Sharing time:
new forms of reciprocity in the digital economy

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ABSTRACT

**The current debate about the sharing economy has rediscovered the importance
of reciprocity as a model of exchange. Time banks, traditionally tools for
enhancing an underutilised workforce, are developing at the same time as
forms of mutualism and reciprocity within defined communities (residents of
a neighbourhood or organisational population of a company), and now have
a new opportunity for scaling up through the enabling power of new digital
technologies. This article analyses the case of a digital time bank using social
network analysis in order to investigate whether the sharing economy can be
considered a practice of 're-socializing economic exchange'.**

Sharing and reciprocity

The current debate about the sharing economy has rediscovered the importance of
reciprocity as a model of exchange. More than 80 years ago, the theory of the gift
(Malinowski, 1922; Mauss, 1924) showed how free exchange was the basis for all social
life. Similarly, Polanyi ([1944] 2000) highlighted how reciprocity works as a mechanism
that supports and complements the functioning of redistribution and market trade.

It is now evident that the web has amplified the importance of these forms of
reciprocity and sociability (Arcidiacono, 2017). Today, a renewed interested has arisen
in the *collaborative digital economy*, or *peer-to-peer production system* (Benkler &
Nissembaum, 2006), as a model of economic organisation based on the sharing of the
over-capacity of a good, service or competence in peer networks. This appears as a sort

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1   This article is the result of the joint work of the two authors. The first, second and fourth sections were
written by Davide Arcidiacono. The third, fifth and sixth sections were written by Antonello Podda.

of hybridisation between production and consumption and between professionalism and hobbyism. Belk (2014) highlights how the main intention of sharing is not simply 'to have access to a service but help and develop human connections' (Belk 2014: 17), but at the same time the sharing economy is characterised by a large plurality of exchange practices with different aims, making it difficult to give an overall assessment.

The sharing economy is a mix of innovation and tradition, and contributes to a redefinition of the traditional classification of Polanyi's forms of economic exchange. Pais and Provasi (2015) have proposed three different variants of reciprocity in the sharing economy, overcoming the threefold Polanyian taxonomy of exchange, reciprocity and redistribution (Polanyi, [1944] 2000, 1957), while also enlarging the analysis to the 'economics of the gift' (Sudgen, 1984; Gui and Sudgen, 2005; Bruni, 2006). In this revised typology, they propose a distinction between 'reciprocity in the strict sense', 'collaboration' and 'common-pool arrangements'.

Reciprocity in the strict sense entails a direct relationship between individuals who know each other as well as specific (inter)personal trust, whereby a bonding value emerges (Godbout & Caillè, 1998). The exchange of goods may be of different kinds (material, immaterial, rival or non-rival). The forms of sharing economy in which we find this form of reciprocity include the loan of tools, couchsurfing and 'traditional' time banks where the exchanges have an important relational component.

Collaboration is the second variant of reciprocity in which a certain degree of trust is still present, but in this case, the parties do not intend to enter into a relationship that obligates them beyond the contingent interest that induces them to cooperate. In this case, interpersonal trust mainly stems from the indirect trust that depends on the ability of the institutional context (within which the collaboration takes place) to circulate reliable indicators of reputation. Such arrangements are defined as a form of 'cautious reciprocity'. Examples of this type include ride sharing (e.g. BlaBlaCar) and social eating (e.g. EatWith or Gnammo).

The third and strongest form of reciprocity is the so called 'common-pool arrangement'. This consists of a reciprocal bond between persons who share a strong sense of belonging in a clannish or communitarian structure. It is a form of 'generalised reciprocity' (Sahlins, 1972), which is based mainly 'on a bond that includes all the members of the community regardless of personal acquaintance and gratitude', but it does not depend specifically on a direct personal relationship (as in the case with reciprocity in the strict sense) (Pais & Provasi, 2015:363). In this form of reciprocity, the community establishes moral obligations towards all its members.

The hypothesis of the sharing economy as a new practice of re-embeddedness of economic exchange through the pervasiveness and potential of digital technologies re-emphasises the importance of social networks and trust in the promotion of local development and the well-being of the actors (Granovetter, 1985; Fukuyama, 1996).

At the same time, networks and relations could be seen as an asset for the generation of social innovation (Hamalainen et al., 2007). According to Bureau of European Policy Advisers[1], we can define as social innovation all the innovations which are social in their ends and means, based on strong personal relations between referents

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1   https://goo.gl/OvVnFV, accessed 22 February 2017.

and producers, which makes it possible to overcome the impersonal relations that characterise market trade. Zapf (1991), linking the social innovation concept with development and modernisation theory, has argued that this expression could represent a bridge between structural and action-centred approaches to the analysis of social change. These innovations promote: a new social economy based on the intensive use of distributed networks to sustain and manage relationships, helped by broadband, mobile and other means of communication; blurred boundaries between production and consumption; an emphasis on collaboration and on repeated interactions, care, and maintenance rather than one-off consumption; and a strong role for values and missions. It is quite evident that sharing economy practices have these features and could therefore be defined as a social innovation too. However, there is currently insufficient research that demonstrates the extent to which the sharing economy is socially innovative and the nature of its concrete impact on the social sphere.

This article seeks to analyse this transformation and explore reciprocal transactions in the sharing economy applying the classification of Pais and Provasi, in order to examine the real 're-socialising' capability of the sharing economy, seen as a social innovation. Our analytical focus is on the case of a digital time bank and the exchanges generated within it, with the aim of testing the hypothesis that the sharing economy can be considered as a practice of 're-socialising economic exchange' (Belk, 2014), highlighting the relational, personal and intimate aspects of production and consumption, anonymised and *outsourced* in the context of the hegemony of market trade (Sombart, 1916; Hochschild, 2012).

The first section reviews the existing literature on the time banking phenomenon and explores the empirical evidence on the transition from the traditional offline time banking (TBs)[2] to the new digital time banking (DTBs). The second section presents the hypothesis of our study and the methodology applied. The third section presents some descriptive data on the platform analysed, and the fourth section presents the results of the social network analysis (SNA) applied to the case study. The article ends with some conclusions and some final remarks.

