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# Re-framing librarians' identities and assumptions around IT

Corresponding Author:

Pamela Carson,

Concordia University, Montreal, QC, [pamela.carson@concordia.ca](mailto:pamela.carson@concordia.ca)

Column Editor:

Geoffrey Little,

Concordia University, Montreal, QC, [geoffrey.little@concordia.ca](mailto:geoffrey.little@concordia.ca)

Librarianship and information technology (IT) have a symbiotic relationship – or do they? While librarianship is dominated by women, women remain underrepresented in IT. As our profession becomes increasingly digital, it is time to examine our gendered identities and assumptions around IT. Both librarianship and computing are subjected to strong stereotyping, so there may be misunderstandings and assumptions on both sides. We might try to ignore stereotypes, but these oversimplified--yet fixed--ideas can be detrimental and can have real effects on performance and recruitment to the profession. The damage done by stereotypes can be countered by finding role models that do not adhere to the stereotype and finding evidence to refute the stereotype.

Only 20% of professional librarians in the United States are male and only 12 percent are non-Caucasian (American Library Association, 2012). This is not reflective of the diversity of the American population, which is 49.2% male and 37% non-Caucasian (United States Census Bureau, 2012). Librarianship has an underrepresentation problem and more needs to be done to recruit both males and non-Caucasians into librarianship. Meanwhile, computing struggles with its own gender and racial imbalance; women, African Americans, Hispanics and Native Americans are considered underrepresented in computer science. More than 80% of computer science students and professionals are white or Asian and more than 70% are male (National Science Foundation, 2012).

### Merging of computing and librarianship

If librarianship is 80% female and computing is 70% male, what does this mean for library technology? Technology is essential to many parts of academic librarianship, from integrated library systems to digital humanities. Librarianship and computing continue to converge, blurring the lines between disciplines. The library, in essence, is an “internetworked information technology made up of both human and material components” (Downey, 2010) and cannot be divorced from computing. West (2007) stated that, as a librarian, she has encountered many technology advocates, but “they are the exception rather than the rule.” A recent survey of new librarians found that almost all saw technology as an important component in library and information science (LIS) education; however, less than half could see themselves working in a technical profession in librarianship (Del Bosque & Lampert, 2009). Even more recently, Emanuel (2013) in her study of “digital native” librarians, assumed by many to have more advanced technology skills, showed that this population is actually most comfortable with technologies that are *used* (e.g., Microsoft Office, Web 2.0, or mobile devices) rather than technologies used to *create* content (e.g., programming and web programming languages, among others). In addition, these digital natives did not say technology was their reason for wanting to become librarians. Hoping that newly-hired “digital natives” will effortlessly move in with technology skills that the other staff lack (Emanuel, 2013; Farkas, 2007) will likely lead to disappointment.

Librarians’ role in technology is currently poorly defined. When it comes to library systems, for example, is our role to simply buy a commercial product but not participate in its development? As the need for IT in libraries increases and merges with our services, how much of our work do we end up giving to someone else? Outsourcing or handing over library technology to those unfamiliar with librarianship will become untenable eventually. How will it be possible to properly communicate our needs and the needs of our users to IT staff that do not have a thorough knowledge of librarianship? When we ask for something and are told that it cannot be done, how will we know this for certain? How will we even be able to come up with innovative ideas without a curiosity and a comprehensive understanding of the possibilities of IT? We cannot assume that the development of library IT does not require knowledge of library science (Farkas, 2007), or the inverse, that library science does not require knowledge of IT.

## Stereotypes

Librarianship has been viewed as women’s work since the days of Dewey (Downey, 2010). The commonly held stereotype is that of “an older woman, her hair tight in a bun, wearing glasses, a cardigan, and sensible (meaning ugly) shoes, who wouldn’t know a computer from a cat (of which she owns many)” (Kneale, 2009). Particularly harmful is the stereotype that librarians are no longer needed in the digital age because everything is online. Some aspects of libraries have been romanticized like the collections of leather-bound volumes, the rolling staircases, and the card catalogue. Contrast this with the reality of academic libraries staffed by diverse professionals who deliver digital initiatives, technology programs, and new and novel ways to support users and research.

Computing, like librarianship, also has its (highly masculine) stereotypes with roots in popular culture, particularly film: the nerd (*Revenge of the Nerds)*, the hacker (*Hackers*), and now the “brogrammer” (*The Social Network*). The “brogrammer” stereotype has sexist undertones and media outlets have been keen to write about sexist incidents, particularly in tech start-up companies and tech conferences (Raja, 2012). Upon closer examination, the ultra-masculine image of computing is not entirely representative of actual practice (Misa, 2010; Shafer, 2010). Mature tech companies, like Google and Microsoft, are not tolerant of “brogrammer antics” (Raja, 2012). Tennant (2012), who frequently speaks and writes about library technology, has also written about gender and states that we need to “[r]ecruit and support women who are interested. More women are interested in a tech career than care to survive the cultural gauntlet to make it. We […] can help to change this.”

