to twenty typical problem situations that are related to individual descriptive elements. The results of both tests should give us a better perspective on *HyperRAD*'s performance.

Conclusion

We set out to compare the efficiency and effectiveness of the printed *RAD* to its electronic version, *HyperRAD*. This preliminary test has indicated the improvements that are needed. This reengineering process must also include some reassessment of the user group. What features do novice users need? Is simply displaying the rules, albeit with a clear pathway for use as exemplified in the current *HyperRAD*, adequate? Do the novice users need additional guidance in applying the rules? Do expert users require the same type of assistance? Can a single product be developed to serve the needs of both? The participants in the study wanted to use rule numbers to help them orient themselves. Is this because of the inadequacies of *HyperRAD*, or because rule numbers come from their familiar environment, *AACR2*? Would visual aids have improved their navigation through the document? Perhaps the use of electronic documentation is not as intuitive as initially thought.¹⁷ We know little

¹⁷Leventhal et al., "Sleuthing." Leventhal also concluded that training is required to overcome the errors participants made.

about how archivists approach documents of this type.

Should *RAD* become an electronic document? We believe the question is really one of *how*, rather than *should*. Although the results of our test did not demonstrate a significant difference in *HyperRAD*'s overall performance when compared with the paper version of *RAD*, the test did identify areas for improvement. The next stage will be to reexamine *HyperRAD* in light of

these findings, address the new questions that arose in the course of this study about the needs of the user group, address concerns about how *HyperRAD* relates to an automated descriptive system, and then retest. This is an iterative process. Only with constant feedback from our user group can we ensure that we develop a tool that improves performance and creates more accurate descriptions.

Appendix A

Appendix A contains the two narrative summaries of fonds that formed the tasks used in the experiment. Participants created fonds descriptions from these summaries.

A Description of a Fonds

In 1989 the Archives received electoral lists for provincial elections held from 1884 to 1988. The bulk of the lists cover the elections for 1967, 1970, 1974, 1978, 1981, 1984. The lists, with the exception of one for 1884, were transferred directly from the office of Nova Scotia's Chief Electoral Officer and totalled 76 linear metres. In researching the history of the office you find that the Provincial Secretary was normally responsible for the administration of the Elections Act until 1947 when the Elections Act empowered the Governor-in-Council to appoint a barrister to the position of Chief Electoral Officer. The Chief Electoral Officer is responsible for exercising "general direction and supervision over the administrative conduct of elections" and other functions related to the administration of elections as defined in the Election Act. The electoral lists contain the name, address, and sex of each elector. Lists prior to 1988 sometimes included the occupation of the elector. The Elections Act prescribes that the electoral lists for urban areas be prepared in geographical order by streets, roads, and by apartment or unit numbers or, in the case of a large institution, in alphabetical order. Rural lists are prepared in alphabetical order by the last name of the elector.

Description 2

The Department of Housing has been transferring records to the Public Archives of Nova Scotia in accordance with the records retention schedule approved by the governor-in-council. This results in regular accruals to the department's archival hold-

ings, the frequency and volume of which are documented on the records retention schedule for each series. Records are closed for 30 years from the latest date of the activity unless permission in writing is received from the Deputy Minister of Housing. The earliest records having archival value that the Archives has received date back to 1938 and include the records of the department's predecessor, the Nova Scotia Housing Commission. The Nova Scotia Housing Commission (NSHC) was created by an Act of the Nova Scotia Legislature in 1932 (S.N.S. 1932 Chapter 12) to study housing needs and conditions in the Province, to make recommendations for their improvements, to encourage and promote public and private initiatives in housing and urban renewal, to stimulate the creation of local boards under the Town Planning Act, and to collect and distribute information concerning housing in the Province. In 1953, together with the Canada Mortgage and Housing Corporation, the NSHC began building family public housing units. In 1986 it expanded this program to include senior citizens' housing. As the demand for serviced land grew, the NSHC began a land development program. Sackville Lakes, Forest Hills, and Cape Breton Land Assembly (Baille Ard) are three major projects it has undertaken along with a number of smaller projects scattered throughout the province. In the early 1980s, the government of Nova Scotia commissioned a review of the NSHC which concluded that the housing needs of all Nova Scotians could be better met by a provincial department. As a result, the NSHC was replaced by the Dept. of Housing in 1983 by the Act of the Nova Scotia Legislature (S.N.S. 1983 Chapter 6). A brief history of the Commission

was published under the title *The Nova Scotia Housing Commission, 1932–1965*. The fonds comprises record series of both the Nova Scotia Housing Commission and the Dept. of Housing. In addition to the minutes of the Executive Committee and Board of Commissioners of the Nova Scotia Housing Commission, policy files document the sale of land, the development of public housing and the many programs the Commission, and latterly, the Dept. of Housing administer, among them Senior Citizens Public Housing, Self-Help Housing, Lease Purchase Housing, and Neighbourhood Improvement programs. Enquiry files relate to various enquiries received from the public regarding Dept. of Housing policies. Com-

mittee files document agreements and arrangements entered into with the various public and nonpublic housing groups. Problem reports contain correspondence regarding a variety of problems associated with NSHC lands. The legal land document series contains legal records and related correspondence pertaining to the purchase of land and insurance of homes by the Department. Other records series transferred include files of the Minister of Housing and new and amended policies and procedures of the NSHC and its successor, the Department of Housing. The archives has produced box lists for some of the series in the fonds.