Blockchain Organizing for Managers

Both authors work at Weconet Blockchain Technologies (www.weconet.org). Weconet is a spin-off of the Weconomics Foundation. Weconomics is primarily a way of thinking, a way of organizing projects with three pillars: organizational model, infrastructure and transition program. This book is part of the Weconomics program. Most of the Weconomics books are in Dutch at the moment. When you are member of the Blockchain Organizing Center of Knowledge (see www.weconet.org/block), **we will translate** the references in this book from Dutch to English for you.

The following books are included in the Weconomics program:
Book1: 'Every day when the sun rises: the history of the community economy' (2010)
Book2: 'Weconomics: how will you survive the 21st century as information worker?' (2013)
Book3: 'Weconomics analysis: why our welfare machines need to be replaced' (2013)
Book4: 'Weconomics theory: organizational science for Weconomics' (2013)
Book5: 'Weconomics practice: practical advice for setting up communities' (2013)
Book6: 'Blockchain Organizing: foundations for a new social-economic order' (2017)
Book7: 'Blockchain Organizing for Managers: The Reinvention of Management' (2017)

Book 1, 2, book 3, 4 and 5 (also called the Weconomics Trilogy) and book 6 are only available in Dutch at the moment. More information about Weconomics program: www.weconomics.org (Dutch) or www.weconet.org (English)

For more background information with this book, including a literature list and blockchain knowledge center, see also the website: weconomics.org (Dutch) and weconet.org (English).

Blockchain Organizing for Managers

- The Reinvention of Management -

Paul Bessems
Walter Bril

"The most important, and indeed the truly unique, contribution of management in the 20th century was the fifty-fold increase in the productivity of the manual worker in manufacturing. The most important contribution management needs to make in the 21st century is similarly to increase the productivity of knowledge work and knowledge workers. The most valuable assets of a 20th-century company was its production equipment. The most valuable asset of a 21st-century institution (whether business or non-business) will be its knowledge workers and their productivity."
(Peter Drucker, 1999)

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Preface

What if selling your house would be as easy as sending an email? Big chance you would not believe that this will become reality in the near future? But when internet started nobody could imagine, that it once would be possible to operate Spotify on internet. As Halfdan Mahler, former director World Health Organisation once said: *"What sounds idealistic today becomes realistic tomorrow"*. But from 'today' to 'tomorrow' is a long and difficult road where leadership and management can play an important role. One of the key stakeholders, in the digital transformation and the transition to a mainstream usage of blockchain, will be leadership and management. Will they act pro- or reactive? Will they be ambassadors or resistors of change? Will they give up some autonomy and believe in decentral decision making? One thing is clear: leadership and management must innovate more fundamentally then they did till now. According to fintech expert Chris Skinner the real problem is legacy leadership, not legacy technology.

When you ask someone what the most important invention has been during the last few centuries, you will probably hear: steam engine, electricity or, more recently, the internet. Not many people will say: management. In general, management is not regarded as an invention or technology. Charles Perrow, an American emeritus professor of Yale and Stanford once said: *"Organizations are systems for getting work done"*. In our digital era you could say: Organizations are digital technology to share information, make decisions and process transactions.

In our opinion: processing ideas into tools to combine humans and resources in order to perform activities in the most productive way is also a form of technology. So we could agree on the idea that management is also a technology. But when we compare management with other technologies we can conclude that it hardly innovates, at least not in a fundamental way. We have hardly seen any fundamental innovations in management since its first invention at the beginning of the twentieth century: Scientific Management (1911) and the first assembly line of Ford Motor Company (1913). With management technology we don't see an innovation pace that is comparable with other technologies such as information technology. But we believe that this will change in the next generation.

Harvard Business School professor Clayton Christensen coined the term disruptive technology. In his 1997 book, 'The Innovator's Dilemma', Christensen separates new technology into two categories: sustaining and disruptive. Sustaining technology relies on incremental improvements to an already established technology. But the light bulb was not invented by the continuous improvement of the candle. Therefor you need a quantum leap, you need a disruptive innovation. We strongly believe that Blockchain Organizing, as a management concept or technology, is an example of the latter. But disruptive technology often has performance problems because it is new, appeals to a limited audience and may not yet have a proven practical application. A lot of people find it abstract but they use 'abstract' not in

the proper way. Abstract means: let go of non-functional parts or back to basic. And Blockchain Organizing is back to basic, back to the fundamentals of organizing. A lot of people find this hard to understand because it deviates from what they are used to and the complex world they live in. It seems that they avoid simplicities because they don't know what to do with the surplus that technology can create.

Innovations are often associated with matter, but you can also innovate ideas and concepts ('products of the mind'). Management is above all a type of social technology because we believe that management tasks such as decision making must be performed by people and cannot be done by protocols. Our claim as authors is that management, as an invention, as a technology, has not changed fundamentally since the 'first' Ford Motor Company assembly line started working at the Highland Park Assembly Plant in October, 1913 in Michigan. Management was invented to align capricious people: farmers, housewives and craft-men, into the systematic way of working on an assembly line, between nine and five, in a building away from home. 1913 is also the year when the Chartered Institute of Personnel and Development (CIPD) was founded in England, the first, what we now would call, HR community. Since then, management is not reinvented in a fundamental way.