TBs: From offline to online

Time Banks (TBs) are a social innovation tool born in the early 1990s, designed to contrast with the dynamics of the commodification of time resources through an alternative settlement scheme based on reciprocity.

The idea was first developed by Edgar Cahn, a professor at the London School of Economics, in 1986:

> *Help a neighbour and then, when you need it, a neighbour – most likely a different one – will help you. The system is based on equality: one hour of help means one-time dollar, whether the task is grocery shopping or making out a tax return […] Credits are kept in individual accounts in a 'bank' on a personal computer. Credits and debits are tallied regularly. Some banks provide monthly balance statements, recording the flow of good deeds.* (New Economics Foundation, 2001:5–6)

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2 In the text from now on we will use the abbreviation TBs to indicate the traditional time banks that operate primarily offline, and DTBs to indicate the new digital time banks based on online platforms.

The organisation of a TB aims to act as a credit institution based not on deposited money or the accumulation of interest but on the willingness to exchange performance for free with other members, using minutes / hours as the units of transaction. TBs are predominantly used by unemployed persons who have plenty of time and can therefore make their time resources available in order to obtain access to essential services for their welfare (Lasker et al., 2011). The system is configured as a proximity service that pools the time resources of each person, redistributing them to support the needs of the community members. Concretely, through the TB the members of a community exchange for free services whose value is defined in terms of time resources that act as a sort of a complementary currency. The main idea is to redesign the idea of community and social cohesion within increasingly individualised and commodified societies (Arrow, 1972).

In Great Britain, TBs started quickly to be implemented also as a way of redesigning social care services (e.g. *Time for Childcare* in the Cotswolds and Leicester, and the *Rushey Green Group Practice* in a surgery service) re-embedding the human side of an 'anonymised' service that, in the 1980s, with processes of deregulation and privatisation, transformed many citizens into simply customers. The TB mechanism aimed above all to be egalitarian, horizontal and relational, in contrast to the dynamics of competitive appropriation, hierarchical production, and asymmetric distribution of value typical of capitalism (Schroeder, Miyazaki & Fare, 2011).

The literature on this issue is particularly developed in Anglo-Saxon countries, the contexts in which there have been the most significant experiences in this regard. TBs are mainly considered relevant as 'social capital builders' (Boyle, 2003:254) that empower the creation of social networks, including an important social and emotional component. Moreover, TB operate mainly in disadvantaged areas, remaining confined to unskilled personal services. They have suffered from a high dependence on subsidies, often public, necessary in particular to bear the costs of so-called 'time brokers', the salaried personnel required for the administration, maintenance and updating of the database of requests and offers for the coordination of the time banking network (Seyfang, 2004; Dittmer, 2013; North, 2014). Recent studies about the motivational profile of TB members (Laamanen, Wahlen & Campana, 2015) have demonstrated the centrality of the issue of cultural and economic transformation within the society, although highlighting different scales of proposition: some members are motivated by the desire to develop a transition to a non-monetary economy; others propose a more political and economic realignment in local decision making; others simply seek to develop forms of friendship and care within the neighbourhood.

TBs, as a transaction model and a relational tool, are now redefining themselves, following the logic of the sharing economy, becoming DTBs. This transformation started mainly in 2008, following the recent economic crisis.

Traditionally TBs involved a limited number of people, usually confined to the neighbourhood of a big city (often peripheral, as illustrated in the Anglo-Saxon experience), or a small town, a school, or even a company. In contrast, the new DTBs (such as Cronobank, Bliive, and TimeRepublik) have overcome the service concept based on proximity, involving a limited number of people, often elderly, or having a

scarce availability of economic resources. The DTBs have opened up more towards global space and 'borderless' networks, involving an unprecedented set of users, the *millennials*, increasingly highly educated young people who exchange expertise that is typically more highly skilled and qualified. Moreover, in their digital transition, TBs have had the opportunity to scale up the forms of mutualism and reciprocity previously typical of defined communities (residents of a neighbourhood or the organisational population of a company). By such means, DTBs can empower reciprocity towards the construction of a sort of 'global neighbourhood'.

With their tradition of mobilising an underutilised workforce, TBs raise new challenges within the sphere of the sharing economy. Thanks to digital technology, they bring a new concentration on *immaterial labour* (Lazzarato, 1996) putting into question the classic definitions of 'work' and 'workforce', because they are based on a peculiar combination of the results of different types of works, skills and aims (e.g. combining creativity with technical and manual skills, but also entrepreneurial skills and social relational skills). Furthermore, they have a typically collective nature, because they exist only in the form of networks and flows.

In some cases, the new DTBs are venture capital start-ups, which do not require money from their users but use alternative non-monetary exchange practices, through online advertising or by developing partnerships and collaborations with public and private companies, using, for example, freemium accounts[3] for specific targeted users. The members interact through the platform, bypassing the intermediation of the *time brokers*, as the platform itself is organised so as to allow the regulation of flows and matching without the necessity of an intermediary. The trust mechanisms between the parties are enabled through online reputation rating.

Social benefits seem far less important in such models, as demonstrated by several case studies of DTBs (Dubois, Schor & Carfagna, 2014) even highlighting forms of discrimination in access to and exchange of services. In particular, studies of online time banking have demonstrated a high territorial and gender homophily (Pais & De Moral, 2015). Similarly, other research (Arcidiacono, 2016) has noted how a high number of users are motivated mainly by curiosity or emulation with little participatory contribution. However, studies of DTBs continue to be limited: so far, there has been no attempt to test whether, within the framework of an increasing cultural legitimacy of the sharing economy in the public debate, the use of a digital platform contributes to the empowerment of reciprocity within the TB scheme.

Objectives and method

This article focuses on the analysis of one of the larger Time Banking online platforms, called TimeRepublik (TRK). This study tries to analyse the social relationships built within the platform, by using a quali-quantitative approach.