Negative sociocultural stereotypes can influence how a person performs (Shih, Pittinsky, & Ambady, 1999; Shapiro & Williams, 2012). Stereotypes can be insidious: even in neutral situations, self-as-source stereotypes have a real effect on performance (Shapiro & Williams, 2012). For example, it is plausible, based on previous research about women’s lowered performance in STEM fields based on self-stereotyping, that librarians may also be taking negative stereotypes to heart thereby stunting their interest and growth in computing. More specifically, because the majority of librarians are women, it would also be possible that some are self-stereotyping themselves out of IT because it does not fit with society’s female gender stereotype. Those starting to learn more about computing – especially the *creating* aspects – are particularly vulnerable to the stereotypes because beginner’s mistakes might confirm in one’s own mind that the stereotype is true.

There are ways of buffering the effect of stereotypes on performance. By finding evidence that the stereotype is wrong, those who previously self-stereotyped can increase their interest (Cheryan, Plaut, Handron, & Hudson, 2013). Role models who do not conform to stereotypes have a powerful effect on the self-concept of those who previously self-stereotyped themselves out of a field (Stout, Dasgupta, Hunsinger, & McManus, 2011). It would be interesting to test different interventions with librarians who self-stereotype out of the computing domain such as identifying with role models who break the stereotype or looking critically at the stereotype to find its falsities.

Those who self-stereotype are even more susceptible to damage from discouraging comments or actions based on the stereotypical beliefs of others. Philip Guo (2014), assistant professor of computer science at the University of Rochester, stated: “ask any computer science major who isn't from a majority demographic (i.e., white or Asian male), and I guarantee that he or she has encountered discouraging comments such as ‘You know, not everyone is cut out for computer science.’ They probably still remember the words and actions that have hurt the most, even though those making the remarks often aren't trying to harm.” He likened seemingly innocuous comments like these to “thousands of micro-inequities” that have a lasting effect on one’s motivation to endure in the field.

## Breaking stereotypes

Women in computing can find female role models with a little bit of research. From Ada Lovelace, considered the very first computer programmer, to Marissa Mayer, the president and CEO of Yahoo!, there are many examples of female IT leaders. The history is rich with examples of women programmers and their successes. In fact, women were the first “computers”: hand-computing to organize complex problems in order to compute them (Abbate, 2003). Given this history, Misa (2010) states “it’s strange that anyone would think that women don’t like computing.”

Librarians commonly say that little to no formal IT training was offered as part of their LIS education (Farkas, 2007; Engard & Singer Gordon, 2012). It is not reasonable to expect that an LIS education will fully prepare librarians to be tech innovators. While there are examples of IT innovations in LIS education, with the wide range of topics in librarianship and/or information science needing to be covered, only the fundamentals might be included in some of the many aspects of computing from programming logic to hardware. It has been argued technology should be integrated into every course (Farkas, 2007), but better results might be obtained via self-directed problem-based learning.

### How IT workers are learning

Problem-based learning is a good way to learn about computing. Brown (2008) states that open source programmers are learning through practice: watching the work of their peers, defending their own work, and participating in community discussions about problems. Attitude is important also, and IT workers with self-directed learning orientations were better suited to learning on the job (Gijbels et al., 2012). For its IT workers, Google tries to foster a “capacity identity”– a belief in one’s capacity to learn and improve – and encourages programmers to find role models and copy them (Johnson & Senges, 2011).

Librarians are struggling with large workloads made up of various types of tasks from serving our patrons to developing subject matter expertise to administrative work. If a library prioritizes IT skill development for its employees then time allowances will need to be made for learning. There are core technology competencies that every librarian should know (common software, word processing, basic web editing), but learning about more advanced topics with the goal of creating new library systems or applications should be considered scholarly activity and the appropriate opportunities or release time should be granted.

In addition to finding role models in computing history, there are many other supports for entering into the IT field. Free and inexpensive introductory programming and computer science courses can increasingly be found online (like Codecademy and Udacity) and online courses and communities for specific groups exist too (like Girl Develop It and Black Girls Code). It may be argued, however, that exclusive groups are problematic. The positive gains must outweigh the negative costs to rationalize creating a group apart. While these gender-segregated groups may make their members feel at ease, they may also inadvertently contribute to the marginalization of certain issues and leave out others who may benefit, and, at worst, be different versions of the “old boys’ club.”

## Looking forward

Librarianship and IT have a relationship worth examining. Information technology is arguably the most effective tool we have now to advance knowledge and our success in achieving our goals depends on how we leverage it. Librarians’ assumptions and gendered identities around IT may be preventing us from using this tool effectively. If only a small percentage of a library’s staff is willing to engage with technology to not only use, but create methods of attaining our goals, then we are underachieving. By giving the ever-increasing work of creating, implementing and supporting library IT to non-librarians, we are expecting non-librarians to practice our profession. Through closely examining our beliefs about IT we can find whether we are limiting ourselves based on self-stereotyping. We know as librarians how pernicious stereotypes are for our profession – perhaps we are misunderstanding another discipline and thereby preventing ourselves from engaging fully with it.