Yes traditional management did its job: it doubled our standard of living on average every thirty years. It brought us prosperity, but the context changed from factory work to knowledge work at the end of the twentieth century. And for that matter, management didn't adapt in a way our productivity growth could keep up with the rising costs of healthcare, education and safety. Management did a good job, improved over time but is still not replaced by something better as the enemy of good as a result of a changing context. The candle has continuously been improved, but it has not been replaced by the light bulb as mentioned before.

Some adjustments have been made to management, such as the recently introduced agile and self-steering teams, or before that Lean Six Sigma and the implementation of performance indicators. But these concepts have never challenged 'the firm' as a superior way to organize work. They have, especially in the last decades, made insufficient contributions to the required growth in productivity and improvement of trust. They are relatively small adjustments within an existing invention that mainly involves the use of buildings, hierarchies, planning, informing, assessing, deciding, awarding and punishing. The way we connect people and resources to tasks, projects and targets in order to increase the productivity has not fundamentally changed since Taylor and Ford.

Because many people do not consider management as an invention, there are many different views regarding management innovation. The term innovation is mainly associated with process and product innovation or ICT; not management innovation. Most managers will say that the current work method is fine because everything has been going well for quite some time. However, there are more and more undercurrents that indicate that things are not going so well after all. These include,

among other things, privacy concerns, regulation, bureaucracy and complexity, power concentration, inequality and lagging productivity. Management is and was meant to organize people and tools in such a way that the productivity and therefore the 'standard of living' improves. But traditional leadership and management are no longer capable to tackle the social problems we are facing.

There is however a rapidly growing management technology that can perform many of the existing (often mechanical) management tasks decentral, autonomously and much more efficiently: it is called Blockchain Organizing. This technology will create surplus time. We can move from the third (after agriculture and factories) work sphere (offices) into the fourth 'work sphere'.

Management (as technology) develops itself at a much slower speed than other organization technologies, so management, in its current shape, could quickly become less relevant. Many traditional managers are still trapped in an existing paradigm of what management is and the best way to handle it. On the other hand, more and more organizations, such as Svenska Handelsbanken or the distributed company Automattic, adopt new organization methods and make maximum use of technology to connect people and tools to activities. This means for example that the span of control within these organizations is more than 1:10, while this is 1:5 within traditional organizations. So there are management concepts that operate fundamentally different from the way most organizations and managers are used to. One of these concepts is, as we as authors call it: Blockchain Organizing. Blockchain Organizing is the combination of a disruptive technology (blockchain) with a fundamental new model of organizing supply and demand (Weconomics). This book addresses the questions: What is Blockchain Organizing, why is it important and what does it mean for managers and management innovation?

Since the seventies people started to do other work (from factory work to knowledge-based and service work), but the methods with which we organize work have hardly changed. The question that has been keeping us authors occupied for years is: what is the reason that we, despite increasingly more and 'better' information technology, share information increasingly worse, cooperate increasingly worse and trust each other increasingly less? Why are there so many intermediaries required between supply and demand to reduce uncertainty? Why is the capacity utilization not improved, why can't we safeguard our privacy better, trust each other better and share knowledge better? Why has internet not made us more productive? Why have markets not become more transparent? And why have we not become less dependent on large companies and central governments? Further on in this book we'll see that the number of managers and staff officials continues to increase despite the present technology. You expect that technology would make us sufficiently productive but that is not the case. And now a new technology is emerging: blockchain. So, will this organization technology indeed provide an improvement? Why would this technology succeed where others failed?

To keep our organizations, economy and society going, we use tools such as management, money, contracts, brands and laws. These are ideas created by human minds. These tools are organized by companies, banks and governments and are meant to reduce insecurity and to install trust within our economy and society. In the organization theory we call these tools agents or institutions. Without these institutions we would be unable to organize work, to trade, to make economies work and to enable our society to function. However, these institutions have the disadvantage that they make our society unnecessarily complex and bureaucratic. And as a result we need more specialists to understand this complex world. These specialists must be attuned to each other and therefore we need even more institutions, etcetera. In short: we are all very busy, without making enough progress.

Many of the institutions that we use date from the time of Columbus and the Industrial Revolution. Nowadays we live more and more in a digital society. Trust can be programmed as it were. That is in any case an important promise that is inherent to blockchain and one that is proven by the Bitcoin blockchain until now.

The purpose of this book is to describe how to use blockchain technology for solving social, organizational and management problems. We do not want to stimulate and sell a new technology. In this book we do not extensively discuss Bitcoin as money, as we might not need any money (physical or digital) in the future as a way to exchange values. The hype surrounding the price of a bitcoin, cryptocurrencies, futures or the Initial Coin Offerings, illustrates again that when changing a technology, the behavior of people does not automatically change with it. That will require more, and most managers will be aware of this. Human behavior is mainly focused on satisfying our conviction and needs. Too often useful new technologies are used in old organization methods with the purpose to strengthen existing positions or organizations and therefore weakening new business models.

