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Reviewer: Mona Elayyan, Columbia University Libraries, USA
Book Review Editor: Norda A. Bell, York University, Canada

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G oogle has monopolized and transformed the way searches are performed. The impact of its algorithms and methods of retrieving information not only influences the way other competitors code their search algorithms to match its level of speed and sophistication, but arguably also people's actions and beliefs. Its simple and easy to use design and immediate results challenge academic libraries and information providers to compete with its powerful algorithmic searches. The problem with imitating Google is that despite proving to be a powerful search engine, Google does not take ethical responsibility for its search algorithms' results which, on occasion, demonstrate biases against marginalized and minority groups.

Reidsma's book, *Masked by Trust: Bias in Library Discovery*, explores these issues and the impact that algorithmic search results have on users. It addresses the problem of Google's increasing popularity as a search engine and a model for library discovery systems. The book tackles these topics in six chapters that are divided thematically and linked coherently to a larger theme advocating the questioning of search engine results. Reidsma's clear use of examples and detailed explanations help call attention to the code, its creators, and the decisions that influence the design and implementation of these search engines. He defines and contextualizes search algorithms as microscopic elements within a larger technological ecosystem and emphasizes the need to study its parts as well as its function as a whole.

Reidsma eases the reader into the book by starting with a definition of a coding algorithm in the opening chapters and continues to explore its limitations as a model for complex real-world problems. He then addresses the strategies for writing a search algorithm that involves reducing every problem into quantifiable mathematical values. Reidsma exposes the impact relying on numbers has as a basis for design while simultaneously neglecting qualitative details significant to human decision-making in order to achieve efficient working code. He demonstrates the inability of a program to process the various possible human considerations, then draws attention to even broader influencers that motivate the design and implementation of these search engines. He takes finding a coffee shop as an example to demonstrate how algorithms rely on geographical coordinates and numerical values such as "likes" and quantitative customer reviews to locate a coffee shop. However, these types of results capture large commercial shops that have the experience and financial capacity to improve their online ranking results while neglecting smaller local shops with equal or greater value. Reidsma uses this example to demonstrate the algorithmic impact search results have on people and their decision-making process in selecting something as basic as

a coffee shop.

The book's purpose is to raise users' awareness of the imperfections of search tools. Despite their complexity, search engines cannot and will not have the capability to consider the contextualized factors that each individual bears in mind before making a decision. They can only complete much simpler processes with a finite number of factors. Reidsma proceeds to considerations of other elements that influence the design and implementation of search engines. By encouraging users to look past the search engine as a neutral search tool, Reidsma urges critical examination of the creators of the code and the cultural and social beliefs that may be permeating through it. It is coders who are responsible for translating complex world problems into algorithms and deciding how the code operates and under what conditions. Each decision to include or exclude is made in the context of their personal experiences and biases. The book provides several examples, one of which is Google labelling a photo of two black men as gorillas (p.19).This example reveals the lack of detail with which the coders supplied the algorithm, having it misidentify people as animals. But this mislabeling also reveals sensitive and problematic racial divides that "dredge up … years of institutionalized racism" (p. 19). Reidsma flags this as another reason for keeping a critical eye on how search results are perceived and processed.

The book then moves the focus from the algorithm and its coders to business considerations. As companies concentrate on the fulfilment of financial agendas and business goals, there is an absence of regard for the social impact of their product. Google, for instance, insists it is a neutral, objective tool, reinforcing Marissa Mayer's (Google's spokesperson) defense of Google by deliberately describing its search algorithms as offering answers, not possibilities (p. 34). Such marketing strategies strengthen Google's popularity and image as a reliable, objective search engine. In fact, a study by Pew Internet and American Life Project in 2005 shows that three-quarters of search engine users in the United States believed that most, if not all, the information they found were accurate and trustworthy, and two-thirds felt that they were fair and unbiased (p. 36-7). These numbers show an increasing unquestioning reliance on search tools that can result in serious outcomes.

The journalist Noah Berlatsky is quoted as saying that Google "arguably has more power over knowledge" (p. 36) than any other media source. Consequently, when Dylann Roof ran his searches in Google regarding black crimes against white people, he was directed to white supremacy sites that shaped the way he thought about race and led to his murdering nine black people at a church in South Carolina. As the American author and Professor of Law at Maryland University, Frank Pasquale says, the power that Google has "to include, exclude, and rank is the power to ensure which public impressions become permanent and which remain fleeting" (p. 25). As Google continues to dismiss its responsibility towards the community and its users it becomes important for libraries to raise awareness and educate users to think more critically and consider all of the factors influencing search results. However, with library discovery systems operating like Google, libraries have a much tougher time helping users navigate the online world of information.

The reliability of libraries is compromised when their integrated discovery systems that function much like Google exhibit both biases and outdated information. In Reidsma's testing of various discovery systems, he found that Summons Topic Explorer presented outdated Wikipedia articles that had been scraped from the internet and stored in their database without being updated on a regular basis—thus making the resources retrieved through

libraries' systems appear inaccurate and irrelevant. The book also demonstrates that the research starter tool that suggests other areas to explore for a specific keyword search was exhibiting bias. Librarians across various universities tested different discovery systems for such inaccuracies. In one example, when a search of "white slavery" was entered they found that EBSCO's Research Starter tool offered information regarding "human trafficking" and Summons offered research into "moral panic". When a search for "black slavery" was entered, the Research Starter tool did not offer any suggestions. These Reseach Starter tools' suggestions and lack of, implicitly shape users' thinking to perceive white slavery as panic inducing while black slavery as common, by merely making these associations and links to targeted sources. Exposing the biases within the algorithms is not as troubling as the way discovery systems handle them. Much like Google, discovery systems dismiss these inaccuracies as one-offs and inconsequential. However, the implications are severe and tend to reflect and perpetuate social misconceptions.

Academic libraries have a responsibility and reputation to uphold regarding the accuracy, reliability, and credibility of the resources to which they link. It is important, therefore, that discovery systems are implemented with care and consideration. While information providers like ProQuest or EBSCO compete to look and operate similarly to a Google search engine, giving preference to their own services and resources, they are failing to offer up-to-date information—as was demonstrated by the old Wikipedia articles—or to provide the neutral access to information necessary in a research environment. Reidsma shows that if it were not for libraries' careful testing and their ongoing obligation towards their users to ensure these systems are operating correctly and ethically, users would be misinformed. The fallibility of the information presented at a library level jeopardizes the relationship between the users and the library, turning more users to Google and its information resources. The library's role as educator, critic and mediator continues, then, to be significant in holding information providers and companies like Google responsible for their lack of neutrality while ensuring users' cognizance of the inner workings of search engines.

This book builds on the work of Safiya Umoja Noble (2018) and many other authors whose investigations center on the cultural misconceptions inherent in online search engines. Reidsma pulls aside the curtain to expose their inner workings, with a specific eye to their impact on libraries. This volume educates academic users and raises public awareness of the dangers of passive and unquestioning acceptance of algorithmic search engine results. Users are encouraged to be more critical and skeptical of these algorithmic results that are, ultimately, human creations.

References

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Mona Elayyan (mona.elayyan@gmail.com) is the Web Services Librarian at Columbia University Library. Usability planning and testing are key aspects of her current role and her research focuses on making online information accessible, engaging, and discoverable for all

users. She received a BSc in Electrical Engineering, an Honours BA in English Literature, a Master of Information from the University of Toronto, and a MSc in Digital Humanities from University College London. In her previous roles she worked as an Outreach and Instructional Librarian at the University of Toronto, a Reference and Instructional Librarian at York University, and served as an intern at the British Library as a Research Data Strategist.