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(Re)Positioning Librarians: Young People's Views on the Information Sector

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(Re)Positioning Librarians: How Young People View the Information Sector

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More than 2,000 students entering their first year of university studies completed questionnaires about the work roles, future employment prospects, educational requirements, status, and starting salaries of twelve occupations. Their responses were compared with U.S. and Canadian government labor-force projections. The results revealed a complex interplay of gender relations in the students' perceptions of the occupational world and their roles within it. The results also revealed an interesting positioning of the job title "librarian" relative to other fields. Unlike their assessment of the other occupations included in the study, the students considerably underestimated the level of education required to be a librarian (most did not believe that librarians require a university education). They also underestimated librarians' average starting salary and rated the occupation's social status and future prospects to be lower than the other job titles.

Taken together, the results indicate that young people beginning their university studies hold views about career prospects in the information sector that are consistent with some labor-force analysts' views of occupational winners and losers. The students see status, opportunity, and success to be attainable in fields such as computer engineering and systems analysis. Unfortunately, they view the occupational present and future for librarians in a somewhat dimmer light, a worrisome result in view of labor-force data that suggest reasonably strong salary and employment opportunities for this occupation in both the United States and Canada. The implications of these findings for library and information science (LIS) education are discussed in the context of gender and identity politics.

Introduction

To say that librarianship is in a state of flux could hardly be more of an understatement. Rarely is an issue of a library and information science journal released in which concerns aren't expressed about the pace and meaning of change and the future of libraries and the profession. For instance, commenting on a study about public libraries, Estabrook observed that

> library leaders are optimistic but anxious. They see opportunities for public libraries to marry traditional services with digital formats but

worry how libraries can find a competitive niche in the rapidly changing information environment. They recognize the potential for libraries to provide new services and educate people to use new technologies, yet fear there is no broad leadership in the profession to meet the challenges of competition and change. Not surprisingly, there is no consensus.[1]

If there is no consensus among library leaders, it is not surprising that the public, too, is unclear about the future of libraries. According to Estabrook, "the public's view of libraries is complicated to assess and

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potentially worrisome," especially since "computer ownership and bookstore usage is highly correlated with library usage, our strongest users are also those who can most easily find substitutes for libraries."[2]

The theme of survival appears repeatedly in the LIS education literature. Some authors suggest that librarians (and libraries) should adopt new roles and acquire new skills in order to preserve their turf, while others urge the formation of new professional identities, even to the point of abandoning librarianship altogether. An example of a relatively modest call for change is Estabrook's encouragement of librarians to be "politically savvy" and to "develop new services but ones shaped to the traditional roles the public values."[3] She writes,

> the advantage of each library attending to the needs of minority users, building collaborations, and using technology to preserve community culture is that none of these strategies requires public libraries to change radically from something they have not been or to become something new. Instead, they allow libraries to build on historic strengths, to use new information technologies to become more relevant to their communities, and to extend their influence.[4]

Taking a similar approach, i.e., building on preexisting strengths, Newton and Dixon suggest that "there is a need to examine the profession's new roles much more broadly if information professionals are to highlight their unique contribution to managing the new information environment and facilitating end-user access to online information." Arguing that "until recently the literature on professional change has tended to be limited in its horizons and aspirations," they claim that "within the new information environment, where electronic information is increasingly central, there is opportunity for information professionals to distinguish themselves as experts, not in technology but in the organization of the information mediated by the technology." Newton and Dixon urge librarians to renew and extend "their traditional skills within an environment centered on electronic information" to ensure "their continued professional relevance."[5]

Winter also argues for a different emphasis in the preparation of librarians:

> In a world where knowledge and culture producers, along with consumers, are very specialized, librarians and other distributors must themselves be very specialized in order to cope with some basic realities of professional work at the end of the century . . . . Specialization is also required to colonize appropriate new niches to replace the older ones that are now occupied by new groups of workers. In increasing levels of specialization, librarians can recover some lost ground by defining exclusive new jurisdictions as autonomous domains of expertise.[6]

Winter recommends pursuing subject specialization in greater depth and diversity, as well as:

> functional and format specialization. If librarians are able to rethink the problems of classification, cataloging, and bibliographic control in ways that make new and emerging fields more accessible, and thus promote more mutual awareness of possibilities for collabo-

ration where specialized researchers may not have noticed them, they will simultaneously define new landscapes of technical services and new services for users.[7]