More and more banks buy fintech start-ups. Is that because they are interested in solving social problems or to strengthen their existing position? Banks will start to compete with each other on 'who has the best blockchain'? But what if money and banks become irrelevant? Therefore, it is important to realize that Bitcoin can take many forms. Blockchain Organizing mainly concerns the exchange of values between seller and buyer. And Blockchain Organizing does this with minimum friction, and at minimum transaction costs. Blockchain Organizing primarily concerns solving management problems, secondly it looks as the organization model that can be used best and tertiary it looks at the tools.

We believe that technology can actually add value to our society. That was also the promise of the internet. But there was no clear problem to solve and we have used the internet within an old management model. With the internet we did not fundamentally organize supply and demand differently, mainly the medium has changed: the brochure was replaced by the website and the letter by e-mail. The

relationship between producer and consumer, government and citizen and employer and employee has not actually changed.

We see the shortcomings of the internet more and more, it is a beautiful technology that is still used within the boundaries of a traditional management style and an old socio-economic system. The internet did not increase our productivity sufficiently, privacy is increasingly more difficult to safeguard, American internet companies are becoming increasingly more powerful, elections are being manipulated and we find it increasingly more difficult to distinguish between lies and the truth. More and more people are aware that internet alone does not really help us to progress as we would like: it gives us more and more insecurity and we trust each other less and less. We can conclude that the internet is far from being completed; it is actually only in its infancy. With the introduction of blockchain we get another chance to do it better. Blockchain can be considered as the next stage in the development of the internet. Not only does it enable the sharing of information, but values can be moved from seller to buyer, without having to trust each other and, in principle, also without money as exchange tool.

So, 'the blockchain' can be regarded as an additional layer on the internet: a layer of trust. With the internet we can share information without any significant friction. Sending e-mails (bits & bytes) costs almost nothing. With blockchain technology you can transfer values (also bits & bytes) from supply to demand without irrelevant third parties, without any significant transaction costs. This does not just apply to buying a training course or consultancy service, but also doing the daily shopping up to selling your house on a blockchain. To bring supply and demand together against the lowest possible costs is not just the essence of organizing work, but also the essence of organizing our economy.

The essence of organizing is: look for a tool that can transfer values from supply to demand against minimum friction (or transaction costs). Blockchain has a lot less friction than the existing coordination mechanisms such as hierarchies, building, management development programs and permanent contracts. We as authors of this book support the potential of blockchain technology, but we are also worried about the 'hype' around 'the blockchain'. A hype can frame or slow down a fundamentally good idea. A lot of sense, but also a lot of nonsense is written about blockchain. We believe that a major breakthrough of using blockchain technology in several areas, might take a decade unless we quickly become collectively smarter and also innovate management technology in addition to blockchain technology. But we are slightly less optimistic about this. Institutions that have been around for centuries cannot be changed 'overnight'. We believe that the core of the success of blockchain will not be the technology, which normally finds it way, but leadership and the organizational ability. This is a broad perspective that also includes: laws, politics, power, adaptability and management.

So, we must not overestimate the power of technology alone. Technology is 'only' a lever: an ability to realize something. Without being firmly grounded, without foundations, a lever does not work. When we start with new digital leadership, connect a new technology to a fundamentally new management model the effect on the existing organization methods can be huge. As a result, enormous resistances can arise. However now may be the best time for renewal. For us Blockchain Organizing is a fundamentally new way of organizing that can provide a large contribution to social challenges, such as the crumbling welfare state, aging population, growing inequality, fraud, tax evasion, propaganda, cyber security and climate change. It is definitely not a panacea for all problems but it can contribute in resolving many social problems. It has fundamentally different answers to the question how physical and data flows should be organized. Although the impact can be huge in the long term, the embedding of Blockchain Organizing in our daily lives will be rather evolutionary than revolutionary. Changes will be made step by step comparable to the development of the assembly line or internet for example.

In this book we mainly focus on the fundamental management innovation by operating organization technology, such as the internet and more recently blockchain, in a smarter way. Tools will not have the desired effect if we, with the technology not also change the methods and the institution with which we organize trust, work and economics. If we stay trapped in the old leadership and the management innovation of Taylor and Ford, blockchain will add little or even make it worse. Traditional companies, banks and governments have had their days. They become irrelevant. They are no longer the superior coordinating mechanism with the least friction. They keep us unnecessarily trapped and at work. More and more people will become aware that we create fake work to keep the illusion of full employment alive and avoid real work at home, in local communities and to organize a more sustainable prosperity.

By operating Blockchain Organizing we become a lot more productive and we save more time. We can use this surplus for the next step in our evolution: the sustainability of the prosperity we enjoy and to secure this for the future of our children. That is also growth and progress. Growth is not just more in the 'here and now', but also better and in the 'there and later'. The first step to use Blockchain Organizing is the transition from hierarchy to market. To differentiate between traditional markets (markets between two hierarchies), we call these new markets also: network organizations. Management and leadership can play an important role in this transition, both in a positive as well as in a negative way. When you see technology as a danger, you will resist the introduction as much as possible, whether or not anonymously. When you see technology as a basis of our evolution and progress, you will embrace it and discover what your new added value will be. This book will also help you with this.