Our main aim was to investigate whether the sharing economy is really able to re-embed economic action through the form of strong reciprocal bonds and, if so, in what form. Is the sharing economy really capable of re-embedding the economic

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3   'Freemium' is a business model used especially on the Internet, whereby basic services are provided free of charge while more advanced features must be paid for.

relations disembedded from the two mainstream forms of economic regulation, market and hierarchy? Or, to use the words of Pais and Provasi, 'to what extent can the ongoing experiments generate a real and lasting process of economic "re-embedding", after being "disembedded" by the market and the hierarchies in the twentieth century?' (Pais & Provasi, 2015:355). In the platform examined, is there a 'network effect' (Pais & Provasi, 2015) according to which relational technology platforms allow forms of reciprocity (even among distant strangers) that are able to re-embed economic relations in social relations?

To test this exploratory hypothesis, we considered the degree of embeddedness and the quality of exchanges and relationships established. To assess the overall relational impact generated by the platform, we looked mainly at the level of interactivity among the members, in particular the importance of occasional or iterative and recursive relationships and the density and the average value of the strength of intra- and extra-group ties. In particular, we tried to understand the level of interaction between users in terms of reciprocal transactions, and how variables such as nationality, type of expertise or reputational rating (trust) could affect these interactions and influence the bonds and reciprocity of the interactions.

The digital space is an ideal observatory of relational dynamics generated within the TB. Every online action or interaction produces an extraordinary amount of data that represent a valuable asset for research, and also contributes to the redefinition of content, methods and analytical tools (Cioffi-Revilla, 2010; Caliandro & Gandini, 2017). Our research used a digital ethnographic approach, using all the data about users available in the platform from 2012 to 2014[4]. From a micro perspective, we adopted a 'shadowing' form of online observation using the mystery shopping technique (Turner, 2007)[5]. The study combined this approach with social network analysis (SNA) from a 'macro' point of view, focusing on the structures of the time transactions within which individual actors were embedded (Granovetter, 1985; Block 1990, Polanyi, [1944] 2000; Beckert, 2007). We used Granovetter's (1985) formulation of embeddedness in which, despite 'oversocialised' and 'undersocialised' views, social action is embedded in networks of ongoing social relations. Nonetheless, taking account of the most relevant criticism on structural aspect of relationships (Krippner, 2001), we added some social content and attributes of the people who were in this specific social structure.

The perspective we follow in this section seeks to understand and describe whole populations by the 'texture' of the relations that constrain the individual members (Hanneman & Riddle, 2005). Two key features which characterise the relationship between the actors are the structure of the density of ties and reciprocity: the density of ties can tell us how relationships are created and the characteristics of the actors involved in the transactions. These characteristics are important because, as a result of homophily, the density of bonds is generally greater among subjects sharing common

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4   The platform makes it possible to analyse these data to gain a deep understanding of their internal dynamics of functioning.

5   A method used to assess the quality of a service and the impact on customer satisfaction. This is a variation of the shadowing technique in which mystery shoppers, without revealing their research interests, act as 'normal consumers', to detect the genuine experience of the offered service.

features or particular interests (Blau, 1964, 1990; Borgatti, Jones & Everett, 1998; Burt, 2005; Lin, 1982, 1990; Lin, 1982, 2001; Lin, 2001; Podda, 2017; Salvini, 2005); the level of reciprocity can tell us whether these relationships are repeated over time and if we are creating a lasting inter-faith trust relationship between two subjects (Portes, 1998; Granovetter, 1973; Grieco, 1987).

The use of the TRK platform

TRK was created in 2012, with the aim of bringing the TB system into a global, social and digital environment. In less than a year, the number of registered users reached 22,000 units, distributed over 80 countries[6], with an average growth rate of about 30 users per day.

TRK is a for-profit start-up that explicitly relates itself to the sharing economy paradigm. The service is actually offered to normal users for free, but in the future the company plans to offer to some special clients (such as institutions or firms) access to a more specialised service via the payment of an annual fee.

The DTB is organised like a sort of social network. Users can create their own profiles, download images or even publish comments about the help they need or what they can do. People who register on TRK must select their 'talents'[7] from a list that includes more than 300, divided into 14 main categories. Through the 'find' tool, users gain access to an internal search engine which allows them to find someone who can help them and, likewise, enable themselves to be found by those who need their services. It is also possible to refine the search by filtering the talent for users, using the 'Trustmeter' score (the reputational ranking present in the platform based on personal information and feedback of other users), for the number of followers, for seniority of registration, or simply by name; by changing the search radius using the appropriate bar, a user can locate other users with the skills required closer to their area.

Once the right person has been found, each user can consult the profile to get more information. The information available on the profile is not limited to personal data and possessed talents. Each user has the opportunity to enrich the profile with a brief description, personal interests and also with images and documents. In the profile, it is possible to consult the history of the previous time transactions and the feedback collected by each member.

The two most visited sections of the platform are the 'offers and requests notice board'. By consulting these pages, users can access published advertisements or publish their own requests, or use the messaging platform to launch a negotiation that ends with the signing of the agreement in time currency (deal)[8]. Once agreed, the time deal is performed, the system credits the remuneration – in hours – agreed with the

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6   About 35.5% of TRK users come from Brazil and 28.2% from Italy, followed by USA (9.4%), Russia (7.6%), Switzerland (5.5%) and Spain (2.7%).

7   By the term 'talent', the platform defines the set of capabilities that each user wants to exchange. The term appears evocative, since already from its etymological dimension it refers to a unit of economic measure which, in common parlance, has come to mean skills.

8   In the case of online time banks, the accumulation of time resource has no meaning or utility in itself, because its value is activated and is qualified only in the moment of direct negotiation between the peers and the performance of the service.

counterpart to those who carried it out. On the other side, the counterpart – as well as confirming the accuracy of the accredited compensation – has to leave a feedback.