Van House and Sutton have taken a more extreme position, claiming that

the traditional focus of LIS practice and education on the library as an enterprise and an institution largely remains the controlling factor in defining the arena of professional practice in the eyes of both the profession's members and the public. This is true despite the broad potential application of this knowledge base in a range of contexts beyond the library (e.g., business and government), a trend in LIS education toward expanding its market to other information functions and organizations, and the decline in library jobs, especially those in the public and quasi-public sectors such as public and university libraries.[8]

They propose that to survive, "LIS education needs to (further) decouple itself from libraries" because "without a rapid response and fundamental change, LIS education is likely to go the way of pandas: cute, well-loved, coddled, and nearing extinction."[9] And, while not exactly predicting extinction, Whitney says of the declining membership in the Association for Library and Information Science Education, "while 'hemorrhaging' may be an overstatement at this time, 'leaky boat' is not."[10]

Given what seems to be a sense of impending catastrophe, it is not surprising that around the world, schools that have traditionally prepared librarians for entry to the profession are being reshaped. For example, the Florida State University School of Information Studies (prior to 1997 the School of Library and Information Studies) has started a new program, leading to an undergraduate degree in information studies. According to Sherron and Landry "this new program emphasizes the user's perspective as well as the use of information technology" and the "the information

studies graduate is a facilitator of access to information."[11]

At the University of California at Berkeley, the School of Information Management and Systems is the transmogrification of what was formerly Berkeley's School of Library and Information Studies. The school's Web site makes the following declaration: "The information revolution has created the need for a new kind of professional: someone who is skilled in locating, organizing, manipulating, filtering and presenting information. The mission of the School of Information Management and Systems is to educate such information managers."[12]

In Australia, the Department of Information Management and Library Studies at the Royal Melbourne Institute of Technology (RMIT) has "undergone fundamental changes in mission and objectives" since the mid-1990s and now has been repositioned to attract students "who are more technically and commercially oriented than our traditional LIS entrants" by focusing on "knowledge management programs." In one of these programs, a graduate diploma in Document Management: Knowledge Management, students "analyze the nature of knowledge, its characteristics, and its role and significance in a business environment."[13] Knowledge management has also been adopted as an emphasis in the School of Information and Media at the Robert Gordon University in Aberdeen, Scotland.[14] Along with programs in information and library studies, the school houses a Centre of Knowledge Management with a mission to enable organizations to build sustainable competitive advantage through management of knowledge.

In 1998, at the University of Pretoria in South Africa, the Department of Information Science (having earlier changed its name from the Department of Library and Information Science) was integrated into the School of Information Technology. The school offers undergraduate programs leading to a bachelor's in Internet Studies (B.IS) in library and information science, publishing, information science, or multimedia.

Bothma and Britz describe the transition as one of moving from "a fairly traditional LIS school to an open department that offers extensive opportunities to any information professional, as well as to all other students who need information skills to obtain a competitive advantage in a predominantly information-based industry."[15]

What is behind these global changes in approach to the field? According to Van House and Sutton,

> LIS is engaged in a struggle with other professions and academic disciplines both for jurisdiction over the information functions that have traditionally been the problem domain of LIS and of the emerging information functions brought about by changes in technology and society. The primary reasons for this struggle are twofold: first, changes in computing and telecommunications; and second, the increasing strategic importance of information in our economy and in society more generally.[16]

Of course, the struggle for turf and economic power in the information society goes far beyond the roles of libraries and librarianship. As Hamelink writes, "World communication politics is increasingly defined by trade and market standards and ever less by political considerations. There is a noticeable shift from a predominantly political discourse to a largely economic/ trade discourse . . . and the locus of much policy making shifted from governments to associations of private business sectors." Indeed, Hamelink notes, "it is no surprise that information and communication technology governance is shifting to a global trade forum given the increasing economic value of communication networks and information services."[17] Taking up a similar theme, Birdsall and Rasmussen argue that national information policies that encourage citizen access to the information highway seem to have as their main motivation the preparation of citizens to be consumers rather than effective political actors.[18]

According to Hamelink, "the globalization of the new world order is characterized by social Darwinism and fragmentation . . . greatly facilitated by a conservative libertarian belief system that is broadcast widely across the globe by the world's largest communication conglomerates."[19] These conglomerates are becoming increasingly powerful in shaping our thoughts. As Bagdikian points out, "a handful of mammoth private organizations have begun to dominate the world's mass media." These "lords of the global village have their own political agenda. All resist economic changes that do not support their own financial interests. Together, they exert a homogenizing power over ideas, culture and commerce that affects populations larger than any in history."[20] Just what are some of these ideas? One key notion is that of privatization, i.e., that "the world's resources are basically private property and that public affairs should be regulated by private parties on free markets,"[21] a notion clearly extant, for example, in the development of national information policies.