Apart from a positive contribution to our productivity growth, Blockchain Organizing also ensures that personal data can be better protected. In the coming years

more and more organizations will face problems due to the new and much stricter European privacy law (GDPR). The problems that we expect can no longer be solved by more IT, lawyers or 'Data Protection Officers'. The anticipated problems can only be solved with another mind-set, new thinking, a new IT-architecture and a fundamentally new way of organizing supply and demand in a digital context. This will increasingly happen with humans as the unity of design, as the starting point of organizing supply and demand instead of firms, banks and governments. People will become owner of their personal data. Blockchain Organizing and concepts like Personal Data Service, Bring Your Own Data and Data Self-Determination will help with this. The future of our digital society can be seen as an American barbeque party whereby you bring your own food and drinks. When you buy a service from a company or government authority you yourself provide the data that this organization requires to perform the business process, such as the printing of an address label by the company Amazon to send you this book.

In addition to increase our productivity and securing privacy we also want to use Blockchain Organizing to become less dependent on large tech companies. Blockchain technology can provide an important contribution to decentralization and the construction of a general data common whereby we are less dependent on companies like Facebook and Google, for using data, sharing files, messages or promoting products. This way, we the people will also be able to, jointly, curb propaganda in a much better way.

A final incentive for companies to introduce Blockchain Organizing is to make processes more efficient. This can be useful in the short term, but in the long term more and more processes will have to be transferred to shared information- and transaction networks. This means that processes must be 'prepared' to be transferred from company to network. Currently for some organizations blockchain technology is only considered as a technology to make processes within the existing system more efficient while the system is the problem.

Our intentions with this book
How can you start with Blockchain Organizing in your own organization, supply chain or ecosystem? Which innovations do you require for this and how do you organize these? With this book, we want to help start-ups, enterprising people and organizations to operate the management concept of Blockchain Organizing. This book can help you to set up and implement a blockchain project within your organization or network. We, ourselves, have helped to set up many of these projects as consultant, project leader and sometimes as an entrepreneur. These projects have led to the design, development and setup of shared information and transaction networks. Through this book we like to share our acquired knowledge, experience and methodology. For example, this book offers some kind of organizing capacity, a process and proven method for your own project. Purpose is to implement your idea in terms of Blockchain Organizing within your organization or maybe within a new foundation, limited company or cooperative to be established.

You could regard our method of Blockchain by Design and our way of project-related working as some Kickstarter with the difference that you not only could bring money together, but also other building blocks, like a network, methods and techniques, a Blockchain Organizing Center of Knowledge (BLOCK), infrastructure, transition program etcetera. Our intention with this book is to further strengthen the movement towards a more sustainable prosperity with the help of organization technology.

What to do next?
If you would like to proceed with Blockchain Organizing after reading this book, we advise you to appoint a 'blockchain lead' within your organization or network. This lead is the first appointed person who keeps track of developments, advises management and, for example, sets up and supervises projects. A blockchain lead prepares the organization to use Blockchain Organizing and is therefore some kind of forerunner or quartermaster. Some examples of the tasks:
- recording developments, visiting conferences, establishing network
- designing and setting up Proof of Concept projects and experiments
- creating conditions for a successful implementation
- coordinating different internal and external roles

Finally
This book is full of ideas about the use of blockchain technology, but not all ideas have to be executed as described. A good book doesn't do the thinking for you but makes you think. Play with the idea of Blockchain Organizing and try to imagine what it can do for you and your organization, without immediately having to decide what you actually will do with it. To realize a fundamental change there will have to be a good balance between the existing and new world. This means that we, with this book, focus on both 'traditional' managers, consultant and policy makers as well as dissenters, evangelists and pioneers and everything in between. The fact that you have picked up this book probably means that you are fascinated by the idea of Blockchain Organizing and that you in any case would like to know more about it.
We are aware that we sometimes might have chosen an explanation or example that technically is not 100% correct or definitely has to be. On the one hand, this is due to the fact that blockchain technology is still developing feverishly. In a number of areas, no consensus has yet been found. On the other hand, we have chosen to give a simplified (technical) explanation as this book does not primarily focus on blockchain technology or blockchain developers, but on management problems that we want to solve and on organizational aspects of blockchain. If you want a further deepening (both organizational as technical), we advise you to read our book 'Blockchain Organizing: foundations for a new social-economic order' (called book 6, see also colophon, only in Dutch at the moment).

We hope you'll enjoy reading this book.
Paul Bessems and Walter Bril
Eindhoven, the Netherlands, May 2018

1. Introduction

Imagine you lived a long time ago and looked at the sky, see the moon and stars….You must have been thinking that you were the center of the universe and that everything else was revolving around you. That was the prevailing view until somebody called Nicolaus Copernicus came up with a completely different model. He developed a different world view and stated: *"Those things which I am saying now may be obscure, yet they will be made clearer in their proper place."*

The majority of the people we as authors engage with nowadays don't immediately understand the new world view we are promoting. They 'think' in a similar way as people did before Copernicus: that their job, department, company or industry is the most important dot in the universe and that everything else revolves around it. Most companies see themselves positioned between purchase and sales. When a new technology comes to their attention, they will probably integrate this new technology from the perspective of their existing job or organization. The way they will organize trust, work and economics will not be fundamentally changed as result of that new technology. Their reasoning will be: 'Let's put this new technology in our organization and strengthen our business model'. They do not want to cannibalize their existing revenues. They assume or hope that it is just a new technology that will not impact their business.