The most shared macro categories of expertise are *media, art and design*, which makes up 24.3% of talents, followed by *education, lessons and help for students*, with 16.3%, and *digital world, computer and web*, with 15.7%. For the most part, these are services and activities that can be quickly exchanged with users across all countries, contributing to the realisation of the global ambitions of the platform. The top ten traded talents include *graphic designer* (194 deals), *assistants to computer use* (191 deals), *language teachers* (156 deals), *web developers* (154 deals), and *translators* (114 deals). There are fewer deals (94) related to benefits that require physical proximity between the parties, such as *pet-walkers*, *personal shoppers*, *babysitters*, etc. In 57.9% of cases, those who offered their services were rewarded with a 15- to 60-minute compensation. In 26.9% of transactions, the allotted minutes varied from 61 to 180 minutes; only 15.1% of the deals exceed 180 minutes.

The analysis of 'active users' profiles – i.e. those that request (*requester*) and offer (*performer*) their services most frequently in TRK – shows that Italy ranks first, both for the percentage of applicants (54, 4%), and for the percentage of respondents (53.5%), closely followed by Brazil (19.9% of requesters and 20.6 % of performers), the USA (7% of requesters and 5.8% of performers), Switzerland (6.1% of requesters, and 6.6% performers) and Russia (4.4% of requesters and 4.1% of performers).

The geographical origin of those seeking help on the notice board seems to exert a decisive influence on trade (see Table 1): in the five countries with the highest percentage of respondents, it appears that the performers mostly belong to the same nation as their requesters. In Italy, Brazil and Russia, in about 90% of cases the exchanges took place between compatriots. Interestingly, in Switzerland 47.8% of respondents were Swiss citizens, and 41.9% were Italians[9]. Despite the significant impact of online tradable skills, it seems that the 'territorial' nature of trade, typical of the traditional TBs, does not completely disappear, but widens, giving shape to a kind of 'broad-range neighbourhood', whose members help each other, within embedded social networks in a limited area. If, on the one hand, the platform makes possible the extension of networks of contacts, on the other hand, the national languages and cultural codes may represent obstacles that lead to a re-regionalisation of the transaction space, in contrast with the idea of a global neighbourhood in the sharing economy.

Because the exchange of time is the main driver of the interaction on the platform, we focus the analysis on the bulletin board of offers/requests for help. First, this analysis shows that supply exceeds demand: requests for user support are quantitatively less than the offer. This is also a feature that is present in many traditional TBs, indicating a greater willingness to help than to get help. As argued by Seyfang (2004), this element has represented a recurrent internal obstacle to the functioning of time banking: many participants consider time banking exchange as a volunteer activity and are willing to give time but are more reluctant to ask for help. Therefore, time offers are more

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9   These percentages can be explained by the fact that Italian is the official language of the Swiss Canton Ticino, which hosts the headquarters of the company, and the majority of Swiss users (69.7%).

Table 1: Top performers/requesters by nationality

Requester country	Performer country	%
Italy	Italy	91.4
	Switzerland	4.5
	Brazil	1.8
	Germany	1.7
	Spain	0.6
Brazil	Brazil	90.5
	Italy	4.9
	Switzerland	2.5
	USA	1.4
	Russia	0.7
Switzerland	Switzerland	47.8
	Italy	41.9
	Brazil	5.4
	USA	3
	Netherland	1.9
USA	USA	62.5
	Italy	13
	Brazil	12.7
	Switzerland	9.7
	Russia	2.1
Russia	Russia	89
	Brazil	3.7
	Italy	3.3
	USA	2.6
	Switzerland	1.5

Source: TimeRepublik (2014).

numerous than time demands, and this restricts the range of choice and potential interactions within the platform.

As far as distribution by gender is concerned, slightly more than half of requesters of aid (54%) are women, while respondents to requests for help are predominantly men (68%). Moreover, 71% of the users between 20 and 35 years old are looking for a job. These characteristics emerge strongly when starting to analyse the notice board of offers and requests for help in detail. It is easy to notice a certain similarity with some online job applications, which are often found in major job boards or in professional social networks. Some users try to make their skills, visible combining level of technical expertise and life skills possessed, as in a cover letter sent with a job application, as this quote illustrates:

> … I think I have an appropriate profile in a job market that requires adaptability, organisational skills and willingness to move. At the same time, I think mine is a professional multi-faceted approach, that knows how to combine the humanistic knowledge in the computer field …

Others seem to resemble jobs offers, translated into a commercial and catchy style, rather than being formulated as community requests. The type of communication, in this case, is more informal and users try mainly to capture the attention of the other members of TRK:

> *'Hello, is Windows making you crazy??? Before finishing insane in an asylum contact me, I have the right solution for you.'*

> *'There is no second chance for a good first impression. Did you know that over 80% of the first impression depends on the image you project (the clothes you wear, the colours, style)? With an analysis of your characteristics and your lifestyle it will be easier for you to choose clothing items and colours best suited to your person'.*

In light of the high proportion of participants with skills related to the digital economy, and considering the patterns of interaction observed during the *mystery shopping phase*, we deduce that most of the users are young computer or communication experts without a steady job who can be designated *digital nomads* or *digital proletarians*: young, less experienced freelancers who make their knowledge and skills available to the community to build their reputation and develop ties that might be fruitful from a professional perspective. This approach feeds into an orientation towards continuous and informal training based on the intensity of their interactions/experiences with people who have similar or higher skills.

Trust is always at the centre of any economic exchange and can be defined as 'an expectation of experiences with a positive value for the actor, matured under conditions of uncertainty' (Mutti, 2003:516). Although some scholars have argued that digital reputation rating could push towards the development of a more 'ethical' and consumer/society driven economy (Arvidsson & Pietersen, 2013), others point to the risk of promoting a stronger selfhood (Papacharissi, 2011). The bond of trust/reputation within such large networks is developed through algorithms that produce ratings that orient the exchange. TRK, for example, has a so-called *Trustmeter*, which indicates the reliability of the members based on the quality and quantity of information they have submitted, as well as the number of transactions generated: users who want to present themselves as serious and reliable are encouraged to transact and complete their profile, inserting images and data that will ensure them a higher score. The available data seem, however, to demonstrate the limited effectiveness of the Trustmeter score: on a scale from 1 to 100, only 4.7% of TRK users have a high score (above 66) and only 7.4% have an average score (between 33 and 66); the remaining 87.9% of members have low Trustmeter scores (less than 33), including 3,499 users whose scores still show zero points.

