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THE ECONOMIC SOCIOLOGY OF DIGITALISED PAYMENT SERVICES

Abstract

The article argues that digital means of payment aim at a fundamental change of the everyday economy by thrusting aside traditional banking. It compares the so far successful Paypal service with Bitcoin, which has failed to gain widespread acceptance as a means of payment. However, this is only an interim result, because these payment solutions represent models that are constantly imitated and improved by competitors. The article argues that the core of the development changes the relation of contracts and property, as well as the resulting social relations in market societies.

Keywords: economic sociology, law, digitalisation, money, credit

INTRODUCTION

The research problem of the article is the change of the political governance of the economy as a consequence of digitalisation¹. Since the establishment of market economies in the nineteenth and twentieth centuries, banks have played a crucial role as managers of liquidity and credit providers, and trust was one of

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their most important *social* resources. Economic textbooks explain this with the risks involved in the management of assets and liabilities. Banks depend on the trust of their customers, which is easier to maintain in a clear, homogeneous and familiar environment [Jaffee 1989: 258–302]. Yet, digitalisation is challenging the role of banks in the economy because it basically allows the payment handling to take place on the same platform as the sales negotiation.

However, the dissemination of individual market relations due to digitised communication leads to a shift rather than to a resolution of the problem of trust. The role of banks as *third parties* that guarantee the economic capacity to act must be taken over by the negotiation partners themselves. The empirical comparison of the digital payment solutions *Paypal* and *bitcoin*² in this article shows the increasing importance of contractual relationships and the framing of property as replacements of trust in banks.

The intertwined analyses of economic and legal relations necessary to answer the question require some initial theoretical clarifications. The popular *law and economics* approach ascribes *natural* rationality to actors, which makes it unsuitable for the theoretical research question of *how* rational relationships of trust are established. Hence, this article applies the economic sociology of law approach, which is explained in the first subsection.

Then, the article turns to a comparison of *Paypal* and *bitcoin*. The two different types of digital means of payment were created to facilitate trading on the Internet. *Paypal* presents itself as a monetary payment service, mediating the transfer of money from bank accounts to salespersons. In contrast to this, *Bitcoin* deliberately claims to represent *money*. However, a closer look reveals that these demarcations are not as clear as they seem to be at first glance. In particular, both means of payment contain some form of *credit* due to the temporal delay of the transactions and, hence, trust.

Paypal has become successful and well-known, whereas *bitcoin* can be considered a failure, because it is not widely used as a means of exchange and has turned into an object of financial speculation instead. However, both models have been emulated and challenged by competitors, and in the rapidly changing realm of Internet business, new solutions may quickly expand their market share.

Digital payment services are confronted with two main problems: the fulfilment of contracts and the verification of existing property for exchange. On the Internet, these problems are more severe due to the difficulties in verifying

² Confusingly, the lowercased *bitcoin* refers to the currency that is transferred in a network signified by the capitalised noun *Bitcoin*.

the personalities of the actors and in controlling the finalisation of economic transactions. This study argues that the success of Paypal and the failure of bitcoin is caused by the specific form of contractual obligations and property rights in their respective networks. Additionally, this study shows the weaknesses of the successful example and possible improvements of the failure, which may cause further changes in the future.

THE ECONOMIC SOCIOLOGY OF LAW

This analysis of digital payment tools deals with the contractual safeguarding of mutual obligations on the one hand, and the legitimisation of claims towards commodities or payments on the other. Hence, the economics of digital payment tools is embedded in legal relationships [Polanyi 2001; Granovetter 1985].

The economy and law are always closely linked, but usually, they are analysed separately. This is true not only for scientific analysis but also for everyday life – citizens treat economic matters differently from legal affairs, despite their interweaving [Zelizer 1994; Ewick, Silbey 1998]. This general social differentiation is a crucial characteristic of modern societies [Weber 1978].

The close connection between the economy and law is caused by the competing interests of social actors in the utilisation of resources. In a market society, which inevitably has to be a monetary society, it is not sufficient to possess the financial means to buy a commodity or, the other way round, to own a commodity in order to sell it. It also requires *legality*, so that other actors are willing to accept the success of a competing buyer or seller. This legality is based on a mutual acceptance of obligations and rules [Weber 1978: 635–640]. It confirms that law is more than an accumulation of public edicts, which may be enforced by state powers: “Law is not just formalized doctrine; it is legality” [Edelman, Stryker 2004: 530].

The most prominent approach to studying legal and monetary matters together is the *law and economics* approach [Cooter, Ulen 2012; Posner 1986]. It analyses the legal relations of economic activities by applying basic concepts of economics to law [Posner 1986: 3–17]. Unfortunately, this includes the acceptance of natural presuppositions like that “man is a rational maximizer of his ends in life” [Posner 1986: 3], and a fundamental misconception of money when Posner rejects “one of the most tenacious fallacies about economics – that it is about money. On the contrary, it is about resource use, money only being a claim to resources” [Posner 1986: 6].

In contrast to this, the *economic sociology of law* sees money as a medium which offers society more options than just mediating access to resources. Its amount can be manipulated, and it can be credited. The simplification of money to a “claim to resources” was countered most evidently by Joseph Schumpeter as he wrote that “you cannot ride a claim to a horse, but you can pay with a claim to money” [Schumpeter 1996: 305].

Interestingly, due to the emphasis of a “claim to resources” as a basic social mechanism, one would expect from the *law and economics* approach a decisive definition of the concepts of contract and property as those institutions that regulate such claims. Yet, as Merrill and Smith have to admit, there is no clear boundary to be found between these two concepts. In fact, there is not even a consensus if property refers to an *in rem* right, i.e., a contract that refers to a thing, or if it is an *in personam* right, which refers to a defensive relationship towards other persons [Merrill, Smith 2001a]. In the first case, the property would be of a substantially different character than a contract, which refers to social relations of persons, but in the latter case, it would be a bundle of contractual rights. Merrill and Smith discuss this problem by applying the *law and economics* principles, which means that they analyse the social costs of the concepts.