Well, Blockchain Organizing is not business as usual disguised as innovation. Blockchain makes value exchanges as easy as sending an e-mail. Blockchain has the potential to organize transactions and economics without the traditional institutions such as money, contracts, brands and hierarchies. It even has the potential to disrupt modern institutions such as peer-to-peer business platforms and non-transparent algorithms. Uber, Facebook and other platforms are examples of new technology dressed up in an old 'business model'. You can put lipstick on a pig, but it's still a pig. Blockchain Organizing has the potential to reinvent management and turn hierarchies into markets and eventually into shared information and transaction networks. Not for a few industries as internet did, but for most of the industries we know of.

Digitalization is not the same as automation. Automation started roughly in the mid-twentieth century in a context of expanding industrially based organizations. It automated relative simple and routine processes such as bookkeeping and document management and it stored data in databases instead of filing cabinets. All of this work was done with 'the firm' as unity of thinking, analyzing and design. If you automated processes at that time, it was within a department or a company, not within a business ecosystem. As a result of this 'firm based IT development' process, we expect that the vast majority of IT service companies still uses the 'firm' or a department as starting point for their automation, which they unfairly call digitalization.

You could say that digital transformation is automation plus the change of the organization model. Digitalization is processing transactions between the smallest organization units (humans and resources on the supply side and activities on the demand side) in an autonomous and decentralized way. This means actor-oriented design with the smallest building blocks in mind: humans and resources, supply and demand. And when both technology and organization model fundamentally change, most of the organizations that are unwilling or unable to adapt, will become irrelevant with respect to organizing trust, work or economics. If they are no longer the most efficient way to coordinate supply and demand, they will disappear eventually. In that context, we expect that more and more IT-companies in Europe will become utility companies that use and share a data common, similar to other utilities such as electricity grid, roads- and water infrastructures. It is possible that Europe, the USA and China will develop different data infrastructures: Europe more private/public, the USA more private and China more state controlled infrastructures.

Blockchain Organizing is a new management concept and concerns embedding a disruptive organization technology (blockchain) in a fundamentally new organizational model (Weconomics). It promises to reorganize trust, work and economy. It claims to largely replace money, contracts, administrations and hierarchies by programmable trust. Blockchain Organizing does not just improve productivity; it also ensures more privacy and limits the power of large companies, banks and central governments. The influence of Blockchain Organizing will be substantial in the long term but its use in our daily lives will go step by step. Important is leadership and the manager's contribution to this process. In any case, you as a manager can no longer ignore this new management concept. In the coming years it will not just affect your position but probably also your organization and perhaps change it fundamentally or even make it redundant. We can see 'the blockchain'[1] as the next stage of 'the internet'[2], but also as an additional layer to the internet.

Internet makes it possible to send a message in a secure way from sender to receiver. But basically every time you send a message, you make a copy. The email you send is in your 'out-box' and in the 'in-box' of the receiver. We find it okay to copy information when we send hundred carbon copies of an email. But when I, as a sender, have to pay you and your neighbor each twenty euro and a make a photo

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[1] A 'single blockchain' does not exist. There are several chains of blocks. There is not one blockchain. There are private blockchains (similar to intranet), public blockchains (similar to public websites) and more hybride types (similar to login websites). They use different principles, techniques, governance models, protocols etc. When we use 'the blockchain' or 'blockchain' in this book, we mainly mean this as a theme, as a (organizational technology) concept. Concepts like blockchain technology, blockchain organisation, blockchain community and blockchain infrastructure are part of this.

[2] A 'single internet' does not exist either. It is a collection of concepts, techniques, media, agreements, protocols, websites etcetera.

of a twenty-euro bill and email it to you and your neighbor with the remark: 'it is payed for', you probably will say: 'that is not okay'. We find it not okay to copy money, or more general: values. And the receiver probably also wants to know, whether or not, the sender is the rightful owner of the twenty euro bill. So basically, blockchain adds two import functions to internet that already has secure transport from sender to receiver in its protocol. These two functions are: are you the owner of the value you want to send and do you send it only once? A blockchain secures these three important value transaction characteristics.
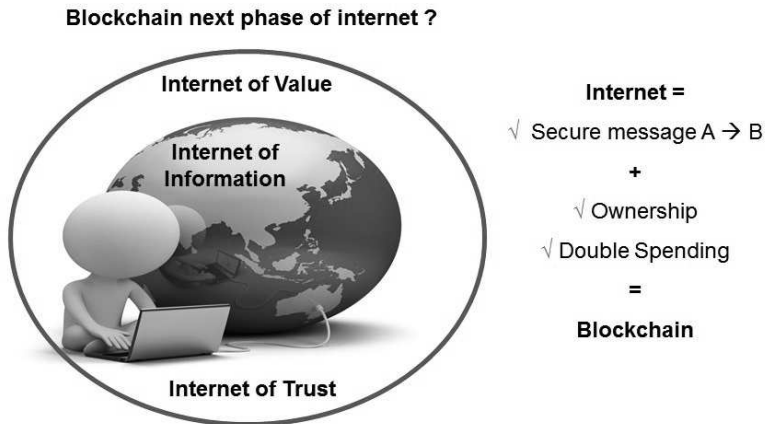