Embeddedness

The use of embeddedness analysis makes it possible to analyse the ways that individuals are connected, with a focus on the social structure. This is a 'macro' perspective that seeks to understand and describe a whole network by the 'texture' of the relations that constrain its individual members (Hanneman & Riddle, 2005:117). First, we can

understand whether the time banking platform – in addition to being a place of exchange of extra-monetary services – is able to stimulate the creation of solidarity relationships and ties that go beyond the single spot transaction. We wanted to understand whether participation in the network enables the creation of multiple ties repeated over time between same actors, the so-called strong reciprocal relations or common-pooling relations (Polanyi, [1944] 2000, 1957; Pais & Provasi, 2015), based on a specific sense of community belonging. In this case, it is necessary to consider the difference between physical communities – which imply proximity – and the concept of a virtual community that best represents the characteristics of the platform. In relation to this virtual community, we consider a form of reciprocity that we can define as 'light', because it does not require physical contact between social actors. According to Granovetter (1973), there is a dichotomy here: ties that involve a low contact frequency can be understood as weak ties – that arise from the need to obtain a service; ties with a high contact frequency could be considered more similar to the strong ties that are inherent to a relationship of trust and interchange which exceeds the aspect of remuneration – albeit important and critical to the functioning of the bank – based solely on the number of transactions and services offered.

To investigate whether the time banking platform is able to create solidarity relationships, we analysed the presence of repeated transactions in the same link, in the dimension of internal reciprocity (single or double direction) and the strength of the relationship. We can ascribe greater strength to those relationships that share more than a dyadic transaction: the greater the number of transactions between two subjects, regardless of the direction, the greater is the strength of the bond. Furthermore, we can analyse whether the reciprocity between actors also grows alongside the strength of the bond.

At the time of our analysis, 13,024 actors were enrolled in the platform. Of these, 4,162 actors created 6,695 transactions in 6,342 links between different actors (each link can match one or more transactions). In Figure 1, the strength of the link is graphically represented by a greater thickness. Reciprocity, on the contrary, is represented by the presence of a double direction of the link. This implies the reciprocity of services exchanged between two subjects, and, therefore, the reversal of roles between requester and performer.

In the network, the analysis of overall reciprocity makes it possible to observe that among all the 6,252 dyads found, only 1.5% (equal to 91) are symmetrical links (indicating reciprocity), while the remaining 6,161 are asymmetrical ties[10]. At this level of analysis, the overall size of reciprocity within TRK does not appear particularly significant but seems exclusively focused on a few actors.

At this point, it is interesting to investigate whether the low reciprocal values that are found are generally related to the structure and form of this type of transaction. In this case, we could not expect different behaviours. Alternatively, we should be able to find, within the network, characteristics of the bonds or of the subjects that affect the number of transactions, and thus the creation and the nature of the bonds themselves.

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10   If we consider the ratio of symmetric and non-symmetric connections, the value of reciprocity rises to 2.9%, a value in any case rather low.

In Figure 1, the reciprocal links are represented by a red tie (grey in the print version) and the absence of reciprocity with a black tie. In addition, through the thickness of the link, we have highlighted its strength, that corresponds to the number of transactions exchanged between the two actors: the thicker the line, the greater the strength of the relationship (a greater thickness corresponds to a higher number of transactions)[11]. There are two important aspects: the reciprocal links are few and a relationship characterised by reciprocity does not always match with a greater strength of the relationship. This shows that the links where the relationship is repeated over time can also be unidirectional, which means that the requester often chooses the same performer, but it is not certain that the relationship is balanced by a mutual service. In the image, the box on the right is an enlargement in which we can observe both the different thicknesses of the links and some reciprocal ties (red lines - which are grey in the print version).

To understand what factors can influence the creation of ties, we used the so-called *embedded approach* (Hanneman & Riddle, 2005), which analyses the density and the average value of intra- and extra-group ties to give an indication of their strength[12].

The Clustering analysis makes it possible to understand the social behaviour of actors in big networks and allows us to examine the local neighbourhood of each actor (i.e. all nodes that are directly related to that actor) and calculate the degree of neighbourhood density for the entire network. The results show that the density of the neighbourhood has an average value that is quite low (*Weighted Overall graph clustering*
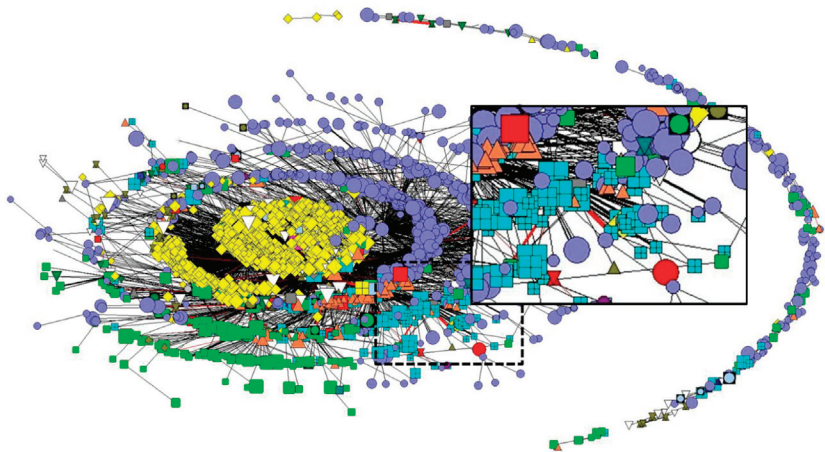

Figure 1: Reciprocity and strength of ties in TimeRepublik

Note: The different size of each node reflects the value of the 'Trustmeter' that the platform attributes to every user.

Source: Analysis by the authors, 2016.