References

Abbate, J. (2003). Women and gender in the history of computing. *IEEE Annals of the History of Computing, 25*(4), 4-8. doi: 10.1109/MAHC.2003.1253885

American Library Association. (2012). *Diversity counts.* Retrieved on February 26, 2014 from http://www.ala.org/offices/sites/ala.org.offices/files/content/diversity/diversitycounts/diversitycountstables2012.pdf

Brown, J. S. (2008). Foreword. In T. Iyoshi and M.S.V. Kumar (Eds.) *Opening up education: The collective advancement of education through open technology, open content, and open knowledge.* MIT Press: Cambridge, MA.

Cheryan, S., Plaut, V. C., & Handron, C. (2013). The stereotypical computer scientist: Gendered media representations as a barrier to inclusion for women. *Sex Roles, 69*, 58-71. doi:10.1007/s11199-013-0296-x

Del Bosque, D. C., & Lampert, C. (2009). A chance of storms: New librarians navigating technology tempests. *Technical Services Quarterly, 26*(4), 261-286. doi:10.1080/07317130802678878

Downey, G. (2010). Gender and computing in the push-button library. In T. J. Misa (Ed.), *Gender codes: Why women are leaving computing* (pp. 143-162)*.* Hoboken, NJ: Wiley.

Emanuel, J. (2013). Digital native librarians, technology skills, and their relationship with technology. *Information Technology and Libraries, 32*(3), 20-33. doi: 10.6017/ital.v32i3.3811

Engard, N. C., & Singer Gordon, R. (2012). *The accidental systems librarian* (2nd ed.). Medford, NJ: Information Today, Inc.

Farkas, M. G. (2007). Training librarians for the future: Integrating technology into LIS education. In R. Singer Gordon (Ed.), *Information tomorrow: Reflections on technology and the future of public and academic libraries* (pp. 193-201). Medford, NJ: Information Today, Inc.

Gijbels, D., Raemdonck, I., Vervecken, D., & Van Herck, J. (2012). Understanding work-related learning: The case of ICT workers. *Journal of Workplace Learning, 24*(6), 416-429. doi: 10.1108/13665621211250315

Guo, P. (2014, January 15). Silent technical privilege. *Slate.* Retrieved on February 21, 2014 from http://www.slate.com/articles/technology/technology/2014/01/programmer\_privilege\_as\_an\_asian\_male\_computer\_science\_major\_everyone\_gave.html

Johnson, M., & Senges, M. (2010). Learning to be a programmer in a complex organization: A case study on practice-based learning during the onboarding process at Google. *Journal of Workplace Learning, 22*(3), 180-194. doi:10.1108/13665621011028620

Kneale, R. (2009). *You don’t look like a librarian: Shattering stereotypes and creating positive new images in the internet age.* Medford, NJ: Information Today, Inc.

Misa, T. J. (2010). Gender codes: Defining the problem. In T. J. Misa (Ed.), *Gender codes: Why women are leaving computing* (pp. 3-24). Hoboken, NJ: Wiley.

National Science Foundation. (2013). *Women, minorities, and persons with disabilities in science and engineering.* Retrieved on February 22, 2014 from http://www.nsf.gov/statistics/wmpd/2013/pdf/nsf13304\_digest.pdf

Raja, T. (2012, April 26). “Gangbang interviews” and “bikini shots”: Silicon Valley’s brogrammer problem. *Mother Jones.* Retrieved on February 21, 2014 from http://www.motherjones.com/media/2012/04/silicon-valley-brogrammer-culture-sexist-sxsw

Shafer, L. (2010). Foreword. In T. J. Misa (Ed.), *Gender codes: Why women are leaving computing* (pp. ix-xi). Hoboken, NJ: Wiley.

Shapiro, J. R., & Williams, A. M. (2012). The role of stereotype threats in undermining girls’ and women’s performance and interest in STEM fields. *Sex Roles, 66*(3-4), 175-183. doi: 10.1007/s11199-011-0051-0

Shih, M., Pittinsky, T. L., & Ambady, N. (1999). Stereotype susceptibility: Identity salience and shifts in quantitative performance. *Psychological Science, 10*(1), 80-83. doi:10.1111/1467-9280.00111

Stout, J. G., Dasgupta, N., Hunsinger, M., & McManus, M. A. (2011). STEMing the tide: Using ingroup experts to inoculate women’s self-concept in science, technology, engineering, and mathematics (STEM). *Journal of Personality and Social Psychology, 100*(2), 255-270. doi:10.1037/a0021385.

Tennant, R. (2012, October 13). Fostering female technology leadership in libraries. *The Digital Shift.* Retrieved on February 21, 2014 from http://www.thedigitalshift.com/2012/10/roy-tennant-digital-libraries/fostering-female-technology-leadership-in-libraries/

United States Census Bureau. (2014). State & county quickfacts: USA. Retrieved on February 26, 2014 from http://quickfacts.census.gov/qfd/states/00000.html

West, J. (2007). Technophobia, technostress, and technorealism. In R. Singer Gordon (Ed.), *Information tomorrow: Reflections on technology and the future of public and academic libraries* (pp. 203-215). Medford, NJ: Information Today, Inc.