Figure 1.1: Blockchain: additional layer to internet: internet of value or trust

Internet makes it possible to share information without almost any friction. With a blockchain we can do business with each other, without having to trust each other. The 'only thing' we must trust are the underlying mathematical proof, the organizational principles, the protocol and the people who design, develop and maintain it. Blockchain Organizing ensures the proper organizational embedding of blockchain technology. This allows us to coordinate, validate, process and store transactions. It functions automatically and autonomously without the involvement of third parties, such as notaries and accountants, and without any significant transaction costs[3].

Suppose you have a community for demand and supply of management services like: conferences, training courses, consultancy services and interim managers. With Blockchain Organizing, and more specifically a smart contract, you can facilitate the following processes: profiling, searching, selecting, approving, contract preparation, ordering, confirming, planning, invoicing, paying, evaluating, registering, administrating and archiving. You will not do this on your own, but with and in your business ecosystem. The core of Blockchain Organizing is transferring values from

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[3] See also the transaction cost theory of Ronald Coase, for example in his article: 'The Nature of The Firm' (1937).

seller to buyer. The 'challenge' is to do this at the lowest possible costs. The processes, required for these transfers, are mainly protocols with if-this-then-that-statements[4]. Another example: suppose you want to sell your house. You need a notary for this. This reliable third party normally performs four checks:

- Are seller and buyer the person they claim to be (*authenticity*)?
- Is the seller the owner of the house (*ownership*)?
- Does the seller sell the house only once (*double spending*)?
- Is the transfer form seller to buyer done safely (*security*)?

In principle, these steps can be programmed, as has been done with Bitcoin. This means that we can, to a large extend, replace the organizing of trust by means of the use of social institutions (such as traditional management), by the organizing of trust through the use of blockchain technology. Social institutions have the disadvantage that the complexity increases. Blockchain technology, provided they are used correctly, has the advantage that productivity will increase, privacy can be better assured and the power of mainly American tech-companies will be reduced.

Blockchain technology is a type of organizational technology that makes it possible to work much more efficiently, especially within offices where many knowledge workers are engaged. Blockchain Organizing makes it possible to autonomously and decentral perform almost all validation, administration and archiving processes without third parties and many existing manual management processes.

The best definition of a blockchain is a chain of blocks; a block is a collection of transactions that (logically) have taken place at the same time and about which there is an agreement that they have occurred. A transaction is transferring the value from the seller to the buyer. The offering, searching, booking and paying of management services can also be performed with blockchain technology. So, hardly any people are required anymore to do this. Whether the implementation of blockchain technology will succeed, does not depend on the technology but on the used management model and the guts to let go of existing institutions and striving for full employment (making full use of the production capacity).

1.1 What do you need to do business?

Why does the number of managers in healthcare grow with an average twelve percent per year?[5] Why does bureaucracy cost us 1.3% in productivity growth? And why does a ten-kilometer ambulance ride costs seven hundred euros? All questions that are related to the core of organizing: uncertainty reduction and the organizing of trust. As we can see in figure 1.3 organizing in its core includes: specializing,

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[4] Also called IFTTT.

[5] See for example: The number of NHS managers has grown by almost 18% in the four years since the government introduced a 'bureaucracy-busting' shakeup of the health service, according to the latest official data, see article in The Guardian: 'NHS gains 4,000 more managers but loses GPs' (15-04-2017).

coordinating and finalizing. Coordinating capacity brings specialists together to complete activities. In the example of the ambulance (finalization), these seven hundred euros do not just cover the costs of the direct people and resources (specialization). A large part of the costs is spent on coordination between demand and supply, actually on organizing trust and reducing insecurity. For example, we find it important that the ambulance arrives on time, that the staff is well trained and that the equipment complies with the latest safety standards. We must be able to trust that the ride with the ambulance does not make us sicker. Organizing this trust, reducing insecurity, costs money. The question is not whether coordinating capacity costs money or not. The question is which coordinating capacity costs the least money with the condition that that way trust is organized must not lead to a more complex supply chain.

Complexity is growing
According to research by Gary Hamel and Michele Zanini[6], increasingly more people are employed in the trust industry. This creates bureaucratic organizations. While the number of people in primary processes has been reduced, the number of managers and supporting staff has almost doubled between 1983 and 2014. Despite, or maybe thanks to, all kinds of investments in lean and mean programs, ICT technology and management development programs, the number of managers is increasing. Managers have an important role: they reduce the insecurity in transactions[7]: they organize, coordinate and provide trust so the primary process goes as expected. But they also have an impact on the transaction costs. And when the transaction costs increase and the primary turnover stays the same, productivity reduces.

