Chapter 5

Ethical and Other Considerations

As libraries explore the feasibility of implementing blockchain-based applications, a number of issues and questions arise that are beyond the scope of the technological implementation. These issues are ones that decision makers and those working in and with libraries will have to reconcile in order to effectively move forward and take advantage of this transformative technology.

Who Owns the Blockchain?

The blockchain that underlies any application has to be developed and set up. However, who or which entity is responsible for setting up the blockchain? Once the blockchain is set up, the question arises about who "owns" it. The argument could be made that nobody owns a public blockchain and it lives in the cloud as a distributed technology. However, every blockchain has to have a supervising authority that determines rules and approves modifications. In the case of Ethereum, a not-for-profit foundation with voting members has been set up. How would that process adapt to libraries? Who would own the blockchain? Who would oversee it?

Who Owns the Data?

Blockchain is a data-based application where stored data is encoded in the blocks. The nature of blockchain is such that if the blockchain is actively in use, then the amount of data stored rapidly grows. The question arises, then, of who owns the data in the blockchain? Is it the owner of the blockchain? Is it the libraries contributing data to the blockchain? In a consumer application, do the users of the blockchain own their own data? Or, perhaps, the notion of ownership of data in a blockchain is misplaced. Perhaps the blockchain is a public good? If the blockchain is private, does that change who owns the data? Are all parts of the data "ownable"? Perhaps the blockchain is owned or coordinated by one entity (such as a not-for-profit organization or consortium) while the data in the blocks is owned by its producers. And, if the data can be owned, what does that ownership actually mean and authorize its owners to accomplish?

How Secure Is the Blockchain?

While blockchain is a technology based on cryptographic principles designed to ensure security, the system itself is not infallible. In a public blockchain, the blocks that have been added to the blockchain are immutable, and the consensus requirement of 51 percent provides a layer of security. Could libraries ensure the same level of participation? How would we incentivize the participation of distributed computing nodes to verify or mine the blockchain? In a private blockchain or open-source blockchain (e.g., Hyperledger), how do we audit the integrity of the data? Could the owner of the blockchain modify the record at any time? Could the owner use authorization for root access to subvert the integrity of the blockchain? In cryptocurrency applications, great efforts have been made to ensure the blockchain's privacy and security, and we should make an effort to learn from those efforts if we pursue blockchain within our organizations.

Unintended Consequences?

Of course, this section is dipping into the great unknown. As we explore blockchain and its ability to

transform libraries, we will no doubt learn about its many benefits and encounter challenges we could not have anticipated. How do we work with patrons who have lost their private key? What will we find out about the energy consumption required? What will we find out about the technological requirements? How about the costs associated with developing and maintaining the blockchain? These are the unknowns of new technology, and it stands to reason that every "unhackable" technology poses an invitation for hackers to find ways to defeat it. As computing power increases, the race will continue to develop better cryptographic standards to stay a step ahead of hackers.

Legislation and Regulation

At this point, it remains unclear what the future holds for blockchain regulation. The case for cryptocurrencies has been made, and they have been established as functional, decentralized currency. However, one of the most significant critiques of cryptocurrencies has come from legislators. They are concerned that cryptocurrencies have enabled avoidance of regulation and taxation that apply to regulated currencies. This has led regulators to review ways that cryptocurrency can be regulated and taxed. This, of course, is counter to the entire decentralized nature of blockchain. However, as a result of this increased scrutiny into blockchain technologies, libraries may possibly face similar concerns around issues of data and user privacy. The General Data Protection Regulation (GDPR), introduced by the European Union in 2018, is an example of the complexity that is introduced when one jurisdiction (the EU in this case) imposes rules that have far-ranging effects. The rules were introduced by the EU, but any organizations conducting business in or with the EU have to align their data practices with these rules, thus effectively changing the global landscape regarding data and security. The rules were designed to empower individuals to have more control over the data collected about them on the internet. Individuals can instruct a company to remove any of the digital records it has on them. The enactment of these GDPR rules also has an important impact on blockchain. If the blockchain is indeed immutable, then the request of an individual could not be honored, which could lead to significant fines against the organization holding the data. However, it remains to be seen how this scenario will play out. It is conceivable that as blockchain evolves, more regulation will come into place that will further impact how the technology will be implemented.

General Data Protection Regulation
https://eugdpr.org

This chapter illustrates just how many unanswered questions there are with regard to blockchain and libraries—questions that extend beyond the technical and really touch on the ethics of blockchain. Considering these questions is of the utmost importance, especially in the information profession. Our motives and ethics in libraries are such that these are paramount issues we ought to resolve or at least be aware of. One by one, the questions will be answered as libraries walk down the path of blockchain development and implementation. At the same time, as some questions are answered, new ones will reveal themselves. My goal in introducing these questions is to raise awareness and hopefully create a dialogue or motivate an investigation into some of them.