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11   Which can range from 1 to 8.
12   The embedding macro-approach suggests that 'most of the time, most people interact with a fairly small set of others, many of whom know one another. The extent of local clustering in populations can be quite informative about the texture of actors' social behaviour into the network' (Hanneman & Riddle, 2005:118).

coefficient 0.001) but greater than the overall density of the network (0.0004). The clustering analysis results indicate that we are faced with a large, but very loose, network, within which we find many 'small worlds' (Milgram, 1967; Watts, 1999) formed by relatively few actors in contact with each other[13].

At this point, some assumptions were made about the characteristics that might influence the creation of linkages. The first hypothesis was that nationality may affect the 'capacity' of individuals to come together in order to create transactions within the platform. This hypothesis is consistent with two aspects. The first concerns the cultural affinity between people with the same nationality. This affinity is linked to the sharing of specific codes of communication that could facilitate the understanding of requesters' needs, and thereby facilitate the transaction. The second aspect concerns spatial proximity: if the bond is repeated over time, transactions mediated exclusively by computer support could change into physical proximity transactions.

Figure 2 shows the network in a form in which nodes, represented by different colours and different shapes, represent the various nationalities. Of all the 83 nationalities surveyed, six major groups clearly emerged above the others. They differed in size and internal cohesion and also in the level of isolation and positioning with respect to the smaller groups. Most isolated individuals are at the top of the graph; they belong to different nationalities and have a few ties with other actors. At the bottom are positioned four relatively large national groups (Switzerland, Spain, Russia, and the USA) and a host of other subjects from different nationalities, which are located spatially close to each other because they share many transactions. In the graph, we can also see two large groups that are more decentralised than the others, one on the left (Italy), and the other on the top right (Brazil). These groups have a very high level of internal cohesion and a greater spatial distance from the other groups (parameters that indicate a high number of contacts between the members) but, despite this, they also show a significant number of links *in* and *out* towards all other groups, and a number of reciprocal links (red* lines). This indicates that they cannot be considered just as closed groups or as entirely self-referential.

Despite the fact that groups formed by compatriots are, in some cases, easily identifiable, it is notable that there are nevertheless large numbers of bonds (lines) between subjects belonging to different national groups, which indicates that nationality may be only one factor in the choice of the subject with whom a transaction is made. But, probably there are also other concomitant variables to consider. If nationality was the only characteristic, groups would be graphically distant and, also, totally disconnected from each other.

It is noteworthy that the few strong ties between the actors are quite commonly among individuals of different nationalities (thicker lines). Moreover, reciprocal ties can be found among people of different nationalities.

Our first hypothesis concerned users' nationality: if we analyse density within the groups formed by subjects with the same nationality, we find that the density values still remain low among larger groups and slightly higher for smaller groups. This should indicate that the larger the group, the lower is the possibility that national origin affects

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13   Furthermore, the density value for the entire network of relations is connected to a higher level of standard deviation, indicating that there are strong differences in density within the network.
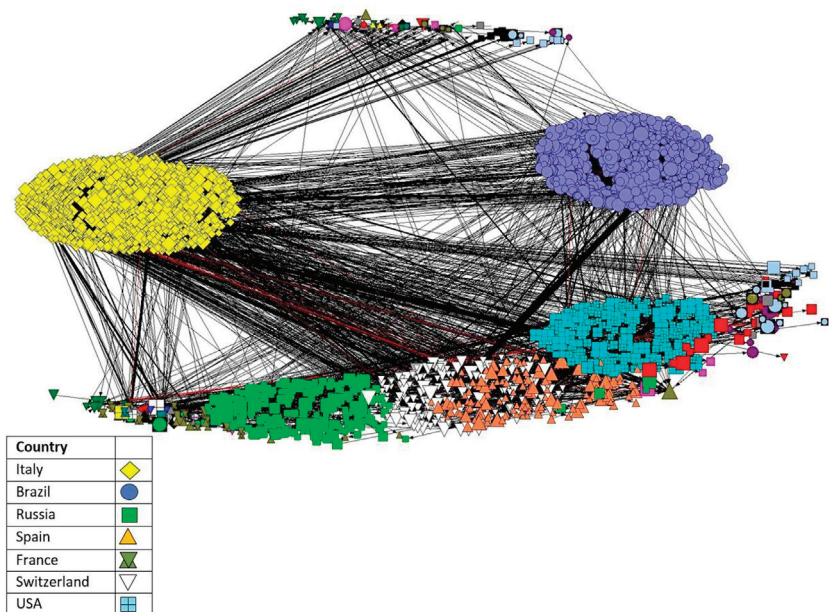
Country	
Italy	◇
Brazil	●
Russia	■
Spain	△
France	⧩
Switzerland	▽
USA	⊞

Figure 2: Clustering by nationality

Source: Analysis by the authors, 2016.

the emergence of relationships. On the contrary, for those who belong to small national groups, this characteristic can influence the dyadic relationships between actors. Observing the density within national groups, we note that the value of Standard Deviations Autocorrelation indicates a slight tendency for there to be larger numbers of links between individuals from the same country (Table 2). To verify whether nationality can influence the presence or absence of a relationship between two actors who belong to the same group (and therefore create homophily contacts) (Trobia & Milia, 2011), we applied a *Relational Contingency-Table Analysis* (Table 2), which allowed us to test the hypothesis that individuals with the same characteristic (in this case the country of residence) tend to establish relationships with each other rather than individuals having different characteristics. According to Burt (2005), it is more likely that relationships will be found between actors who share important attributes (such as income, level of education, age or gender), and according to Blau (1990), the attributes of the actors affect contact, so homophily is not the result of a strategic choice but is influenced by the characteristics of the subjects. In this case, the hypothesis that nationality may influence the presence or absence of a relationship between two actors was not confirmed[14]. It is therefore hypothesised that, probably more than nationality,

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14   The software calculates the expected frequencies in case of independence (no relation between groups) and measures the distance between real and expected frequencies (carrying 10,000 random tests). It is noted that chi-square value is 48,575.112 with *p* equal to 0.101890, so the hypothesis cannot be considered significant.