Because the complexity is growing, the transaction costs increase. As a result, our welfare becomes far too expensive. The productivity growth cannot keep up with the increase in welfare costs. Healthcare, safety and education become too expensive and the welfare state is crumbling, which partly explains the rise of populism. The core of our welfare problem is that the costs of our welfare are rising much faster than our productivity. It is okay to earn more or spend more on welfare as long as the system becomes more productive. But despite investments and innovations like internet, IT, cloud services, social media, management training courses and so on, productivity has insufficiently risen to keep up with the rising welfare costs. This phenomenon is also known as the productivity paradox.

We can no longer justify our welfare state with sufficient productivity growth. This is not due to the absence of appropriate technology but because we strive for full employment and use the wrong resources to organize trust and work. To break this

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[6] Gary Hamel and Michele Zanini: 'More of Us Are Working in Big Bureaucratic Organizations than Ever Before' (Harvard Business Review, 5-7-2016).
[7] The 'cooperation' between two colleagues or between a colleague and a flex worker etcetera can also be seen as a transaction with transaction costs.

pattern, we must reinvent management and go back to the fundamentals of organizing work.

Economy is driven by complexity

At the moment we create, often unconsciously, a complex world because we strive for full employment in addition to innovation. For some reason we refuse to accept a simple world because we are afraid to be left without any work. We create fake work at the office to avoid real work at home. Plus, in accordance to the system we 'must' grow two percent per year. Almost every entrepreneur has growth DNA. But the result is that we do not become more prosperous, but instead make our world more and more complex and erode the earth. The only way to correctly deal with complexity is to go back to the basics; to the smallest building blocks and the fundamentals of organizing work.

This is an important role for managers and the consultants who support them. There is an important role for professionals who no longer earn their money with complexity but who want to contribute to provide more welfare for more people. The strength of Blockchain Organizing is the simplicity of the underlying organizational model. It is based on a limited number of basic principles of organizing work and trust. All that Blockchain Organizing requires are the small building blocks: man and resources and the connections between them. That is all! It is the perfect way to cooperate in a smart way within and mainly between organizations. The beauty of this disruptive management concept lies in the simplicity. It makes it possible to coordinate demand and supply without expensive institutions and with a good balance between scalability and flexibility, competing and cooperating and the individual and the community.

Trust paradox

When executing transactions, we are prepared to incur costs to reduce insecurity. But if the various resources to reduce insecurity are not correctly aligned, the complexity increases and therefore also the insecurity. In case of bad alignment, the insecurity reduction creates a new problem: complexity. And an increasing complexity again leads to more insecurity and distrust. This way a vicious circle of cause and solution is created: in economic theory also known as reflexivity. This also leads to active inertia: we do a lot, but we do not move. So, a paradox is born when organizing demand and supply: by reducing insecurity, the insecurity increases. This paradox is also called the trust paradox: *In order to improve trust, distrust grows*.
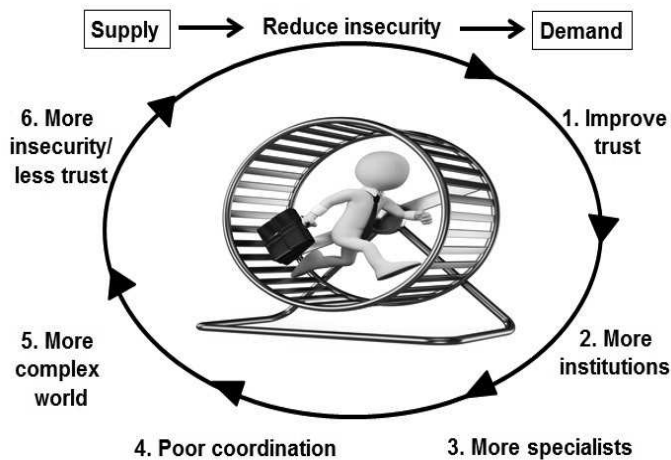
Figure 1.2: The trust paradox: in order to organize trust, distrust grows

What is trust?

Stephen R. Covey[8] formulated it as follows: "*Trust is the glue of life. It's the most essential ingredient in effective communication. It's the foundational principle that's holds all relationships*". Trust is a broad and difficult to grasp concept that is widely represented in our lives. All four living atmospheres (personal, public, private and politics), learning atmospheres (art, sports, education and religion)[9] and working atmospheres (agriculture, industry, offices and welfare) require trust to make and maintain a connection. Managers wonder if they can trust their employees: for example, do you trust, as a manager, that your employee will perform the task correctly? Or do you trust that the intentions are good and the employees stick to their agreements?

You could divide 'trust' in human aspects (human relationships) and resource aspects such as craftsmanship. Emeritus professor Bart Nooteboom[10] puts trust in a time dimension: "*Trust is of all times. It is pervasive and indispensable.*" In his book 'Trust: Forms, Foundations, Functions, Failures and Figures', he discusses organizing trust within and between organizations. He also makes a link with the transaction cost theory of Coase and Williamson. In his book he answers questions like: can trust serve as a tool to manage relationships? Is trust a substitute, a condition or for example a result of a contract? According to Nooteboom trust is essential in order to be able to make and maintain connections.