The ubiquitous presence of business interests in the form of transnational corporations restricts the policy options of national governments, especially those in the developing world. In countries such as India, local business elites push for economic liberalization and the opportunity to collaborate with transnational corporations while at the same time benefiting from cheap local labor and infrastructure.[22] In other words, they support liberal trade policies and conservative (even regressive) labor policies. The result in India, where there is enormous national support for the information economy after nearly a decade of work in a liberalized economy, is that the vast majority of Indian workers in the information economy are subject to the global "race to the bottom" in wages and unprecedented price hikes for basic goods and services. In this setting, a more probable future for the majority of those employed in India's information economy is work as part of the expanding

disposable labor force.[23]

Labor practices in India's information sector are also seen in some American high-tech industries. As Colclough and Tolbert observe,

> one important source of flexibility utilized by high-tech industries and many other industries is geographic movement or capital mobility. By subdividing the production process into standardized components that require limited worker skill to complete, firms can relocate later stages of production to areas where labor costs and lower and/or new markets are emerging. In many cases, the new source of labor may be offshore.[24]

The result is

> a two-tiered occupational structure in high-tech industries . . . the rapidly expanding top tier of management, technical, engineering, and research and development personnel in the United States is congruent with . . . primary labor market jobs—good jobs, high pay, extensive benefits, and avenues for mobility. The labor-intensive production tier of many high-tech firms exhibits classic characteristics of secondary labor markets—low skill, low wages, few benefits, little job security, and limited opportunities for mobility. It is these secondary labor market jobs in which women and, increasingly, racial and ethnic minorities are employed.[25]

Libraries are also affected by trends in the new economy. As Hildenbrand indicates,

> the information industry, a major winner in the new economy, has an impact on libraries in two ways: it lobbies vigorously for a tax structure that is inhospitable to all institutions that rely on public support and, also, it markets its products as efficient, time-saving, and labor-saving, making them attractive to underfunded public bureaucracies. And gifts, none of which are free if processing and learning time are calculated, are judiciously made to build allegiance to particular systems.[26]

Underfunding, combined with aggressive marketing of new information technologies, has had an impact on how public institutions are managed. In health care, for example, "the term 'corporatization' has been used to characterize the entrance of large capitalist corporations into the production of medical services, the development of alternative provider organizations, and the reorganization of community hospitals through the introduction of more rationalized systems of management and bureaucratic control."[27] Similarly, in social work "globalization has provided the impetus for the move away from publicly funded welfare provisions to commercial enterprises run by private entrepreneurs, loss of a public-service ethic, reduction in the power and influence wielded by professionals in determining welfare policy and provisions, [and] a deprofessionalization of professional skills."

The complexities of social work have been fragmented by managerial practices through which tasks are divided "into discrete components which can be done by workers holding lower-level qualifications," a situation that enables employers to control workers more easily and pay them less. The result has been that "a profession which suffered from a low professional status because it has been considered women's work, has a workforce made up largely of women although men control its higher managerial echelons and is relatively undertrained and underpaid as a result, has been forced even further downward in the professional status stakes."[28]

Similar managerial strategies and resulting deprofessionalization have also been reported in librarianship (see, for example, Harris and Marshall).[29] As Winter explains,

> librarianship presents a case in which a number of functions originally assigned and carried out internally have now split off into newer occupational groups which have grown so much that they are now taking over substantial parts of the old 'qualitative' domain. The most dramatic example is the

library assistant, whose functions originated in the more clerical end of technical services and which, thanks to automation and other trends, have now colonized much of the routine task areas of acquisitions and cataloging within libraries. Simultaneously, the core areas of professional expertise in cataloging have substantially migrated to the bibliographic utilities which now produce the catalog record that was originally the province of the catalog librarian.[30]

According to Winter, "at present, this picture is clearest in technical services, but if library assistants continue to expand into other areas of work once reserved for professionals, the trend could easily appear in public services."[31] If we re-read the changes recommended to the practice of librarianship and to LIS education in light of the claims by Hamelink[32] and others about the privatization of information and the shaping of national information policies by private sector interests, it does not seem unreasonable to conclude that a new discourse is being shaped around the profession that supports the privatization of information and the repackaging of the skills of librarians into those of "infopreneurs."

In this connection, it is interesting to look again, for example, at the new programs introduced at the University of Pretoria. Bothma and Britz claim that "South Africa is a blend of first-world and third-world features. The training in library and information science, therefore, must make provision for students who want to work in a high-technology environment as well as for students who are not interested in technology but want to work at grass-roots level, such as in community information in rural areas."[33] In this model, evidently, the library program accommodates the needs of the old or traditional "third world"[34] while the other programs are connected with the new or "first world."

