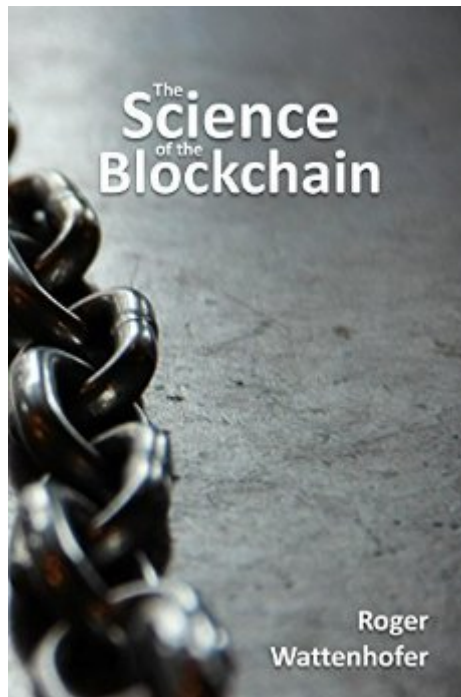


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# The Science Of The Blockchain



## Synopsis

FinTech developers and managers understand that the blockchain has the potential to disrupt the financial world. The blockchain allows the participants of a distributed system to agree on a common view of the system, to track changes in the system, in a reliable way. In the distributed systems community, agreement techniques have been known long before cryptocurrencies such as Bitcoin (where the term blockchain is borrowed) emerged. Various concepts and protocols exist, each with its own advantages and disadvantages. This book introduces the basic techniques when building fault-tolerant distributed systems, in a scientific way. We will present different protocols and algorithms that allow for fault-tolerant operation, and we will discuss practical systems that implement these techniques.

## Book Information

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## Customer Reviews

Wow - this is a terrific book for people with a deep background in computer science. The book is a gem describing the process of state replication problem between distributed computers which underlies the FinTech implementation of blockchain. The chapters include Fault-Tolerance, Consensus, Byzantine Agreement, Authenticated Agreement, Quorum Systems, Eventual

## Consistency & Bitcoin and Distributed Storage.

This book is modest in size, some 110 pages of text. But it's going to be very tough going for anyone without a solid background in mathematics (such as the commonly used symbols in set theory and logic), and the computer science of distributed systems. It's a mix of writing done in a casual style, that can be a bit careless about precision and completeness, intermingled with classically formatted Definitions, Algorithms, Theorems and Lemmas, where the Algorithms are written in an Algol-like pseudo-computer language, sometimes missing key little details such as how some variable gets initialized or what means what. The reader should be comfortable with such mathematical symbols as those for subset, set membership, union, intersection, universal and existential quantifiers, power set (the number "2" followed by a superscript such as for example " $V^2$ " would denote the set of all subsets of "V"), empty set, and so forth. The book covers various state replication algorithms. These algorithms enable multiple communicating nodes to come to a common agreement on some shared state, with some provable degree of tolerance for nodes failing or lying. The main chapter headers are:- Fault-Tolerance and Paxos- Consensus- Byzantine Agreement- Authenticated Agreement- Quorum Systems- Eventual Consistency and Bitcoin- Distributed Storage

This is an excellent book. Whilst a bit terse, it progressively builds and illustrates a good solid Mathematical framework to the Blockchain and manages to condense it all down into a reasonable size avoiding all the fluff and hot air that normally accompanies most other books on this subject. The book also provides good potted histories at the end of each chapter, listing the references to the key academic papers for further reading into the key concepts described.

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