the spoken language is the feature that facilitates and influences the recognition of a performer by a requester. Thus, a person resident in a Spanish-speaking American country has a greater ease of communication with all those who come, in turn, from Spanish-speaking countries. The same argument can be made for all those who speak a 'shared language', such as Portuguese or English[15]. When accessing the online platform, users must choose one of the eight languages available, a number significantly fewer than the number of nationalities represented (83). In this case, the *intra-group density* indicates a higher density of links between individuals who come from countries that share the same language, or who speak a shared language, such as English or French, fluently. The application of the *Relational Contingency-Table Analysis* (subjects grouped by language used[16]) tells us that the hypothesis that actors tend preferably to establish ties with subjects who speak the same language is quite significant and cannot be due to chance. That is probably due to the need to facilitate the communication process, whereby the requester has to explain his or her needs to the performer. Therefore, we deduce that what we are observing is not affinity or sense of community membership but rather an instrumental requirement aimed at optimising mutual understanding and the effectiveness of the transaction.

We also considered how the *talents* selected by users might affect the relations between actors. The aim was to understand whether actors with specific interests were more oriented to relate with others with the same interests[17] but we found that talents, as shown in Table 2, do not have any statistically significant influence on the choice of partner.

Conversely, reputation, represented by a reputation indicator such as the Trustmeter, seems to exert an influence, especially among the most attentive users[18]. Indeed, there is definitely a higher density of links between individuals of the same reputational group (shown in Table 2). The values can be interpreted as a choice of homophily between subjects with similar characteristics, and in this case, it seems that the actors with a high Trustmeter value tend to establish ties preferably with subjects that in turn guarantee higher levels of reliability. At the same time, the fact that few people make an effort to make their profiles credible can represent a significant obstacle to the conclusion of the deal, inducing users not to trust each other.

Concluding remarks

This research has confirmed the fertility of an analysis of time banking and the fruitful use of digital methods. The network analysis shows that the time platform examined is characterised by a very limited value of reciprocal links, highlighting the limits of the

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15   This claim is less valid for languages such as Italian or Chinese, which are generally used only in the country of origin or by expats in other countries.
16   We assumed that Danish users, for example, use English as shared language, whereas an Algerian would use French.
17   Some users chose more than one talent, but the analysis focuses only on the first selected talent. It is assumed that the draft order is indicative of greater importance of the issue.
18   Dividing the population into three groups – high ratings, average ratings and low ratings of the density values of intra-group – it is found that the Standard Deviations Autocorrelation is equal to 0.035, and the Relational Contingency-Table Analysis returns a chi-square value of 21645.646, which is a significance equal to $p = 0.000100$.

Table 2: Analysis result: characteristics that affect users' relationship

	Densities or average tie strengths within/between groups	Relational contingency table analysis – directed networks/ undirected model (Number of iterations = 10,000)
Country	Standard Deviations Autocorrelation = 0.059	Observed chi-square value = 48,575.112 Significance = 0.101890
Language	Standard Deviations Autocorrelation = 0.028	Observed chi-square value = 14,475.942 Significance = 0.056694
Talents	Standard Deviations Autocorrelation = 0.056	Observed chi-square value = 58,679.415 Significance = 0.984102
Trustmeter	Standard Deviations Autocorrelation = 0.035	Observed chi-square value = 21,645.646 Significance = 0.000100

Source: Analysis by the authors, 2016.

sharing economy model as a tool for the re-embedding of economic exchange. Most of the relations remain quite limited to unidirectional dyadic relationships. Even when we are faced with repeated time-deals with a large number of transactions, which imply a high level of trust between the parties, these links are often characterised by the one-way direction of the relationship between the two users, and this implies that there is often a clear division of labour between the requesters and the performers.

In the analysis, we identified two types of actor: those who use the platform occasionally and those who seek the ease of exchange. The first seem more triggered by a mere communicative affinity, dictated by the cultural code (the spoken language). Therefore, there is a strong homophily based on this variable that somehow lowers the potential for innovation of the DTBs compared with traditional ones: developing transactions and relationships within a digital global space. Users of the second type are the most active; they do not even look for a group of talents to exchange but focus on the reliability of the potential exchange partner. In this case, the relationship is based on the Trustmeter homophily. However, the second type of user is a minority in the community analysed, despite representing those who use the sharing economy with more awareness and enthusiasm and with more repeated interactions over time.

In confirmation of this, the cluster and small world analyses highlight how actors move within a very loose network, in small world formats, with few actors in contact with each other, and in small groups with a low number of contacts in them. Elements such as territorial homogeneity or spoken language, though not always the limiting factors to the reciprocity of exchange, nevertheless, retain a significant role.

The subjects' skills or talents do not seem to be an element capable of creating specific relationships between groups with similar interests (probably the converse is the case,

with individuals trying to get in touch with people who have different skills). Instead, reputation assumes a significant role in the creation of trust, especially among subjects who can claim, in turn, high levels of reputation guaranteed, increasing and reinforcing the levels of homophily for such a characteristic (Blau, 1990). We also observed the relevance of the second variant of reciprocity, so-called 'collaboration', but this was exclusively between actors with high levels of reputation, which, according to the definition of Pais and Provasi (2015), represent the weaker form of reciprocity. In this case, the creation of interpersonal trust will depend on the system's ability to increase the utilisation of the Trustmeter tool to a wider audience of individuals. Our analysis does not provide evidence of the emergence of the strongest form of reciprocity – 'reciprocity in the strict sense' or reciprocity as 'common-pool arrangement' (Pais & Provasi, 2015).

In conclusion, the interactions in this DTB network are predominantly instrumental and pragmatic and show hardly any signs of developing into a deeper sociality. Indeed, this limited sociability might even be preferred by the sharing platform's founders and managers because when relationships become too recurrent, the users tend to bypass platform brokering, substituting or competing with it. However, this evidence seems to put into question the sharing economy as a way to 're-socialise' economic exchange because, on the one hand it seems more similar to the market trade and on the other hand it creates more problems in terms of accessibility and discrimination. In fact, the study confirms a high level of homophily in sharing transactions that corroborate what has emerged from other relevant studies on this issue (Dubois et al, 2014; Schor & Fitzmaurice, 2015, Pais & De Moral, 2015; Eldman et al., 2016). In this sense, the sharing economy may be less inclusive and effective than traditional market trade, because 're-embedding' seems to occur exclusively between the most active users who have higher levels of reputation.