How are these ideas about the information professions reflected in the labor force projections of North American governments as they plan for the new economy? In Canada, changing information and communication technologies have resulted in a "widespread need for knowledge and managerial expertise" and a concomitant decrease in the need for "data, services and goods workers."[35] Gera and Massé report that in Canadian manufacturing, "high-knowledge and technology-intensive industries have experienced the highest employment growth. In addition, an increasing proportion of employment is accounted for by industries that require workers with more skills and that pay higher wages. In contrast, low-knowledge, low-technology, low-wage, and low-skill industries have shed jobs."[36]

According to Gera and Massé, employment in "high-knowledge" industries is more resistant to cyclical downturns than in others, and this sector "contributed much more to employment growth than medium- and low-knowledge industries between 1986 to 1991, accounting for 41.2% of total job gains over this period in Canada."[37] Similar conclusions are echoed in other labor-force studies. For instance, Betcherman and Chaykowski report that over the past 25 years, "the proportion of knowledge workers has grown substantially in the Canadian economy" across all major industry groups. They also point to the dominance of certain occupational groups. "The engineering category of occupations increased at a higher rate than that of total employment over the last two decades." In the last decade, "engineers became an important substitute for other occupations in the whole economy" reflecting "an increasing need for engineers to solve widespread ICT-induced complexity which was formerly nonexistent or solved by other types of expertise." Additionally, the computer science category of occupations "was the group of occupations with by far the most rapid rate of growth in the knowledge category of occupations," reflecting "the explosion of computer technology throughout the economy."[38]

Given the patterns of occupational

growth and decline described in these studies, it is not surprising that projections of the fastest growing occupations in the coming decade by Human Resources Development Canada and the United States' Bureau of Labor Statistics suggest that those who plan careers in the information sector (as database administrators, computer engineers, or systems analysts, for example) or in health-care services (as physical or occupational therapists, for example) should find very good opportunities for employment. Indeed, these fields are predicted to be among the top ten occupations in employment growth in the coming decade.[39] Within the information sector, however, along with the employment "winners," some occupations are expected to lose ground because of the "shift away from occupations which primarily require routinized handling of information toward occupations which required nonroutine handling of information."[40]

According to Martin, even though the information workforce continues to grow and while opportunities are better in occupations involving nonroutine information work, "growth is strongest among occupations that produce information." Information workers categorized as "distributors," including "public information disseminators" such as librarians and archivists, will encounter a slowdown in opportunities in the coming decades as technology plays a role in routinizing their labor.

On the other hand, "producers," including "private information service providers" such as lawyers and "science and technical workers" such as scientists, mathematicians, systems analysts and engineers," will find increasing opportunities as technology permits them to apply nonroutinized skills.[41] Martin's analysis suggests that the future is brighter for information workers who attach to the private sector than the public and that librarians will have fewer opportunities than other information workers who are perceived to have greater "high-tech" skills.

In this changing scene in which some occupations are rising in prominence while others decline, how do young people who are beginning to prepare themselves for a career view the structure of the information society and the opportunities it presents? In the study reported here, students entering their first year of university studies were asked a series of questions about twelve occupations in the information and health sectors. The questions explored the students' perceptions of work roles and future opportunities in traditional career roles such as lawyer and librarian as well as emerging careers such as computer engineering. The students' perceptions are compared with Canadian and U.S. occupational forecasting data.

Method

During the summer academic orientation program for incoming first-year students at a large Canadian university, one of eight brief questionnaires was distributed randomly to students who volunteered to take part in a research investigation entitled "Career opportunities: 2000 and beyond." In total, 2,047 students completed one of the eight questionnaires, each of which was completed by at least 250 students. The students comprised a homogenous group, with no differences between the groups completing each questionnaire with respect to age (M = 18.69 years, SD = 1.43), distribution by sex (60% women, 40% men), or intended program of study.

The questionnaires included items concerning the work roles, future employment prospects, educational requirements, status, and starting salaries of twelve occupations chosen to include traditional professions, occupations practiced predominantly by men or women, as well nonprofessional and emerging occupations in the information sector: *lawyer, reporter/news correspondent, internet researcher,[42] paralegal, animator, systems analyst, librarian, database administrator, announcer/newscaster, physical therapist, computer engineer,* and

medical records technician. The occupations reflect the divide between information sector work that focuses on either quantitative or qualitative data. According to Winter, "accountants, management engineers, statisticians, operations researchers, and systems analysts, for example, deal with quantitative information, while librarians, along with many academics and journalists, and some business specialists like advertisers, deal with information in its qualitative aspects."[43]

Results

Students were asked to describe the level of education required for each occupation and to rate its social status on a scale of 1 to 100, with 100 representing the highest possible status in comparison with all other types of work. Their responses, shown in Tables 1 and 2, reveal that while more than 90% of incoming university students think lawyers and computer engineers require university

degrees and 50% think internet researchers require some university education, 60% of the students believe that librarians require no university education.