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[8] Stephen R. Covey (1932- 2012), was an American bestseller author. He wrote, among others, the bestseller: 'The Seven Habits of Highly Effective People'.

[9] See also the Agora model (the world is much simpler than you think) develop by René Gude (1957-2015), a Dutch philosopher.

[10] Professor 'Innovation Policy' at the universities of Tilburg, Rotterdam and Groningen.

Organizing trust is a 'core activity' for manager. However, trust is complex and versatile. It would require a separate book to discuss this further. For the purpose of this book we can only share a few insights related to organizing trust[11]. Block-chain Organizing, and the organizing of trust within it, only focuses on a limited part; trust that you require to initiate and execute a transaction and to check and register the execution. The correct execution of these processes subsequently has an impact again on the next transactions and other aspects of trust. We mainly need trust when we do not know the other party, for example a supplier, or do not know how this supplier will behave under certain circumstances. We need trust because purchasing and sales do not take place simultaneously and at the same physical location.

It is important to know who to trust and what to trust. There are major differences in how and to what extent we organize trust. A system that you must trust is more abstract than a contract you can use to trust someone. There are categories of trust whereby, for example, risk of damage, delivery time, distance, price, personal contact or not, are characteristics that influence the need or expectation of trust. It is also often difficult to establish afterwards what has betrayed the trust. Was it opportunistic behavior, a lack of research or the wrong competences? All these aspects results in the innovation of a large number of instruments to organize trust and there is Blockchain Organizing added to the long list of instruments to organize trust.

With blockchain technology we can organize trust much easier because we use a technical script based on mathematical proof. We start from organizational principles, the smallest building blocks and the connections between them. In principle, trust mainly concerns the connection between two people. Whether or not they will use any resources for this is secondary. They can also use their experience, intuition and hormones. But organizing trust is still difficult to make 'feasible', even with Blockchain Organizing, human interpretations remain possible. Blockchain opens a new road: trust between people starts where machine control stops.

Companies to organize trust
Many companies have turned organizing trust or reducing insecurity into a product or service. For example, banks, governments, auditors, accountants, software companies, lawyers and notaries. Hierarchies, positions, permanent jobs and money: they are all resources to reduce insecurity and to organize trust. But when these tools are not coordinated in a proper way, they create the opposite effect. In organization theory, we call these tools also: institutions or agents. When you merge a number of institutions, an organization is created with a building, employees, an organogram, a structure, a culture and an own ICT system. The most common order we use to coordinate different tools are: the firm as a structure with the mar-

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[11] More about organizing trust in the book: 'Blockchain Organizing: foundations for a new social-economic order' (Bessems & Bril, 2017), also called book6 (see colophon, only in Dutch).

ket as coordinating capacity between firms. The firm itself is also a form to coordinate (internally) and to reduce insecurity.

When organizing work, we choose by default to do the work ourselves (via the firm) or to outsource it (via the market). An advantage of a firm is scalability a disadvantage is its inflexibility. For a market it is the other way around. In our fast-changing world we mainly need a hybrid form between doing it yourself and outsourcing, between the firm or hierarchy and the market. Internet and blockchain are very scalable (with six connections you know the whole world) and humans are very flexible. New organizational forms are decentralized platforms that bring specialists together and carry out transactions when needed. For this to work, we need a good balance between scalability and flexibility. Structured flexibility is one of the five organizational principles of Blockchain Organizing. More about this in paragraph 2.5.

Depending on third parties

When organizing trust, we depend more and more on third parties (agents or intermediaries), such as a notary and a bank when selling a house. We depend on institutions that we use to organize trust. Relatively little attention is given to the function IT could have when organizing and actually automating trust. Blockchain technology will change this. For this we mainly have to investigate the relationship between trust and control. Trust and control are both a supplement as well as a substitute. Blockchain technology in particular can make a difference in organizing control (input references, double spending, encryption, keys and digital signature) and therefore be a supplement to trust. You could see trust as 'giving more freedom', and control as limiting this freedom when you have transactions executed via a protocol.

You limit the freedom but provide more control and therefore probably more trust. When you have transactions executed with human interpretation, you provide less control and more freedom. In some cases man is better at organizing trust and in other cases (often routine-like common transactions) a protocol is better. But to realize this we need a paradigm shift in the way we organize trust, work and economy. Blockchain Organizing is a new way to organize management in relation to the organization of trust, work and economy. To understand the paradigm shift and the strength of Blockchain Organizing, in the next paragraph we will go deeper into the theory of New Institutional Economics (NIE) that explains, why, in our modern times, we need so many intermediaries, between demand and supply.

Who produces trust?

You could ask to what extent the blockchain software development process is sensitive to the perspective of the people who design and develop the protocol? We think that certainly on the design side, the designer is driven not only by a certain perspective on humans, society and societal problems, but also by the way communication is organized or management is done, or how our socio-economic order is