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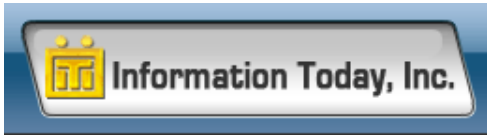🅒 Part of the Artificial Intelligence and Robotics Commons, and the Library and Information Science Commons

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FEATURE

Librarians' Perceptions of Artificial Intelligence and Its Potential Impact on the Profession

by Barbara A. Wood and David J. Evans

"We always overestimate the changes that will occur in the next two years and underestimate the changes that will occur in the next ten." —Bill Gates

The subject of artificial intelligence (AI) is being discussed everywhere in the media. Stephen Hawking, Elon Musk, and Bill Gates regularly sound the alarm about AI as an existential threat to humankind. Open a newspaper, turn on the television, or log on to the internet, and you will find a plethora of information and opinions on AI and its potential impact on human endeavors. In addition to being a

Do you think supercomputers like Watson will have a transformative effect on librarianship?

	192	108	41
56.30%	31.67%		12.02%
YES.	NOT MUCH EFFECT.	NO.
1	3	2

Chart 1: question one (n=341)

In your opinion, what departments in the library are most likely to be affected by Artificial Intelligence

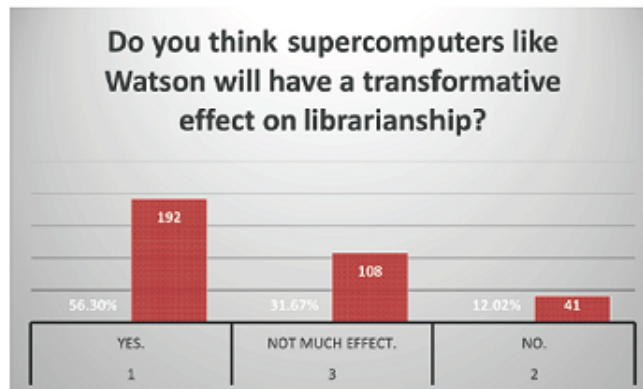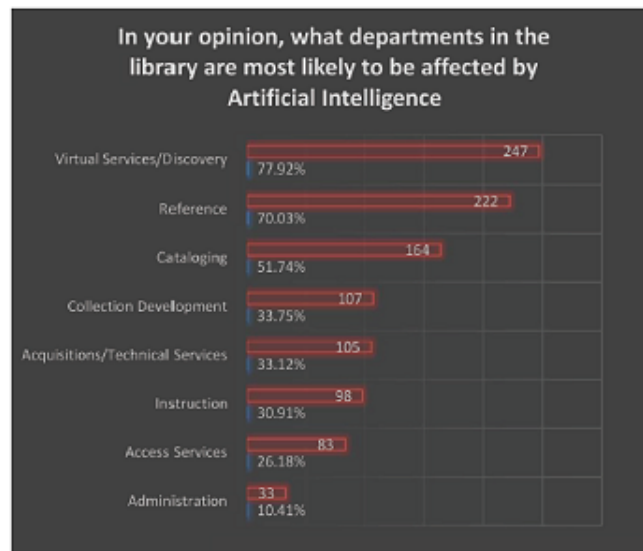| Department	Value	Percentage
Virtual Services/Discovery	247	77.92%
Reference	222	70.03%
Cataloging	164	51.74%
Collection Development	107	33.75%
Acquisitions/Technical Services	105	33.12%
Instruction	98	30.91%
Access Services	83	26.18%
Administration	33	10.41%

Chart 2: question two (n=317)