Given these beliefs about educational requirements, it is not entirely surprising that the students assigned the lowest social status to the occupation *librarian* and the highest to *lawyer* and *computer engineer*, followed by *physical therapist*.

Curiously, status ratings do not necessarily correspond precisely to whether the students perceived an occupation to be a profession. While 98% of the students described the occupations *lawyer* and *computer engineer* as professions and 62% perceive the job *librarian* to be a profession, only 50% classified *internet researcher* as a profession.

The students were asked how much computing knowledge is required in each occupation (see Table 3). Interestingly, they perceived the occupation *librarian* to require less knowledge of computing than the occupation *internet researcher* even

Table 1.
Students' Ratings of Occupational Prestige and Professional Status

OCCUPATION	PRESTIGE RATING (mean)	SEEN AS PROFESSION
Lawyer	82	98%
Computer engineer	82	98%
Physical therapist	75	96%
Reporter	70	76%
Systems analyst	69	87%
Announcer/Newscaster	69	72%
Internet researcher	62	50%
Animator	64	82%
Database administrator	63	79%
Medical records technician	62	63%
Paralegal	61	75%
Librarian	46	62%

Table 2.
Perceived and Actual Educational Requirements

OCCUPATION	STUDENTS' BELIEFS ABOUT EDUCATIONAL REQUIREMENTS (most frequently selected category)	ACTUAL EDUCATIONAL REQUIREMENTS*
LAWYER	university professional degree (95%)	university professional degree
COMPUTER ENGINEER	university professional degree (49%)	university professional degree
PHYSICAL THERAPIST	university professional degree (45%)	university professional degree
REPORTER	university degree (39%)	typically, university degree or community college diploma
SYSTEMS ANALYST	university degree (49%)	typically, university degree or community college diploma
ANNOUNCER/ NEWSCASTER	community college diploma (42%)	typically, university degree or community college diploma
INTERNET RESEARCHER	community college diploma (51%)	not available
ANIMATOR	community college diploma (59%)	typically, university degree or community college diploma
DATABASE ADMINISTRATOR	university degree (41%)	undergraduate or graduate university degree
MEDICAL RECORDS TECHNICIAN	university degree (39%)	not available
PARALEGAL	university degree (34%)	university, college or in-house training
LIBRARIAN	community college diploma (32%)	typically, university professional degree

*Data source: Province of Ontario

though, it might be argued, both occupations involve very similar types of work. The students were also asked to estimate the percentage of women who are employed in each occupation. Table 4 reveals that they estimated the percentage of women employed to be highest in the occupation *librarian* and lowest in the occupations *internet researcher* and *computer engineer*.

The students' perceptions of an occupation's status tended to be inversely related to the proportion of women it employs. For

Table 3.
Perceptions of Computing Knowledge Required by Occupation

Occupation	Computing knowledge required (mean score)*
Lawyer	2.97
Reporter/news correspondent	3.76
Internet researcher	4.79
Paralegal	3.34
Animator	4.42
Systems analyst	4.78
Librarian	3.60
Database administrator	4.66
Announcer/Newscaster	2.98
Physical therapist	2.72
Computer engineer	4.88
Medical records technician	4.17

*Based on 5-point scale; 1 =very little computer knowledge and 5=a great deal.

instance, the students assigned their highest prestige ratings to the occupations *lawyer* and *computer engineer,* both of which they estimated to be among the lowest with respect to the proportion of women employees. On the other hand, they accorded relatively high status to the occupation *physical therapist*, a field that they also believed to be female-intensive (although their estimates of women's participation in this occupation are lower than the actual rates). The students reserved their lowest status rating for *librarian*, the occupation in which they perceive the greatest number of women to be employed.