However, there is a fundamental problem with this form of analysis. It treats the single preference of social actors, i.e. the maximisation of utility, as an exogenous and natural factor, and the method of rational choice as an invariant and absolute term of analysis [Edelman, Stryker 2004: 528]. The individual will is seen as a constant endeavour to reduce the transaction costs and the opportunity costs of *any* social interaction, and it remains the only purpose of social actors [Posner 1986: 5–9].

The problematic core of this approach was revealed by Talcott Parsons from a sociological point of view. The concept of human beings as utility maximisers resolves the individual freedom of action into nothingness. If all human beings strove *automatically* for a rational satisfaction of wants, the origins of these wants would become dubious. Theoretically, there would remain two options to conceptualise the freedom of wants.

The first would let them emanate unpredictably out of the minds of actors. Yet, if there were absolutely no link between the wishes of actors and their social environment, it would be impossible to explain social order. The sum of individual wishes would be accidental, and permanent conflicts of an unresolvable character would be the very likely result. In other words, Thomas Hobbes’ famous image of a *war of all against all* would be the most probable effect.

Alternatively, the wishes of actors could be conceptualised as resulting from the cultural and social environment of social actors. In that case, a complete analysis of this milieu of individuals would reveal their wishes as a causal effect, and social actors would be designed as economic dopes, in a way, because they would only execute wishes which had been programmed into their social environment. Hence, utilitarian thinking is unable to explain the freedom of social action [Parsons 1968: 3–125].

Due to this deficiency in regard to the explanation of individual freedom, the *law and economics* approach will be substituted here by the *economic sociology of law* [Swedberg 2003]. To explain the success or failure of payment services, it is crucial to be able to locate the freedom of decisions of customers sociologically. Tellingly, the *law and economics* approach not only fails to accept individual freedom of action, it also has difficulties explaining the precise relationship between contracts and property and, hence, is inapt for the current research question.

Assuming the fundamental freedom of individual social action does not mean that actors cannot deliberately plan a maximisation of utility, of course. Yet, the crucial point is that an instrumentally rational action represents one among countless other options, and a meaningful economic analysis has to reveal the conditions under which this possibility is realised [Callon 2007]. Freedom of action, which includes the possibility to take a risk that was rejected by others, designates the core of a profitable market economy [Weber 1978: 63–71; Knight 1921]. The *law and economics* approach begs the question of where to locate the freedom of action.

The pragmatic turn of economic sociology, which aims at eradicating this flaw, has mainly focussed on the role of calculation in economic action so far [Callon 1998; Muniesa, Millo, Callon 2007]. The research presented here will include law in this analysis. It adopts the deliberate perspective of an economic sociology of law because the relationship between the economy and law is characterised by a definite temporal structure. Economic social action is future-oriented, whereas law is based on a legitimacy that roots itself in precedent and the traditions of the past [Weber 1978; Swedberg 2003; Glenn 2010]. This means that law represents the social and cultural framework, in which economic actions are “embedded” [Granovetter 1973, 1986 Polanyi 2001;]. The *social* characterisation means that it is personally brokered between actors, and *cultural* means that it is present as a taken-for-granted resource of interaction. Law as culture can be interpreted as a “frame” [Goffman 1986]. However, such a permanently available resource of interaction requires non-social stabilisers [Latour 2007]. In this case study, the

digital representation of legal texts will be identified as a stabiliser of economic action, as the frame of interaction [Smith 2001; Cooren 2004; Latour 2010].

Instead of starting a theoretical debate on this argument, I will perform an empirical analysis here. Based on the insights of ethnomethodology, I will ask which kind of actors are confronted in the discussed means of payment, and the term *actor* is applied to personally present human beings as well as *market devices*, i.e., material tools which represent and mediate the economic action of distant persons [Garfinkel 1967, 2002, 2006; Latour 2007; Muniesa, Millo, Callon 2007]. Legal texts play an important role because they possess the ability to channel interaction between distant points in space and time, they represent organisations and institutions at distant local spots, and they shape the meaning of local interaction [Smith 2001; Cooren 2004]. The researcher himself will take the double position of a customer with the intention of making use of a payment means, and of an analytical observer who scrutinises the economic and legal resources of a payment service provider.

PAYING WITH DIGITS

This section compares two well-known and globally acting digital payment means empirically. It starts with the analysis of Paypal, which is well established as a payment service provider. In 2017, it generated a revenue of more than 13 million US Dollar and concluded more than 2 billion transactions in both the first and second quarters of 2018. Since the fourth quarter of 2014, Paypal has managed at least 1 billion transactions per quarter [Statista 2018: 6–7].

The cryptocurrency bitcoin, by contrast, is barely used as a means of payment. Instead, the attention of the mass media is generated by its function as a means of financial speculation. In contrast to Paypal, bitcoin deliberately claims to be *money*, and the usual way of receiving it is by exchanging it with a traditional currency.³ In other words, bitcoin has turned into commodity money whose value depends on the demand for it [Hart 1986]. As a consequence, the exchange rate between traditional currencies and bitcoin is extremely volatile. Measured in US Dollars, it achieved a peak of 19,840:1 in December 2017, but dropped below 4,000:1 in December 2018. This degree of volatility makes bitcoin unusable as a means of payment because payees cannot be sure how much counter-value they will get in the future.

³ Initially, there existed the option of receiving bitcoins as a reward for active contributions to the maintenance of the network. However, due to the constantly decreasing amount of this reward, which is programmed into the software, this option has nearly vanished [Franco 2015: 143–158].