hot topic in the media, the scholarly literature in medicine and law is replete with AI research. It acknowledges AI as a transformative, if not disruptive, game changer. AI is being used today in the practice of law—in areas of contract review, billing, and jury selection. In the field of medicine, AI's ability to crunch massive datasets has allowed it to surpass humans in diagnostic capabilities. Educators in law and medicine have also acknowledged that AI is changing the way professionals are trained, and it will ultimately reduce the number of lawyers and doctors needed in the
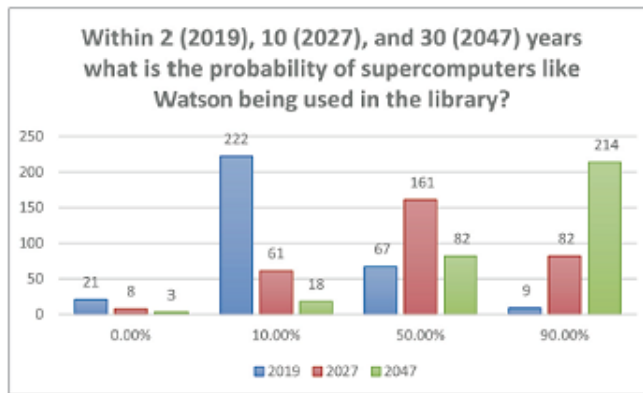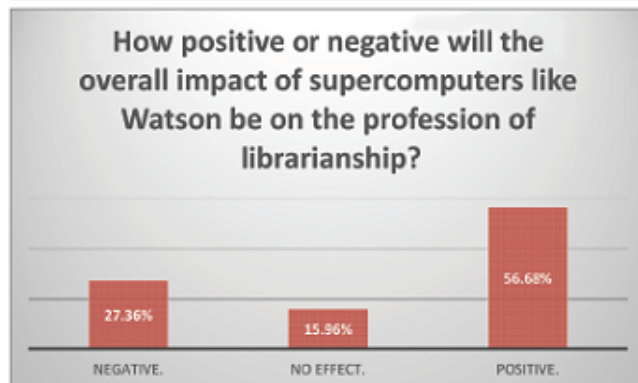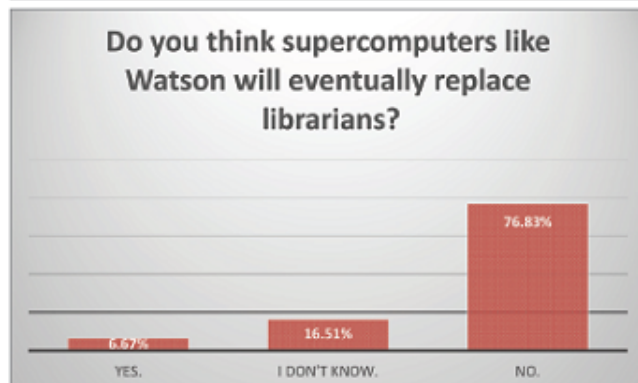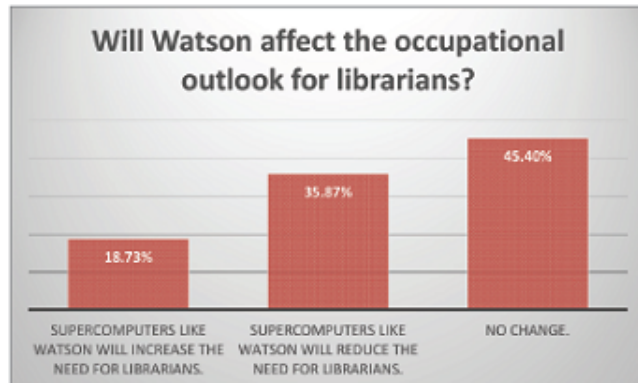

Chart 3: questions three (n=319), four (n=318), and five (n=317)

Charts 4, 5, and 6: questions six (n=315), seven (n=315), and eight (n=307)

workforce of the future.

That said, the topic of AI is not everywhere—it's not in the library literature. Oddly, for a profession that has done more than its share of coping with disruptive technologies over the years, we librarians are not in any meaningful way discussing AI as compared to those in other professions. We have not developed any substantial research on this topic nor have our library schools acknowledged the possibility of reducing admissions. Capability for machine learning, natural language processing, and massive computing power are the three aspects of AI that impact the professions of law and medicine. These will likewise impact the profession of librarianship.

Have you ever read an article in the library literature about supercomputers like Watson?

22.98%

77.02%

- Yes.
- No.

Chart 7: question nine (n=309)

Would you be interested in attending a workshop on supercomputers and AI in the library?

NO 12.26%

MAYBE 40.32%

YES 47.42%

- Yes.
- Maybe.
- No.

Chart 8: question 10 (n=310)

We were curious: Why is there a paucity of discussion about AI in our professional literature? In order to understand this, we surveyed our colleagues on their perception of AI, specifically as it relates to the future, the potential impact on our work, and the numbers in the workforce.