Commensurate with social status (and coincident with their perception of the presence of fewer women), the students, especially the men, believe that the occupations *lawyer* and *computer engineer* attract the greatest starting salaries (see Table 5). Two-thirds of all the students (68%) believe that beginning lawyers earn up to $65,000

per year (5% believe they earn more than $90,000 to start) and nearly 50% believe that computer engineers earn starting salaries up to $80,000. Three-quarters of the students believe that internet researchers earn beginning salaries up to $50,000, whereas 71% believe librarians earn starting salaries up to $35,000. In comparison with actual starting salaries, the students are overly optimistic, consistently overestimating the initial earnings of members of every occupation, with the exception of *librarian*, an occupation that actually attracts *higher* earnings than most of the others. Librarians' beginning salaries, which the students expect to be lowest of all the twelve occupations, are as good as, or in some cases, better than the salaries in occupations that were most highly regarded by the students.

When asked about future employment prospects, specifically, whether the number of jobs in each of the twelve occupations is growing, staying the same, or shrinking, the

Table 4.

Percentage of women employed

Occupation	Students' Estimates	Province of Ontario data: women in professions	Government of Canada data: women entering professions
Lawyer	40%	25%	52%
Computer engineer	30%	13%	21%
Physical therapist	60%	87%	82%
Reporter	50%	46%	45%
Systems analyst	40%	31%	21%
Announcer/Newscaster	50%	46%	45%
Internet researcher	30%	not available	not available
Animator	40%	44%	45%
Database administrator	50%	23%	32%
Medical records technician	50%	not available	99%
Paralegal	50%	75%	38%**
Librarian	80%	82%	76%

**This figure includes college graduates who are in policing technologies, security protection technologies, penal correction technologies, paralegal technologies, and who are legal assistants.

Table 5.

Expected versus actual starting salaries

Occupation	Expected starting salary (% of respondents)	Actual starting salary*
Lawyer	≤$65,000 (64%)	$39,100
Computer engineer	≤$80,000 (77%)	$35,600
Physical therapist	≤$65,000 (70%)	$35,500
Reporter	≤$50,000 (77%)	$21,700
Systems analyst	≤$50,000 (52%)	$35,600
Announcer/Newscaster	≤$50,000 (69%)	$21,700
Internet researcher	≤$50,000 (76%)	n/a
Animator	≤$50,000 (73%)	$21,700
Database administrator	≤$50,000 (73%)	$28,600
Medical records technician	≤$50,000 (73%)	$25,400
Paralegal	≤$50,000 (75%)	$28,700
Librarian	≤$35,000 (71%)	$36,200

*Data source: Government of Canada

students indicated that opportunities are growing for internet researchers, animators, systems analysts, database administrators, physical therapists, and computer engineers but staying the same for lawyers, reporters/ news correspondents, announcer/newscasters, paralegals, and medical records technicians (see Table 6). The only job market they perceive to be shrinking is for librarians. The students' projections are, by and large, consistent with forecasts made by the Province of Ontario, the Government of

Canada, and the U.S. Bureau of Labor Statistics. All three governments agree with the students' perceptions that there will be a growth in opportunities for computer engineers, systems analysts, and database administrators. The Canadian government is more optimistic in its prediction for librarians (steady) than either the students or the Ontario government. Only the U.S. Bureau of Labor Statistics shares the students' optimism about employment growth for physical therapists, and it is alone in

Table 6.
Occupational Growth Potential:
Students' Perceptions and Government Projections

OCCUPATION	Students' perceptions (most frequently selected category)	Province of Ontario projections	Government of Canada projections	U.S. Bureau of Labor Statistics: fastest growing occupations
Lawyer	Steady (67%)	Steady	Steady	
Computer Engineer	Growing (94%)	Growing	Growing	✔
Physical Therapist	Growing (58%)	Steady	Steady	✔
Reporter	Steady (72%)	Steady	Shrinking	
Systems Analyst	Growing (80%)	Growing	Growing	✔
Announcer/ Newscaster	Steady (78%)	Steady	Shrinking	
Internet Researcher	Growing (96%)	N/A	N/A	
Animator	Growing (63%)	Growing	Shrinking	
Database Administrator	Growing (71%)	Growing	Growing	✔
Medical Records Technician	Steady (92%)	N/A	Shrinking	✔
Paralegal	Steady (83%)	Steady	Steady	✔
Librarian	Shrinking (61%)	Shrinking	Steady	

predicting growth for medical records tech-
nicians and paralegals.

The students were asked whether, in their
future careers, they would prefer to be work-
ing in government, the private sector, or to
be self-employed. They expressed a clear
preference to work in the private sector
(39%) over the public sector (19%), with the
largest number of students hoping to be self-
employed (42%). The students were also
asked to estimate, for all the people who
work in each occupation, the percentage
employed in the private sector, in govern-
ment, or who are self-employed (see Table
7). Their perceptions about librarians are
again revealing. The students perceive librar-
ians to be self-employed much less frequently
than workers in all the other occupations and to
be employed in the government sector more
often than workers in all the other occupations.

