

# A CHIP OFF THE NEW BLOCK



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I wanted to learn more about blockchain technology given all the hype surrounding it as a 'game changer' and came across a video by Duke Professor Campbell R. Harvey in which he describes what it is, how it works, and perhaps most interestingly some of the practical applications.<sup>1</sup>

Most of the time you see blockchain mentioned in the media it is used interchangeably with cryptocurrencies such as Bitcoin and while there is a relationship between the two, they are not the same thing. Blockchain is the technology while Bitcoin is just one of the uses or applications of the technology.

There are four key properties of blockchain technology. The first is that it is a real-time ledger or spreadsheet of transactions or information. Transactions and information are lumped into blocks and the last line of one block is the first line of the next one (hence the term blockchain). Secondly, it can be shared and anyone can acquire a copy. The third is that one can add to a blockchain but cannot change past entries. The last is that the ledger is password protected.

The technology has numerous potential applications in the financial services industry. It could be used to verify a particular transaction or ownership very quickly because the blockchain is updated in real-time. Professor Harvey points out that settlement times of transactions on securities of t+X days would be a thing of the past as a blockchain could be used to verify and settle transactions in minutes. Another application of the technology is in financial reporting where financial statements would be available in real time. There would be a blockchain for all accounting transactions for a particular company so users would no longer have to wait for a company to release its quarterly or annual statement.

There are also numerous non-financial applications. Blockchain could be used in a motor vehicle where a blockchain is checked to see if you actually own the car. This would prevent the risk of someone stealing or taking control of your car. Another use of the technology would occur when purchasing a house. Currently, a lawyer has to do a title search and this can take time. A blockchain would solve this as every municipality would put every single piece of land title into a blockchain which could then be downloaded by anyone.

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<sup>1</sup> Cambell R. Harvey, "The Blockchain Identity", 2017 CFA Institute Annual Conference Video, 1:30:58, May 23 2017, <https://www.cfainstitute.org/en/research/multimedia/2017/the-blockchain-identity-conference-collection>.

An obvious question is how secure is blockchain? The cost of the computing power required to create and maintain a blockchain used for a cryptocurrency like Bitcoin would run in the billions of dollars. This would make it very challenging for a hacker trying to cause problems. The technology itself is secured through cryptographic hashing which is a process of generating a code made up of a unique and specific combination of letters and numbers associated with a word, sentence, or document. It is that code that links the bottom of a block to the top of the next one. Therefore, if one tries to change the information in a block, a different code would be generated and the blocks would not match. If a code is generated with a large combination of numbers/letters, the probability of finding the correct combination would be virtually impossible and would require incredible computing power.

There are many challenges with trying to implement the technology. Firstly, there is the massive cost and infrastructure to implement a complex blockchain. Secondly, it would take a tremendous amount of time and human capital to input the quantity of information needed. Finally, although the blockchain technology is very secure, it is still technically possible for breaches even though it's highly unlikely.

I just wanted to provide a very general overview of blockchain and its applications. Blockchain is far more complex and detailed than what I could write in a short essay. However, I would argue that understanding the technology and more importantly the numerous applications could be a 'game changer' in the future.

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