Methodology

For the purpose of the survey, we settled on IBM's Watson as our representation of AI. Watson is a fairly well-known product, along with similar AI-based systems, such as Amazon's Alexa and Apple's Siri. We
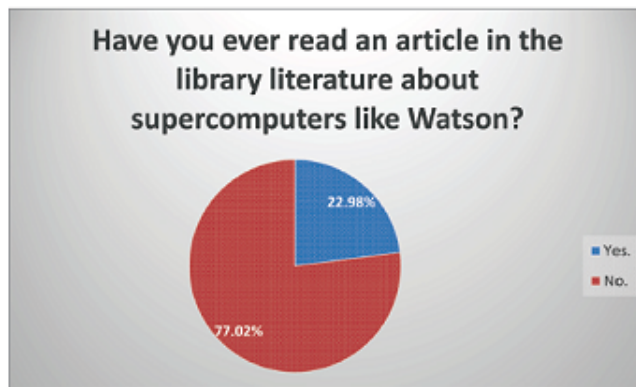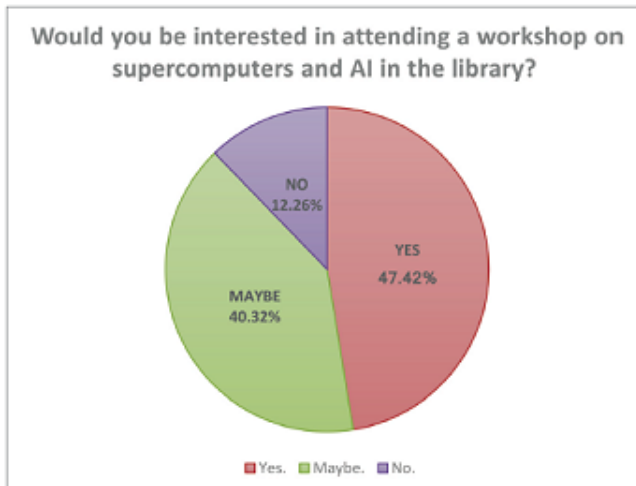
felt that Watson could be easily conceptualized by our respondents, because it, like librarians, answers questions. Unlike librarians, Watson relies on machine learning and massive computing power to do so.

We received permission to model our survey on the one used by AI experts Müller and Bostrom (2016). Our survey, "Librarian Perception of Artificial Intelligence," was created using Qualtrics and received institutional review board approval. The instrument was distributed to professional library listservs during May and June 2017. The survey had 10 questions. Numerically, the responses ranged from 307 to 341.

Chart 1 shows that 56.3% of our respondents feel AI will have a transformative effect on librarianship. Surprisingly, 43.69% of our respondents—who are working professionals in a field that requires high levels of technological proficiency—feel AI will have little or no effect on librarianship. This is a departure from predictions (albeit limited) found in our library literature: "[T]he question is not so much what technology will be affected, but rather what technology, if any, will remain unaffected by AI" (Fernandez 2016). In addition, both the American Bar Association and the American Medical Association have recognized AI in their literature and at their annual meetings. In a 2016 roundtable discussion at the American Bar Association's annual meeting, it was concluded that "it is wise to embrace [AI] now so that it can be a tool as opposed to an impediment."

In question two (see Chart 2), we asked our respondents which departments are most likely to be affected by AI. With the exception of access services, we feel the results accurately reflect what departments are currently being impacted and what experts predict

will happen in the near future. Currently, virtual services in libraries, driven by market factors, have accepted AI in the form of discovery software added to ILSs or as value-added information/full-text aggregation systems offered by EBSCO and ProQuest. In addition, "the practicality of artificial intelligence in the areas such as cataloging, classification, documentation, collection development etc., appears to be improving year after year" (Mogali 2015).

We were surprised that respondents did not perceive access services as higher on the scale of departments that could be affected by AI. Self-service and self-checkout appear to be a fait accompli in the library of 2017, so we were puzzled by these results.

In questions three, four, and five, librarians were asked to predict when supercomputers would be used in libraries (see Chart 3). The overwhelming majority (214) feel it is a 90% probability that supercomputers will be used in the library in about 30 years (2047). Most respondents in each group see a low probability of an immediate takeoff for supercomputer use in libraries.