It is difficult to measure the usage of digital payment tools and to characterise their users. This is particularly true for bitcoin, which was designed for anonymity. A representative survey conducted in Germany with a rather small sample of $N=1,507$ showed that a quarter of all respondents had used digital payment tools. The younger the respondent, the higher the share: 38 per cent of the under-29s had used them, but only 10 per cent of those over 60 had. Paypal had been used by 16 per cent of digitally active respondents [Oliver Wyman 2019: 3].

Although digital payment tools claim to offer an international service by their very nature, both means of payment have been tested from a German point of view. Despite the global interconnectivity of economic transactions, they always have to be performed locally, and especially under the condition of local law. As will become clear in this section, the material effects of digitally performed exchanges depend on national law to a huge degree. Hence, they are “glocalised” in the meaning of Roland Robertson [1992]. Maybe, an analysis of these tools from the perspective of a different country would generate different results.

The starting point of the analysis is the insight that digital means of payment are technologically, legally, economically and socially complex tools. However, they have to be presented in a plain, understandable and reliable way in order to attract customers. In this regard, I will take Goffman’s term *frame-work* quite literally: the customers of digital means of payment must figure out the functioning of digital payment tools without assistance, i.e., they have to *work* on the *frame* in which their interaction takes place.

Yet, as I am dealing with monetary transactions, it is unlikely that social actors are willing to invest a lot of normalisation work in case of confusion or events that contradict their expectations. This is an exception of economic interaction because usually social actors are willing to correct a social situation that disturbs their common sense expectation of a *normal* scene by applying additional explanations or by coordinating misunderstandings [Garfinkel 1963: 217–235]. However, in situations of monetary payments, a much higher importance of trust can be expected [Sztompka 2003]. Before the era of the Internet, banks took the role of generating this trust by guaranteeing the validity of currencies, the safety of deposits and the likeliness of liquidity by credit granting. However, in a digitalised environment, a solitary actor in front of an irritating payment tool will probably terminate a monetary transaction before completion if he encounters a mishap, an incalculable outcome or a loss of money. Therefore, the unambiguity and the usability of digital payment tools are the starting point of the empirical observations.

THE SUCCESS STORY: PAYPAL

Paypal is a stock market-listed online payment service provider which originated in the year 2000 from the fusion of two start-ups that had been looking for a simplification of payments on the Internet. The success story of Paypal is wedded to the Internet auction platform eBay, and this connection explains its functioning to a huge degree. eBay purchased Paypal in 2002. Since 2015, Paypal is no longer a subsidiary of eBay, but their business relationship will remain stable until 2020, and continue on a less intensive scale until 2023. Since 2007, Paypal has had a banking licence from Luxembourg, which grants it the right to operate as a bank in the European Union.

In Paypal, a financial account consists of an e-mail address, and monetary transfers are received at and sent from this address. This e-mail address is linked to a bank account or credit card. Either a deposit is transferred to the Paypal account first, or the bank account or credit card is debited with the due amount after a purchase. This means Paypal does not manage any capital itself; it only concludes payments. In its German user agreement [AGB], it claims to deal with “e-money”, hence not with *ordinary* money, which has the important consequence that money invested in a Paypal account is not subject to Luxembourgian deposit insurance. Customers’ money would not be protected in case of a Paypal bankruptcy. The user agreement clarifies: “In particular, the Paypal services do not constitute a deposit or investment service within the meaning of the above-mentioned (i.e. Luxembourgian) Banking Act” [Paypal AGB from 09.01.2018, section 1.1]. This raises the question of what exactly Paypal is dealing with, because e-money obviously means something different than electronically accounted for money.

After opening a Paypal account, the connection between an e-mail address and a bank account or credit card is checked by a single transfer of a minimal sum of money. If the transfer can be finalised, the connection is deemed valid. However, this test is inapt to check the identity of the Paypal customer, because it only verifies that the keeper of an e-mail address has access to a defined bank account or credit card. This is compensated by a declaration of consent in the user agreement, which allows people to open an account only for themselves or on behalf of their own company [AGB section 1.7]. This means that Paypal implicitly supposes the trustworthiness of the identity of its customers.

Although this provides a sufficient defence for Paypal in case of a lawsuit, it offers no security to its customers. This is important because Paypal does not provide a register of its clients or an option to search for them. They only present a kind of shortlist of Internet shops offering Paypal payments on their website,

but this list is neither complete nor searchable. This means that a Paypal customer has to look up the e-mail address of possible transaction partners somewhere else – and here the auction platform eBay comes in.

eBay began as a kind of Internet-based flea market. It attracted sellers and buyers by the simplicity of trading and the sheer quantity of possible trading partners which is offered by a platform globally accessible on the Internet. It allows its sellers to present their commodities on an Internet-based search engine, which is supplemented with a catalogue divided into product categories. Trading on eBay does not require programming skills or data processing infrastructure, only a computer with Internet access. Complementing this market with a payment solution that rests on the same minimal equipment was a promising expansion. At the same time, the partnership relieved Paypal from the problem of how to connect their account holders to each other, because eBay encouraged [and later urged] their customers to use Paypal for the payment of their transactions.

Paypal presented not only a convenient but also a fast solution to eBay customers. It prevented them from having to use a separate banking process. The banks, in turn, only had to transfer money from a bank account or credit card to a Paypal account of the same client. This means that the bank was *not* involved in a national or international transfer. This was part of Paypal. Paypal clients were saved from the bureaucracy and the fees involved in transnational bank transfers – and traditional banks were deprived of their earnings from these fees.

This means that Paypal's business model rests on its role as an intermediary. It transfers money from a traditional account to a Paypal account on one side of a deal, and performs a transfer in the opposite direction on the other side. Additionally, it informs the seller and buyer about this transfer as soon as it accepts the order. This means Paypal validates the payments *before* it actually performs the transactions with the referenced traditional accounts, and this time lag builds the asset Paypal is earning money with. Seller and buyer acknowledge the monetary transaction as completed and can continue with shipment and receipt of the commodity. In other words, e-money is defined as the temporal difference between the payment notice to Paypal's customers and the finalisation of money transfers with traditional bank accounts or credit cards. This means that e-money is a loan granted by Paypal to the buyer, because he can receive a bought commodity *before* the transaction from his bank account or credit card has been completed.

