

# Code is law and law is code – can Blockchain be without ethics?

Given its potential to shape our daily lives, the firms which own and sell this technology might include ethical considerations as part of ESG. **BY DAVID LEE AND DANIEL SEAH**

**N**OT so long ago, Warren Buffett had dismissed cryptocurrency as “rat poison”. Yet the price of bitcoin rose to hedge against a “QE infinity” (massive fiscal spending) bubble. Wider applications of the underlying Blockchain technology are also growing. On Oct 28, 2020, Cambodia launched Project Bakong, the first Blockchain-based Central Bank Digital Currency. The Regional Comprehensive Economic Partnership will enable fuller adoption of Blockchain through the agreements on distributed data storage and e-signature. Blockchain is poised to advance the Fourth Industrial Revolution with P2P (Peer-to-Peer) exchange of value. It will change the conduct of businesses.

This is why Singapore universities have pushed for digital literacy of Blockchain. However, it is less intuitive for us to emphasise ethical literacy. Blockchain applications are not just defined by its technology. The cultural attitudes of the persons who create the Blockchain and user interface, and the social issues which arise, will involve ethical considerations.

The lack of ethical literacy is evident from a recent class that we taught on emerging technologies and the law. We had excitedly introduced the emerging field of fusing artificial intelligence (AI) to Blockchain. One illustration is a smart contract being powered by AI, which is still not widely adopted.

For example: the fusion of a neural network (AI) to Blockchain can facilitate automatic negotiation of contractual prices between parties, based on past transactions. This is an “on-chain” process: AI and Blockchain are joined without an active human role. If this technology becomes widely available as a smartphone app, we asked our students to consider the ethical issues.

This point matters because, by 2030, one in four Singaporeans would be 65 years old and above. Accordingly, we asked our students to reflect on an app interface which is inclusionary for non-digital natives. Can a user change his or her mind by withdrawing from this AI-powered smart contract, after agreeing to it? Can the user’s loved ones access the app to act for his or her best interests, if the user has mental health issues? As teachers, we must push our students to probe the moral dilemmas which arise from technological applications.

Shortly after this class, a student asked: “Is this part examinable?” This query misses our broader point. In a data-mediated milieu, ethical literacy should be reflexive in our society, to which our students belong. Consider, for example, a Blockchain application which uses digital payment for insurance claims at Singapore hospitals.

The computational technology of Blockchain will yield benefits. Private details, such as a patient’s previous history, medical bills, and insurance deductibles, can be securely transacted through an app. The ethical issues, though, are legion. With an ageing population, should the app be designed to promote decision-making powers by granting access to a user’s loved ones, if the user is infirmed? From a design perspective, do we build this access “on-chain” into the Blockchain technology? Or should we build this “off-chain” by requiring written or deemed consent, between the user and loved ones?



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These ethical considerations should be treated as part of the Blockchain’s design, and not as an afterthought. For example, in applied research at universities which involves human subjects, researchers must submit their research application for an ethics approval by the host university’s Institutional Review Board (IRB).

Furthermore, researchers would usually have completed at least an introductory ethics course by an internationally recognised entity. Our point is that ethics literacy is ingrained. Researchers intuitively build ethical considerations into a research design, even before submission to the IRB for approval.

Similarly, given Blockchain’s potential to shape our daily lives, it is plausible that the companies who own and sell this technology might, over time, include ethical considerations as part of its environmental, social and governance (ESG) framework. One prospect is for a company’s corporate and social responsibility (CSR) programme to articulate and fund initiatives, which deliver social benefits for the whole community, through this company’s Blockchain applications. Staff can be certified, as an ethics manager, to form part of the ESG framework for Blockchain. We have a duty to train our students well for this prospect.

## DEVELOPING ETHICAL LITERACY

Universities are optimal spaces to develop ethical literacy. As a university of social sciences, we draw on each school’s distinct expertise through cross-disciplinary teaching. For instance, in our law course on emerging technologies, we want our students to learn more than just “legal tech” (the technology which supports legal practice), or the regulatory aspects of Blockchain.

Through cross-disciplinary teaching, our students should grasp the gamut of a Blockchain technology stack (the range of technological solutions used to run an application) from the experts in other faculties. Apart from the app interface that Blockchain’s end-users are familiar with, our law students should be comfortable with the “nuts and bolts”. For instance, there must be some familiarity with the infrastructure layer of Blockchain – might the company use a third-party

cloud-based infrastructure, or an in-house infrastructure to run the Blockchain?

In contrast, students in our business programmes (as one example) benefit from a cross-disciplinary introduction to legal standards concerning technology, and the law’s reactive nature in a dynamic area. Our graduates should be “solution managers” who purposefully advance ethical considerations at various levels. In short, human autonomy must be an overarching goal.

This involves awareness of the persons who code or programme. Notably, a solution manager must be sensitive to ground design thinking (commercial and technological viability) to sustain a company’s Blockchain applications. To this extent, we reinforce ethical literacy through our experiential courses.

An example is our university’s partnership with Alibaba Cloud to award a credit-bearing minor in entrepreneurship, if a student secures funding or generates revenue of at least S\$250,000. These students pitch their commercial ideas, which engage technology (such as AI or Blockchain), to venture capitalists and angel investors.

The students’ ideas form case studies for ethical literacy. These are real-world examples created by fellow student colleagues. Therefore, this authenticity supports the students’ willingness to learn. Our aim is not just to teach our students to identify the ethical issues. They should struggle with ethical issues surfacing in a live context, alongside commercial decisions being made from ideation to a finished product.

If we deliver our curricula well, a strong outcome is for the students to be more comfortable with inconclusive answers. Our students will face dilemmas in the real world that test their ethical literacy. Discernment is the son of good judgment and the father of good ethics. Our recent answer to the frazzled student’s query on examinable content was “no”. Next time, our rejoinder would be: “Life is a continuous examination.”

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