The students were asked to indicate
which of various tasks form a regular part of
the work of each occupation. Items most
frequently regarded to be the regular work
of librarians included educating users about
libraries and library services (93.6% of
respondents), checking in and checking out
library materials (92.8%), classifying and
making files or catalogs of library materials
(91.2%), selecting and ordering library
materials (87.6%), and shelving library
materials (82.5%). In other words, the
students tended to ascribe to librarians work
that, in most libraries, is performed by clerks
and other nonprofessional staff.

It is useful to contrast the students'
perceptions of tasks performed by librarians
with those they believe to be performed by
Internet researchers. Table 8 reveals that
while they perceived some commonalities in
the two occupations, the students regarded
Internet researchers to be more involved in
"high tech" activities than librarians, such
as conducting information searches from
electronic sources, designing computer
systems, and maintaining Web sites, as well
as more involved in the production of
information, such as conducting research
and writing reports and proposals.

Discussion

The results of this study reveal that young
people who are beginning their university
studies have formed impressions of the
world of work that are consistent with
Martin's assessment of the information
sector's occupational winners and losers.
The students predict, as does Martin, that
information "producers," i.e., science and
technical workers (including systems ana-
lysts and engineers), as well as private
information service providers (including
lawyers and legal assistants), will experience
better opportunities than information
"distributors," especially those who, like
librarians, work as public information
disseminators.[44]

The students' perceptions of the occu-
pation "librarian" are less than flattering and
they regard the work of librarians to be less
technically challenging than that of other
information occupations, such as Internet
researcher. The majority of the students
aspire to work in the private sector, and they
believe that most workers in the higher-tech
information occupations are employed in this
sector whereas librarians are employed
predominantly in the public sector. They not
only accord higher status to what they
perceive to be higher-tech, private sector
occupations, but they also perceive these
occupations to offer the greatest compensa-
tion and future job opportunities.

The students believe that while the
majority of librarians are women, most
Internet researchers, computer engineers,
and systems analysts are men. In a 1988
study, Harris and Sue-Chan[45] found that the
greater the number of men thought to be
working as librarians, the higher the status
people were willing to accord to the profes-
sion. These gendered lenses through which
librarianship is viewed are still very much in
evidence. In the present study, students
ascribed the lowest status, earnings poten-
tial, and educational requirements to
librarianship, the occupation they perceived
to be the most female-intensive. Librarian

Table 7.
Mean Estimates of Percentage of Workers Employed in Government,
Private Sector, or Self-employed

Occupation	Self-employed	Government	Private sector
Animator	28.22	14.60	57.10
Paralegal	20.26	34.12	45.43
Systems analyst	20.58	32.17	47.37
Announcer/Newscaster	7.78	21.53	70.56
Lawyer	32.02	29.45	39.78
Database administrator	19.74	33.40	46.77
Internet researcher	33.74	26.17	39.88
Computer engineer	20.29	27.75	51.96
Librarian	6.03	61.37	32.48
Physical therapist	31.51	30.72	37.37
Reporter/News correspondent	11.39	25.79	62.88
Medical records technician	9.80	51.58	38.51

Table 8.
Students' Perceptions of the Work Tasks
of Librarians and Internet Researchers
(percentage of students who regard task to be regular part of work role)

Task	Librarian	Internet Researcher
Conduct info searches from printed reference books	64.5	63.1
Conduct info searches from electronic sources	71.0	98.4
Educate the public about info issues (Librarian) Educate the public about the Internet and info resources (Internet Researcher)	59.6	66.7
Supervise Staff	45.7	19.0
Conduct research	26.7	94.4
Formulate and plan policies and programs	40.2	40.9
Write reports & proposals	28.7	67.5
Prepare & analyze budgets & financial statements	24.3	17.7
Design computer systems	8.4	68.1
Maintain websites	34.3	90.8

was also the only occupation the students assessed to be declining in terms of future employment opportunities.