In contrast to our respondents, a report from the New Media Consortium (a partner of ACRL) predicts 4–5 years as the time for adoption of AI in libraries. The report encourages the development of guidelines and contends that AI "can alleviate the burden on librarians … and free up time to focus on other duties, such as teaching and improving research."

In the field of law, the Watson platform ROSS Intelligence can read 1 million pages of case law in a second. It is used in large law firms to save 20–30 hours of billable research time per case. In medicine, Isabel captures patient information and is used by

physicians to help construct or broaden a differential diagnosis.

Questions six through eight asked about the occupational outlook for our profession, including the possible replacement of librarians by supercomputing and if supercomputing will have a positive or negative effect. The respondents overwhelmingly see AI in a positive way and do not think—or don't know—if AI will replace librarians. They feel that supercomputing will either increase the need for librarians or produce no change. The librarians who answered our survey are not aware of the development of an interactive talking library robot named Xiaotu at the University of Beijing in China. In addition, the rosy occupational outlook deviates considerably from that held by doctors and lawyers, who acknowledge the rise of "robolawyers" and personal healthcare robots.

In question nine, we asked respondents if they had ever read an article about supercomputers in the literature. As you can see, more than 75% have not read anything on this topic, which could explain the lack of discussion within the ranks on it.

We asked respondents if they wanted to attend a workshop on AI in the library. We were disappointed to see that only 47.42% of respondents would be interested in this.

Colleagues in medicine and law have acknowledged that their practitioners need continuing education in this new technology. In 2017, about 2,000 medical practitioners attended the eighth annual Health Datapalooza, which was dedicated to improving health through harnessing the power of data and technology. In addition, one of the most popular continuing education on-demand offerings from the American Bar

Association is The Rise of the Machines: Artificial Intelligence and the Future of Law Practice.

Conclusions

The purpose of our research was to survey the opinions of academic librarians concerning the impact of AI (such as Watson) on our profession. Let's talk about the most important takeaways from the survey.

Unlike in the professions of law and medicine, the survey indicates that librarians are not overly concerned about occupational attrition or the transformative effects of AI on the field of librarianship. Librarians' perception and probability of when the transformation will take effect appears to be 30 years in the future. This differs substantially from prognostications of our own library experts. The fact that respondents have not read about AI in our professional literature was significant, as was their tepid reaction to attending a workshop on the topic.

With the rapid rate of progress in AI technology, we are anxious to rerun this survey in 3 years to compare the results.

Recommendations

AI is often viewed as a hoax or the stuff of science fiction. Our initial conjecture for this study was that AI will negatively impact the number of librarians needed in the workforce, and that impact will be felt in the next 10 years. We were able to identify a paucity of this topic in professional library literature as compared to that which exists in other professions. We also wanted to know why there was an absence of discussion about AI among librarians.

The results of our survey point to an overwhelming sense of complacency among librarians in regard to the transformative/disruptive effects of this technology. For the past 35 years, academic libraries have successfully embraced computerization. Why is it that, at this time, we have our heads in the sand? We liken it to the climate change debate—the data is there, but we choose to ignore it.

Perhaps now is the time to follow the lead of our brethren in the fields of law and medicine and be proactive. By doing so, we can harness AI as a tool that will allow us to focus on other duties, such as teaching and research. The deans of library schools should begin the discussion by addressing curriculum adjustments, asking, "Are the current levels of enrollment in our library schools sustainable?" In addition, there is much opportunity for further research on this topic. The time has come for our professional organizations to develop special interest groups, workshops, and professional development opportunities to explore the implications of this rapidly evolving technology.

In moving forward, we should take heart in the past—libraries have managed not to only tread water, but to succeed when dealing with disruptive technologies. We don't believe AI is an existential threat to librarianship. It must be viewed as an opportunity. We must recognize that the time is not when, it is now. This flood of change is not a hoax or the stuff of science fiction, and we may drown if our attention wavers.

References

Fernandez, P. (2016). " 'Through the Looking Glass: Envisioning New Library Technologies' Understanding Artificial Intelligence." *Library Hi Tech News*, 33(3), 20–23.

Mogali, S. (2015). "Artificial Intelligence and Its Applications in Libraries." Delhi.

Müller, V., and Bostrom, N. (2016). "Future Progress in Artificial Intelligence: A Survey of Expert Opinion." In V. Müller (Ed.), *Fundamental Issues of Artificial Intelligence, First Edition*, 555–572. New York: Springer.

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