Note from The Editor

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It has been a year of fundamentals for Ledger, and we are happy to have once again provided a space for the publication of peer-reviewed research into a rapidly diversifying field. It is important that the world of cryptocurrency and blockchain research has a dedicated space for sober reflection on such important advances, and we are more excited every year to provide just such a resource.

As the field of cryptocurrency and blockchain research grows, it finds itself in need of foundations on which to build itself. We feel that this year's volume provides some of the bedrock on which construction can begin. In "Data Insertion in Bitcoin's Blockchain," Andrew Sward, Ivy Vecna, and Forrest Stonedahl describe the past and present of data storage on the Bitcoin blockchain, providing a valuable resource for those wishing to use (or push the boundaries of) blockchains as a storage medium; also, in "Developing a Cryptocurrency Assessment Framework: Function over Form," Andrew Burnie, James Burnie, and Andrew Henderson set out a framework for categorizing cryptocurrencies by their functionalities, both creating a novel methodology—and also allowing for a new vocabulary—to discuss cryptocurrencies and their relationships to one another.

But our authors have also pushed past foundations this year. In "Bitcoin Average Dormancy: A Measure of Turnover and Trading Activity" and "Valuation of Cryptocurrency Mining Operations," Reginald Smith and Jose Berengueres have provided new tools for analysis in the present day. In the former, Smith has shown that the commonly-used metric "bitcoin days destroyed" can be used to determine bitcoins' "average dormancy," which can be useful in analyses of trading in the present; and in the latter, Berengueres has provided new insight into the factors affecting mining profitability (especially for new entrants to the economy). Meanwhile, in "Sentiment Protocol: A Decentralized Protocol Leveraging Crowdsourced Wisdom" and "Quantum Attacks on Bitcoin, and How to Protect Against Them," Anton Muehlemann and Divesh Aggarwal, Gavin Brennen, Troy Lee, Miklos Santha, and Marco Tomamichel have looked to the future, with Muehlemann looking at a new model for prediction markets, and Aggarwal (et al.) eyeing the coming potential for quantum attacks and their remedies.

We could not be more proud to have provided a platform for these authors to have presented their work in a peer-reviewed medium, and once again we are deeply grateful that our authors have chosen Ledger as a home for their work. As in previous years, we would like to thank our authors, our tireless volunteer editors, and our distinguished editorial board. Furthermore our open-access (free to read) and author-fee-free (free to publish) journal would not be possible without the generous support of our publisher, the University Library System of the University of Pittsburgh, and our sponsors, the Bitcoin Unlimited Community Organization and the Institute for Cyber Law, Policy, and Security at the University of Pittsburgh, without whose generosity our work would not be possible.

Lastly, we would like to thank you, the readers and researchers for whom this work is done. Without you to provide a demand for well-reasoned and well-reviewed scholarship, we wouldn't have a reason to provide it. Here's to another year done and a better one to come.

Sincerely,

Christopher E. Wilmer, Co-Managing Editor

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