Paypal's customers take the risk of trusting their transaction partners. Although Paypal verifies the connection between an e-mail address and a bank account or credit card, their customers cannot be sure that their trading partners really exist. Buyers cannot know if sellers will send the commodity, and sellers may

be confronted with actors unwilling to accept the shipped merchandise. Paypal offers purchase protection for sellers and buyers to alleviate this risk.

However, Paypal's purchase protection is limited to the finalisation of transactions. In a conflict between seller and buyer, this means that Paypal will verify that a seller sent a commodity according to the product description that was purchased by a buyer. If the seller is unable to prove the shipment of the commodity, or if the buyer credibly documents the receipt of an item obviously different from the product description, Paypal will compensate the injured party. However, non-delivery and damage caused by transport are not covered; also, a huge number of commodities are exempted from protection, ranging from vehicles to gold.

Further, the German Federal Supreme Court [*Bundesgerichtshof*] decided in 2017 that Paypal's customer protection does not extend to the sales contract itself. In two decisions, it allowed sellers to renew their demands for payment after Paypal had reversed the transaction [Bundesgerichtshof Az. VIII ZR 83/16, Az. VIII ZR 213/16].

The justification of this decision was that the deal between a seller and a buyer has to be distinguished from the payment transaction, and Paypal was responsible only for the latter. Paypal is aware of this fact. The purchase protection guidelines of Paypal in Germany, as valid from 27 April 2017, contain the sentence: "The Paypal Buyer Protection Policy does not affect the legal and contractual rights between buyer and seller and is to be considered separately from them. Paypal does not act as the representative of the buyer, seller or payee, but only decides on the application for Paypal buyer protection" [AGB section 7.5; own translation]. This statement in the small print of the user agreement hints at a separate German law on the rights with regard to warranties for defects [*Mängelgewährleistungsrecht*]. It is based on the German Civil Law Code [BGB § 437]. Trading partners are able to claim these rights *independently* from Paypal's decisions on purchase protection. As a consequence, sellers and buyers are obliged to finalise the deal even if Paypal decides to revoke the payment transaction.

This means that the strict limitation of the services of Paypal – i.e. dealing with e-money instead of taking deposits and assuming the identities of its customers instead of thoroughly verifying them – simplifies its business but results in uncertainty for its customers. The latter expect to finalise a deal by using Paypal, but may be confronted with additional obligations afterwards. Actually, Paypal only covers a specific form of monetary transaction, and in German law, its power of disposition is limited to this transfer. However, most customers will not be aware of this danger, because Paypal's success depends on presenting itself as

a simple and secure payment solution. This is documented from the perspective of a customer in the following.

Visiting Paypal's website for the first time, customers become aware of Paypal's basic distinction between "private customers" and "business customers".⁴ The first group are put on a level with buyers, and "business customers" are regular sellers who have to pay for the service.

Business customers are those who pay most of Paypal's earnings. They benefit from the basic idea of integrating payments on the Internet into the shopping process, and of accelerating the trade at a distance by granting a short-term loan which only covers the time lag between the conclusion of the sales contract and the finalisation of bank transfers. Interestingly, in the concept of Paypal, the seller of a good pays interest for a loan that is granted to the buyer.

For German customers, the price amounts to 2.49 per cent of the charge plus €0.35 fees per transaction at the national level. For international transactions, the interest is raised to a level between 4.29 per cent and 5.79 per cent. Additionally, Paypal allows the transfer of money in 25 different currencies, and charges another 3.5 to 4 per cent for this exchange service.

It is important to recognise that these credit costs are calculated per transaction, and that the loan usually extends to a period of two or three days in a national transfer, until the banking transaction is completed.

To give a domestic sample calculation: a buyer purchases a good from a German trader for a price of €100. In order to prevent a delay of three days due to a separate bank transfer, the seller accepts Paypal. Instead of €100, he will receive €97.16. However, the small difference of €2.84 would amount to an annual percentage rate of more than 345 per cent – a quite substantial amount for a trader who loses this share on every single purchase.

To give an international sample calculation, in a transfer between Brazil and Germany, at the time of writing, the price of 100 Euro would equal 439.46 Brazilian Reals, and the seller would receive 395.86 Reals. If we imagine that an international bank transfer to Brazil would take two weeks, the annual percentage rate would amount to more than 1100 per cent.

From this, I can conclude that the business success of Paypal is founded on relatively high but very small credit costs. Sellers only recognise a small reduction in their revenues. For instance, a loss of some 43 Reals will presumably represent

⁴ There are also "partners and developers" who develop Internet-based business solutions themselves and want to integrate Paypal as a payment service provider. As this category does not represent users of the payment service in the first place we will neglect it here.

a bearable loss to a Brazilian trader if the alternative is that he will sell nothing at all. Paypal, in turn, is earning a huge share of the total of exchanges performed using its services.

Distinct from business customers, private customers only have to pay for money transfers to other private customers, i.e. if no purchase from a trader is involved, or if the trader adds the fee of the deal to the price of a commodity [a quite common practice on Internet-based trading platforms].

Buyers are attracted by the speed of monetary transfers: “Simply send and receive money in a flash” was an advertising sentence on the Paypal website. The opening of an account was illustrated by only two steps, which represented very typical procedures to experienced Internet users because they resembled other shopping processes on the Internet. They consisted of applying for an account by first providing an e-mail address and choosing a password, and then adding either bank account information or a credit card number. Without requiring further activity on the side of a buyer, Paypal checked the validity of the provided account. After the test transaction by Paypal was performed, the Paypal account was activated. From that moment on, a customer was able to buy on the Internet simply by using his e-mail address and his password – that is the promise of Paypal.