Despite the apparent disfavor with which the students regard librarians relative to other information workers such as internet researchers, on close examination, it might appear, especially to librarians, that there is little to distinguish between the actual work performed in some of the more favored occupations. For example, librarians are involved in facilitating access to information for their clients/customers, the same role expected of graduates from the new Florida State Information Studies Program,[46] as well as the knowledge management students who will graduate from the RMIT's Department of Information Management and Library Studies in Australia.[47]

Newton and Dixon argue that the new economy has made possible an opportunity "for information professionals to distinguish themselves as experts, not in technology but in the organization of the information mediated by the technology." These skills to which they refer, i.e., cataloging, classification, and indexing, are, of course, the root or foundational skills of the librarian. According to Newton and Dixon, one of the problems facing librarianship is the

> popular and problematically gendered stereotype of the librarian as a spinsterly and authoritarian naysayer over-concerned with regulations and maintaining a hushed library environment. While the stereotype bears little relation to the real work and diverse identities of actual library and information professionals . . . there may still be a credibility gap between the current status of the information professional and the key educational roles to which they aspire.[48]

An additional problem, according to Van House and Sutton, is that "the habitus of LIS, derived from libraries and the public sector, may disadvantage LIS in its competition with professions and educational programs that are more accustomed to

competition for domain."[49] In other words, the association between librarianship, women's work, and the public sector situates the profession poorly in the information workscape.

Many of the leading writers in LIS education are calling for new approaches to the preparation of librarians that will build the skills necessary for the profession's survival in the new economy. Winter, for example, makes a case for diversity and greater subject specialization, as well as "functional and format specialization."[50] Others focus on new roles for libraries that pose an implicit challenge for the professionals who staff them. For example, Cline writes,

> research libraries have held significant roles in research and education: selecting and organizing materials for collections; developing systems of intellectual access; organizing items for physical access and retrieval; and preserving items for long-term use. These attributes signified a durability that is now challenged in today's fast-paced digital environment of networks, Web interfaces, and proliferating search engines. We cannot ignore the rapid acceleration of digital dependence in all aspects of education and research, nor can we overlook the researcher's need for permanence, reliability, and continuity in this digital environment. Thus as we look to the new century, we must shape an information environment that has sustainable systems of access to enduring information resources so that users, now and in the future, can rely on them with confidence.[51]

The type of skills envisioned here clearly require the profession to attract gifted and accomplished individuals. Yet, how is it possible to recruit these sorts of people if the general view of librarianship, even within LIS education itself, is that it is an occupation in decline and that the institution it serves is about to become an anachronism? In the study described in this article, beginning university students, i.e., the next generation to enter the labor

pool, expressed a clear preference to work in the private rather than the public sector in which they believe the majority of librarians are employed. Furthermore, among the information professions, they situate librarianship as a woman's occupation with poor career prospects, little status, and low earnings potential.

The students' views suggest that the repackaging of librarians' skills under the labels "information professional," "internet researcher," or "knowledge manager" may position the occupation more favorably, but at what cost? Will attracting new entrants to a field positioned as a private sector information profession yield any librarians, i.e., skilled people willing to work in libraries? And, will shedding the profession's feminized label and emphasizing high technology enable current LIS workers to overcome status problems and reap the rewards of the burgeoning information economy?

Henwood reported "no evidence to suggest that women are benefiting from the widespread diffusion of the new technologies, through increased access to 'new technology jobs.' Whilst it is the case that women are finding their way into some new areas of work as a result of these changes, these are new areas of 'women's work,' with all the low status and lack of prospects that such segregation implies."[52] Henwood's observations highlight the fact that the way in which "jobs come to be recognized as requiring skills or involving responsibilities is a social and not a technically determined process." In fact, "differences in skill and job content are not the main cause of the differences in pay between men and women; full-time women workers are . . . systematically lower-paid than men after adjusting for any differences in skill composition of jobs."[53] In other words, as long as women are present in any significant numbers in an occupation, regardless of the technical skills required in their jobs, the work they do will come to be devalued relative to those occupations or sectors in which men predominate.

In the current study, the students' perceptions, albeit sometimes exaggerated, match the reality of trends in the emerging information society. For instance, their views are consistent with representations of the future in advertisements for information technology products in which women are often depicted either as mere onlookers in the presence of new technologies, or in menial, routine work roles, whereas men are often portrayed to be controlling technologies in their roles as visionaries who are crafting the future.[54] Dilevko's results, and the findings of the present study, raise troubling questions about the future of women and women's work in the new economy.

Two aspects of current discourse about LIS education bear thinking about in light of this study. The first is the connection between new high-tech information programs and the preparation for private sector work. Just as Hamelink, Bagdikian, and others suggest, the political agenda of transnational corporate interests seems to have been successful in persuading young people, and members of the LIS community, to valorize the private sector over the public.[55] The second is the relationship between the presence or absence of women and the future of particular types of information work. Just as in Dominelli and Hoogvelt's description[56] of the transformation of British social work, it appears that the type of information work typically performed by women librarians is increasingly regarded as a thing of the past, and may be destined to be deskilled and relegated to the low-paid, low-status realm of the public sector.

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