# Team puts an ancient spin on a new digital currency

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Credit: University of Oregon

Cryptocurrency might seem like a next-generation idea, but two University of Oregon researchers say it has roots in the past.

A new study by UO archaeologist Scott Fitzpatrick and finance professor Stephen McKeon describes striking similarities between the decade-old digital currency bitcoin and a stone money system developed centuries ago in western Micronesia.

Published online ahead of print in *Economic Anthropology*, the study compares bitcoin to rai, the famously giant stone money of Yap, a small island group located about 800 miles east of the Philippines. Drawing from oral traditions, archaeological data and historical accounts, the study identifies parallels between the two currencies and suggests that the bitcoin concept may have been inspired by the ancient Yapese system.

Key among those parallels: Both bitcoin and rai allow people to own and use money without physically possessing it, and both systems accomplish this through a community ledger system that ensures transparency and security

without the help of a centralized bank.

Fitzpatrick, associate director at the Museum of Natural and Cultural History and a professor of anthropology, began studying rai as a doctoral student and has since become a leading expert on their production, transport and use.

"They are one of the world's most intriguing coins," he said. "Carved from limestone quarries located in the Palau islands some 250 miles from Yap, they're the largest objects ever moved over the open Pacific Ocean during the pre-European contact era."

Up to 12 feet in diameter and weighing tons, the coins were typically placed in prominent—and permanent—locations upon their arrival in Yap.

"They aren't the sort of thing you'd want to move more than once," Fitzpatrick said.

Still, the Yapese continued to exchange rai following these initial placements, using an oral ledger that tracked the coins' value and any changes in ownership.

"They were used for key social transactions like marriages and ransoms," Fitzpatrick said. "Each exchange was recorded in the oral history which functioned as a public ledger, maintaining a continuous chain of information and preventing disputes over ownership."

Bitcoin operates in much the same way. The cryptocurrency relies on blockchain, a digital ledger that verifies transactions across a computer network and makes transaction histories available to everyone who participates in the network.

"As with the rai stones, information about bitcoins' value and ownership is managed collectively; it's a distributed financial system as opposed to the more familiar, centralized systems involving third-party

financial institutions," said McKeon, academic director of the Cameron Center for Finance and Securities Analysis in the Lundquist College of Business.

Fitzpatrick and McKeon speculate that the Yapese community ledger system may have informed the development of bitcoin centuries later.

"History often repeats itself, and this is a case in point. It's reasonable to infer that the Yapese model was the impetus for a digital means of doing something very similar," Fitzpatrick said. "Either that, or it's a case of cultural convergent evolution, where two temporally and geographically distinct cultures develop a remarkably similar system, which would still be pretty intriguing."

Also intriguing is the academic convergence behind Fitzpatrick and McKeon's interdisciplinary study.

"After bitcoin's introduction in 2009, I started getting calls from news agencies and financial institutions seeking my take on its similarities to rai," Fitzpatrick said. He dove into the topic and decided to present a paper at the 2018 Society for American Archaeology conference in Washington, D.C.

"It garnered a lot of interest, but I realized that I didn't have the necessary background to contextualize the cryptocurrency and blockchain aspects of the research," he said. "I was literally searching online for a blockchain expert I could collaborate with, when I saw an announcement about a Quack Chat on bitcoin that Steve was giving. I emailed him immediately about the possibility of working together on a study."

McKeon had been including rai stones in his public talks on cryptocurrency for years but didn't know about Fitzpatrick's work until that email arrived.

"I read it with glee," he said. "I almost couldn't believe that one of the world's major experts on rai was no more than a few hundred feet from my office. We met shortly thereafter and agreed that we should write the paper together."

The co-authors agree that additional archaeological studies could yield important insights into the future of cryptocurrency.

"The rai system is a conceptual precursor to cryptocurrency," McKeon said. "By examining how the ancient system worked and the issues that led to its eventual demise, we can uncover lessons about potential pitfalls that bitcoin and other cryptocurrencies will need to guard against."

Provided by University of Oregon

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