Meanwhile, Paypal offers its private customers more simplifications. “One-Touch” saves the login data in a browser and eases customers past the input of their data, and a smartphone application provides the same convenience on mobile devices.

There are plans to introduce some contact-free technical solutions, too [Harvard Business Review December 2016: 35–38]. This was implemented as an addition to *Google pay* in 2018 for the first time: Google, as a provider of the smartphone operating system *Android*, integrated Paypal as a service provider for its contactless payment tool. Another innovation is represented by “MoneyPool”, which allows a group of Paypal private customers to collect money for a common purpose, e.g. a birthday present or holidays.

All these technologies consist of simplifications and accelerations of known banking procedures. It confirms that one of Paypal’s assets consists of the time difference between concluding a deal and the moment when alternative payment procedures would complete. E-money actually *is* this time difference.

The product portfolio for business customers includes regular credit, however. The opening of a business account is illustrated on the Paypal website in two steps, but it demands more bureaucratic effort than a private account. Besides an e-mail address and a password, it also requires a phone number and a physical

residence address, the nationality of the applicant, and his date of birth. Without this information, the registration process cannot be completed. The physical address is real-time checked for its existence. All other data is not validated during the registration process, but the applicant has to give informed consent and is liable for its accuracy.

The list of data is equivalent to the information that is required for a credit scoring process [Leyshon, Thrift 1999], which means that Paypal is able to buy the confirmation of the integrity of the applicant's identity from a credit information bureau. Paypal states that it validates the information regularly. After a new account is completed by confirming the e-mail address, new customers get the information that they will have to pay only if they receive payments.⁵

An important innovation on the side of sellers is the option to offer instalment payments. Paypal offers a complete software solution which allows sellers to signal to their customers the possibility of instalment payment. This option requires a separate application by existing customers. In this case, Paypal will manage the risk management of an extended payment period, which means that the term of the loan is prolonged. According to Paypal's business model, a loan utilised by a buyer is granted to the seller. This means that the "instalment payment" offer is a small business loan granted by Paypal to a professional seller, although the usage is offered to his customers. At this point, Paypal makes use of its European banking licence – it would not be allowed to make this offer without it. However, I could demonstrate that these small business loans derive from a minor modification of Paypal's basic business model.

Nevertheless, the functioning of Paypal depends on the connection between supply and demand on a market. In the past, Paypal did not invest much effort in this precondition. For many years, this problem was outsourced to eBay. Since the split of the companies in 2015, this has become a question of concern to Paypal. A new attempt to solve the problem is provided by the so-called "Paypal.me" link, in which the Internet identity of an e-mail address is connected to a photo, a real name [that is not checked and may be fraudulent], a nickname and permanent link [called a "profile"] inside the Paypal network. This function makes it easier for customers to identify known trading partners, but it still provides no identity check by Paypal.

The option of instalment payment, i.e. small business loans, may be an important service extension in this regard because it offers a substantial advan-

⁵ As mentioned above, business customers can add these costs to their sales price, of course, but they will have to manage such a shift themselves.

tage for business customers. The specific Paypal construction of selling a loan to business customers that is finally used by private customers is advertised as a unique characteristic. Unlike ordinary consumer credit, nothing is changed on the side of the buyers – they just use Paypal as a digital payment service, and their creditworthiness is not checked. This, of course, means that the seller takes this additional risk.

To summarise, there is an asymmetry in the application process between prospective buyers and sellers. For buyers, the basic usage is easy and uncomplicated; however, they bear the danger of dealing with a fraudulent seller. Because a check of the commodity is not possible when shopping online, this presents a concern worthy of consideration. Sellers, respectively, business customers, are treated more like ordinary bank customers. They are liable for the disclosure of valid identity information. For them, the appeal of Paypal derives from the simplicity of a digital payment that is integrated into the shopping process as far as possible. It is particularly effective in transnational trade. This simplicity was connected to the popularity of the auction platform eBay in the past and has to be compensated in the future. The offer of small business loans may represent a crucial service extension of Paypal in this regard.

BITCOIN AS A STORY OF FAILURE

Bitcoin was created as an electronic payment system managed autonomously by its users. It was first described in a technical paper published less than seven weeks after the collapse of the investment bank Lehman Brothers in 2008, and it named the involvement of banks in monetary transfers as the main problem of existing economic transactions [Nakamoto 2008: 2]. This means that bitcoin, like other cryptocurrencies, is an attempt to eliminate banks and the state from economic interaction.

Bitcoin is mainly concerned with solving two problems – the prevention of fraud from monetary transfers and the public management of the total amount of the currency. It claims to solve both problems with computer technology. Explaining these solutions provides an understanding of the underlying economic theory, too.

The most important problem of economic interaction, according to the developers of the Bitcoin network, is fraud by consumers. The technology was developed to prevent double-spending of money. Bitcoin professes to provide sellers with money they can accept without fearing they will receive a valueless token. This means that a core assumption of bitcoin proponents is the unalterable

propensity of buyers to maximise their material benefits recklessly. Deception is seen as common economic behaviour.

The problem is solved by the combination of digital encryption technology with a public ledger. Each transaction has to be confirmed by applying an encryption key that enables the actors involved to verify the validity of the data.⁶ Whenever an economic transaction is confirmed, it is added to a distributed ledger that is publicly accessible on the Internet at <https://blockchain.info>. “Distributed” means that the ledger actually exists in numerous copies on different computers, and transactions are only published after all ledgers have been successfully synchronised. An economic transaction can only be finalised by receiving a confirmation from all operators of the economic network who keep a ledger.

Sociologically, this means that a payment is made by informing all other executing economic actors about the intention to claim a commodity and then waiting for their confirmation.⁷ The distributed ledger is a public accounting book that records all changes of the property situation. Bitcoin comes close to a software implementation of the economic textbook understanding of a transparent market, in which money is limited to the function of mediating exchanges.

The core idea behind this technology is that every seller is saved from fraud because he is able to consult a ledger of all previous transactions. All economic transactions are publicly visible; however, this does not mean *directly identifiable*. Observers can access a record of defined sources of payment, but these sources are of encrypted digital data only.⁸

The second most important concern of the creators of Bitcoin is the value of their currency, and they claim to keep this value high by a gradual slowdown of the multiplication of the currency. The number of issued bitcoins is continually decreasing, and this mechanism is programmed into the software. It can only be changed by consent of every executing member of the network or by replacing bitcoin with a different currency.⁹

⁶ The technological explanations are kept to a minimum in order to keep a focus on the economic sociology. A good technological introduction is provided by Franco 2015.

⁷ Meanwhile, the network has become so large that the synchronisation of payments takes a lot of time and waiting has become a concern.

⁸ The data about purchases or sales managed by a defined bitcoin source can be used to track down the person behind the transactions by other means, of course.

⁹ Actually, this is what happened on 1 August 2017. A conflict about the size of blocks in the blockchain caused the fork of *Bitcoin Cash* from *Bitcoin*, which represents a different currency. It is different because transactions in Bitcoin Cash are recorded in a different distributed ledger.

A single bitcoin is defined by a definite but ever-increasing amount of computational work, which is represented by adding finalised transactions to the blockchain.¹⁰ This process is called “mining” [Franco 2015: 143–158]. Whenever a certain number of transactions is added to the public ledger, it is grouped into a *block*, and a certain amount of computational work invested in this process causes the cash out of new bitcoins to the operator of the ledger. This means that actors can earn bitcoins by operating a public ledger. They are reimbursed for their material and social effort by receiving the currency as a result of this action.

The social key point of this mechanism is that the only way to *earn* bitcoins exists in the operation of a ledger for the network. Actors are offered a self-interested motivation for engagement because they are rewarded for maintaining the Bitcoin network. The economic key point is that the total number of bitcoins is predefined and not subject to decision or discussion. The software issues new bitcoins in a *deflationary* way, i.e. the number of issued bitcoins is “halved roughly every four years” [Franco 2015: 15]. This process is even accelerated by lost bitcoins [Franco 2015: 33]. The total number of bitcoins will be limited to roughly 21 million, and the self-interested incentive to contribute to the network will vanish after 2026. This means that the offer of benefits for maintaining the network is continually being reduced.¹¹

There exists a lot of literature and public debate concerning bitcoin. Most of it refers to the operation of the network, but it is nearly silent about the everyday economy of the currency. What I add here is an ethnographic account of *using Bitcoin*. As I have already shown, the technological background is complex, and earning bitcoins is possible only by mastering this technological background. So, how can everyday actors enter the market of Bitcoin?

The most obvious starting point is the website <https://bitcoin.org>, which was available in 27 languages at the time of writing, with a clear focus on European and Asian languages. It offers a “getting started with bitcoin” section, which suggests proceeding in four steps: “inform yourself, choose your wallet, get bitcoin, spend bitcoin.” I began informing myself about bitcoin in the “Frequently Asked Questions” section. Here I learned that I can get bitcoins by buying them on an exchange, by selling something for bitcoin, or by *mining*.

For mining, I could buy the computational equipment necessary for more than €1,000, and the website provided information that this apparatus would generate

¹⁰ As a security feature, each block also requires the solution of a mathematical calculation.

¹¹ Actually, as running high performance computers is not without expense, the costs of contributing will outweigh the rewards in the near future.

0.1645 bitcoins per month [<https://www.bitcoinmining.com>, access: 08.12.2018]. The website offered technological explanations of the mining process; however, they were not easy to understand. Without existing computational knowledge, readers are likely to be lost. What I clearly understood was that *mining* is a technologically demanding and slow process. The next obvious question was about the value of such small amounts of bitcoins: if I could generate less than 0.20 bitcoins per month, what would I get in exchange for it?

To find out, I skipped two steps of the introductory course and continued with the question of where to spend bitcoin. All I knew in advance was that I could not pay with bitcoin in the nearest supermarket. Fortunately, I was directed to <https://coinmap.org>, where it promised to show appropriate shops on a map.

Around Frankfurt on the Main, which is a financial centre with a huge airport, a lot of business and more than 700,000 inhabitants, I was able to identify only five options to spend bitcoins: at an advertising agency, a skateboard shop, a hostel, a booking office for tickets of cultural events and an eating place. They had been added to the map between 2013 and 2018. However, as I checked the offers, I was neither able to book a hostel room or to order a pizza for bitcoins. The hostel accepted nine different currencies, but no bitcoins, and the pizzeria demanded Euros.¹²

From the perspective of a consumer, my interest in bitcoins vanished quickly. Zooming out of the “coinmap”, only a small number of shops appeared, and tests of the shops failed in every single case. In the area of Łódź, Poland, the map identified two service providers and a pizza delivery shop, but I learned that the ordering of a pizza ultimately required Złoty. Obviously, the map was outdated. The impression I got was that ten years after the introduction of bitcoin, it was nearly impossible to spend it somewhere.

Consequently, I continued the endeavour to become a member of the Bitcoin network for scientific reasons only. I returned to step 2 of the introduction, “getting a wallet”. Bitcoin only represents encrypted data, so users need a software tool to store this data. Due to the aspiration of Bitcoin to establish a currency, this software tool is called a “wallet”. The website I was directed to offered me 23 different wallets. All of them were easy to install, but finding out the differences was demanding. Not all of them worked on all operating systems, so basic knowledge about one’s own computer equipment was required. The website encouraged its readers to “take time to educate yourself” and cautioned “be sure to read what you need to know and take appropriate steps to secure your wallet”.

¹² Remarkably, all tested shops accepted Paypal payments.

Instead of going into the technological details, I will focus on the sociological consequences here. Bitcoin is advertised as an “an electronic payment system based on cryptographic proof instead of trust” [Nakamoto 2008: 1], but already at the second practical step, I learned that the necessity of trust has only been relocated. The creators of Bitcoin feared the manipulation of the currency by central banks and the speculative business of commercial banks. Yet, storing bitcoins requires that difficult technological conditions be met. An insecure Internet connection, a computer crash or a stolen smartphone could deprive consumers of their bitcoins. I already saw that it also requires trust in the network of Bitcoin users itself because if shops do not accept the currency, it is rendered valueless.

The installation of a wallet demanded basic knowledge of encryption because users were asked if they wanted a “standard wallet”, “two-factor-authentication”, or a “multi-signature wallet”. This was probably the step at which many interested users would abort the process due to uncertainty. Continuing the process produced even more difficulties. For instance, in the case of choosing “two-factor authentication”, it is suggested that the user involve the service of TrustedCoin, a privately owned Limited Liability Company. This means that a Bitcoin wallet with a higher security level required trust in an unknown company, despite the fact that Bitcoin was invented due to mistrust in central banks and commercial banks. Obviously, this was a conceptual inconsistency.

Choosing a “standard wallet” was no less confusing because it asked for the choice of a “seed type.” It explained: “Segwit wallets use bech32 addresses, defined in BIP173.” This again expected too much from a non-expert. The choice of the simple option was followed by the provision of a 12 words passphrase, which should be written on a piece of paper and kept secret because it would allow the user to recover the wallet in case of a computer crash. A warning was issued: “If you lose your seed, your money will be permanently lost.” Additionally, another password was required. This was another example of a shifting of trust, either to the company TrustedCoin or to the user’s own reliability and efficiency. Several years ago, Pedro Franco [2015: 33] estimated that 4 per cent of all existing bitcoins were permanently unusable because their owners had lost their keys. The complexity and the insecurity of Bitcoin surpass Paypal or credit cards by far.

After installation, I had an empty wallet. So I looked for the option to exchange bitcoins. One option was to use a Bitcoin ATM, but from Frankfurt on the Main, the nearest one was in Belgium, nearly 300 km away. In Łódź, there were three ATMs available, two of which were operated by the “Shitcoins club”, a brand name that dissolved my trust immediately.

Another option was to buy bitcoins peer-to-peer by connecting unknown bitcoin sellers on the Internet. This, again, was a relocation of trust towards unknown actors whose identity was difficult to confirm, and who demanded payment in legal tender upfront.

The third option consisted of Bitcoin exchanges. A number of options were listed, distributed across the globe. All these exchanges turned out to be busy trading places, with a lot of calls and puts. The options for buying bitcoins changed within seconds. In a typical time slot of five minutes, the prices of the calls on a German exchange shifted between €2,970 and €2,990, and that of puts between €2,935 and €2,950 [<http://www.bitcoin.de>, access: 08.12.2018]. The cheapest single offer was 0.05 bitcoin for €150. This is a lot of money if you do not even know somewhere to spend it.

The sociological insight of this test was that bitcoin represents commodity money because the currency itself has to be bought. The ever-increasing amount of computational work that has to be spent in order to produce small amounts of bitcoins has turned *mining* into a business of huge computer farms [“Energy cost of *mining* bitcoin more than twice that of copper or gold”, The Guardian from 05.11.2018]. The final utility of this procedure is foreseeable when Bitcoin comes closer to its programmed marginal number [https://en.bitcoin.it/wiki/Controlled_supply, access: 10.12.2018].

The volatility of the exchange rate with legal tender currencies makes bitcoin unusable for everyday purchases. The process of applying the technological means necessary is demanding and complex. Trust is not removed, only relocated towards the user’s own computational capabilities and to third party companies. Even more trust is required in dealing with bitcoins, because transaction partners are anonymised into Internet addresses and encrypted data sets. Selling for bitcoin may be safe, but paying commodities with bitcoins occurs at high risk.

DISCUSSION: ECONOMIC NETWORKS OF CONSUMERS AND PROPERTY BUILT BY CONTRACTS

The empirical findings showed that Paypal and Bitcoin were mainly occupied with customer recruitment and retention for their payments services networks.

In the case of Paypal, this problem was initially solved with the help of eBay, to which it represented a problem solution itself. Huge numbers of eBay customers wanted to exchange property but relied on inconvenient and expensive options. Paypal succeeded by simplifying and reducing the cost of the process. However,

conserving and extending its customer base will become a challenge to Paypal after the split from eBay.

Bitcoin, by contrast, tried to develop a network of users first, and deemed the task of connecting the currency to commodity exchanges of secondary importance only. Ten years after its introduction, this has made the currency useless for everyday transactions because it is difficult to find places where bitcoins could be spent or earned in exchange, and its future value is unpredictable. Additionally, entering the Bitcoin network is a complex and technologically demanding task, which probably deterred non-experts.

Paypal benefited from the appearance of simplicity in this regard. The company strove to keep the process of using its digital payment service as simple as possible, but in the process of doing so, it concealed some difficulties and dangers.

The simplicity of digital procedures cuts both ways. Computer and Internet users are constantly confronted with the demand to read licence agreements and user agreements, which is in conflict with the speed of data processing and communication, and access to information as the main advantages of the technology. As a consequence, accepting agreements without reading them is common behaviour [“I read all the small print on the internet and it made me want to die”, *The Guardian* from 15.06.2015]. Usually, this is not a matter of concern due to the improbability of litigation. Yet, when it comes to fulfilling sales contracts, this carelessness may result in dire consequences.

In the context of German law, the strategy of procedurally simplifying Paypal turned out to be a temptation to its customers. The contracts concluded with the help of Paypal appeared to cover the whole process of commodity exchange, even backed by a customer protection service, but legally they covered not even the payment process itself. A careful reading of Paypal’s user agreement revealed that the company was fully aware of these circumstances but preferred to hide them from their customers.

This means that Paypal not only had outsourced the building of a network of commodity exchanges to eBay, but that their contractual service arrangement was limited to the internal execution of payments. Without being fully aware of it, customers could only rely on the mediation of payment information between transaction partners and the subsequent processing of payments.

The acceleration of trade by bridging the time lag between the promise of payment and its actual execution was called “e-money” and it built the core asset of Paypal. Yet, its popularity was based on a more far-reaching trust by its customers, namely that Paypal performed and protected the finalisation business transactions as such.

Bitcoin's failure as a currency of the everyday economy could be attributed to its attempt to establish the value of money independently from the exchange of underlying property. This represents a misunderstanding of the monetary economy as an *autonomous* circulation of tokens. In fact, money mediates economic meanings between humans in the same way as language mediates messages [Polanyi 1977]. If there is no point of reference, the mediating services of money and language forfeit their importance.¹³

CONCLUSIONS: CONTRACTS AND SECURED CLAIMS TO PROPERTY AS A REPLACEMENT OF TRUST IN BANKING

The starting point of the article was the substitution of the role of banks in the everyday economy by direct social and economic interaction between sellers and buyers. Paypal and bitcoin were chosen as two prominent examples which claimed to be able to replace the role of traditional banks. This means that they had to guarantee the finalisation of economic exchanges that banks warrant by their management of payments, assets and credit.

The examples showed two different ways of compensating the role of banks in the economic exchange, and with different levels of success. However, the successful example, Paypal, revealed some weaknesses that might make its success only temporary.

Paypal simplifies the banking procedure by limiting it to local transfers between a bank account and an e-mail address, and communicating the results to the trading partners before maturity. Its attractiveness derives from the acceleration of payment procedures by actually granting short-term loans to the buyer of commodities, which is paid for with the fees of the seller.

However, this business model not only rests on simplifications, but also on limitations. For instance, the simplification of its practical application by only requiring an e-mail address and a bank account or credit card is accompanied by a limitation of its verification of customer identities. Contrary to a traditional bank, Paypal cannot confirm the trustworthiness of its customers, and this risk is transposed to them. Another example, the simplification of transnational money transfers is counteracted by the missing insurance of the customer's invested money.

¹³ *Speculation* in the case of money and *poetry* in the case of language represent self-relational exceptions.

The disbanding of the relationship with eBay confronts Paypal with the problem of how to connect its clients to each other in the future. This will increase the problem of trust, which their customers have to build themselves somehow.

Interestingly, Bitcoin is also moving the necessity of building trust towards its customers, but in completely different ways. To begin with, the usage of bitcoins depends on the practical (and technical) accuracy of individual users. Instead of trusting a currency in the form of a legal tender, the customer has to trust his own ability to manage software tools and to keep data in a safe place. The only alternative is to transfer these tasks to third parties, which would nullify the advantage of foregoing traditional banks, of course.

The second important aspect of trust concerns the value of bitcoins. The initiator(s) of Bitcoin saw political manipulation by central banks and the behaviour of commercial banks as the greatest dangers, and they wanted to circumvent it with a non-negotiable deflationary monetary policy controlled by their software. However, they failed to consider the importance of the demand side of the economy. The value of money depends not only on its relative scarcity but also on the option of exchanging it in the future, which requires trust in the fact that other people will continue using it. However, the social connection to other participants of the economic network is interrupted by the absolute anonymity of their identity. Ironically, it is the *security feature* of encrypted communication that prevents the development of a lively community of bitcoin users.

This means that the failure of bitcoin as a currency of the everyday economy derives from its sole focus on monetary policy and the absolute neglect of its *social function* as a medium of exchange. A successful alternative would need to focus on the establishment of mutual trust between the users of the currency, i.e., in society.

This analysis identified some legal and social factors of the success of digital payment tools that complement well-known economic factors like the relative scarcity of money, common financial solvency, accessibility of commodities and transparency of the market. The first factor consists of the mutual obligation of trading partners to fulfil their promises. The second factor comprises the legality of transactions that derives from the finalisation and acceptance of economic exchanges. The third factor entails trust in the *future* validity of the means of payment, which refers to a common confidence in the further existence of the economic community.

With these factors, the analysis confirms the basic insights of those sociological theories of money which define it as a mediating tool of socio-economic networks [Polanyi 1977; Hart 1986; Simmel 2004; Dodd 2005, 2017]. It adds the

finding that digital payment services consist of a *reconfiguration* of the relation of contracts and property. The success of money as a means of payment derives from its simplicity – money is a *real-time contract* that can be used without understanding the basic economic and legal mechanisms. Paypal and Bitcoin both try to introduce more complexity by keeping the procedure simple at the same time. Paypal achieves this end by hiding some pitfalls from its customers. Bitcoin fails due to its technological complexity on the one hand, and its sociological misconception of the meaning of money on the other.

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SOCJOLOGIA EKONOMICZNA CYFROWYCH USŁUG PŁATNICZYCH

Streszczenie

Autor artykułu rozwija tezę, iż cyfryzacja płatności prowadzi do zasadniczej przemiany w dziedzinie ekonomii życia codziennego poprzez odsunięcie na bok bankowości tradycyjnej. W artykule porównano dwa systemy cyfrowych usług płatniczych: Paypal oraz Bitcoin. Pierwszy do tej pory odnosi sukcesy, drugi natomiast nie zdołał uzyskać szerszej akceptacji jako środek płatności. To jednak jedynie tymczasowy stan rzeczy, gdyż tego rodzaju rozwiązania w zakresie płatności oparte są na modelach, które są stale kopiowane i ulepszone przez rynkowych konkurentów. Autor dowodzi, że rozwój tej tendencji powoduje zmianę relacji pomiędzy kontraktem i własnością, a także przemianę stosunków społecznych w społeczeństwach rynkowych.

Słowa kluczowe: socjologia ekonomiczna, prawo, digitalizacja, pieniądz, kredyt