Although some analysts, such as Belk (2014), point out how in the sharing economy the main intention is developing human connections, the research we conducted seems to contradict this and the results confirm the evidence from other research (Moeller & Wittkowski, 2010; Owyang & Samuel, 2015) that the economic and instrumental reward is certainly the most important motivation among the sharing users. We can also reject the hypothesis of real sharing that presupposes a clan structure or intense communitarian membership. Rather, we see a 'cautious reciprocity' (Bruni, 2006) where more prudent and instrumental motivations take over (Pais & Provasi, 2015:361). These results certainly confirm how the bonds that are born of TRK seem to fall within the scope of Anderson's (1996) concept of 'imagined communities', triggered by motivations that seem to be in sufficient to build a true sense of belonging. In this sense, the sharing economy does not seem really social innovative because the level of co-operation is low, missions and values are not so relevant and relationality is limited. The mix of personal gratification and indirect utility explains the propensity to exchange mainly online despite territorial closeness as a way to maintain interactions in ways that are distant and also less risky. It follows from this that the relational and community dimensions are likely to be partially devalued in a digital community where there is interaction but there is no relationship (Franchi & Schianchi, 2011).

In conclusion, it is difficult to give a definitive assessment so far concerning the ability of the sharing economy model to represent a re-embeddedness of the exchange

tool. Rather, the analysis makes a contribution to the assessment of the socio-relational and economic impacts of sharing economy practices. Certainly, the analysis has limitations since it relates to the analysis of a single-time online banking platform. For this reason, the next step in this research will be to develop a comparative analysis of different types of TBs, both digital and territorial.

The information, albeit limited, about the profiles of users within the platform seems to suggest the importance of immaterial work in the new DTBs that represent a sort of 'evolution' generated by the transition to a post-industrial society. At the same time, this result seems to suggest the potentiality of new research paths. The distinct identity of this TB seems to merge with the functioning of some crowdsourcing platforms (such as Upwork, Freelancer, Fiverr, etc.) (Pais, 2012) or 'digital squares' of job matching with occasional self-employment offers. This is not unexpected given the young profile and inexperience of the users. However, it could be possible to speculate how the platform could contribute to the socialisation of young employees at work in a distinctive way compared with other job matching and crowdsourcing platforms, involving more adult cohorts with a higher level of professional expertise. As discussed in the second section, the issue of employment/unemployment is as central in the history of time banking as its role in the creation of welfare and solidarity ties among TB members. In a future study, we can hypothesise how TRK could be a personal branding platform where young professionals, looking for work placements, or in an exploratory phase of their careers, use this space as part of a multi-channel and multi-platform strategy of visibility and apprenticeship which integrates job-seeking and training activities between offline and online worlds.

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REFERENCES

Anderson, B. (1996) *Comunità Immaginate: Origini e Diffusione dei Nazionalismi*, Roma: Manifestolibri.

Arcidiacono, D. (2016) 'Il tempo nell'economia fondamentale tra sharing economy e personal branding: il caso del Time Banking on line', *Sociologia del Lavoro*, 2 (142):98–114.

Arcidiacono, D. (2017), 'Economia collaborativa e start-up: forme alternative di scambio economico o mito della disintermediazione?', *Quaderni di Sociologia*, 73:29–48.

Arvidsson, A. & N. Peitersen (2013) *The Ethical Economy*, New York: Columbia University Press.

Arrow, J.K. (1972) 'Gifts and exchanges', *Philosophy & Public Affairs*, 1 (4):343–62.

Beckert, J. (2007) 'The great transformation of embeddedness: Karl Polanyi and the new economic sociology', MPIfG Discussion Paper 07/1, Cologne: Max Planck Institute for the Study of Societies.

Belk, R. (2014) 'Sharing versus pseudo-sharing in Web 2.0', *Anthropologist*, 18:7–23.

Benkler, Y. (2004) 'Sharing nicely: On shareable goods and the emergence of sharing as a modality of economic production', *Yale Law Journal*, 114:273–358.

Benkler, Y. & H. Nissembaum (2006) 'Commons-based peer production and virtue', *The Journal of Political Philosophy*, 14:394–419. doi:10.1111/j.1467-9760.2006.00235.x.

Blau, P.M. (1964) *Exchange and Power in Social Life*, New York: Wiley.

Blau, P.M. (1990) 'Microprocess and macrostructure', in K. Cook (ed.) *Social Exchange Theory*, London: Sage, 83–100.

Block, F. (1990) *Postindustrial Possibilities: A Critique of Economic Discourse*, Berkeley: University of California Press.

Boyle, D. (2003) 'The new mutualism and the meaning of time banks, *Local Economy*, 18 (3):253–70.

Borgatti, S.P., C. Jones & M.G. Everett (1998) 'Network measures of social capital, *Connections*, 21 (2):36.

Bruni, L. (2006) *Reciprocità. Dinamiche di cooperazione, economia e società civile*, Milano: Bruno Mondadori.

Burt, R.S. (2005) *Brokerage and Closure: An Introduction to Social Capital*, London: Oxford University Press.

Caliandro, A. & A. Gandini (2017). *Qualitative Research in Digital Environments: A Research Toolkit*, London: Routledge.

Cioffi-Revilla, C. (2010) 'Computational social science', *WILEY Interdisciplinary Reviews: Computational Statistics*, 2 (3):259–71.

Dittmer, K. (2013) 'Local currencies for purposive degrowth? A quality check of some proposals for changing money-as-usual', *Journal of Cleaner Production*, 54 (2013):3–13.

Dubois, E.A., J.B. Schor & L.B. Carfagna (2014). 'New cultures of connection in a Boston time bank', in J.B. Schor & C.J. Thompson (eds) *Sustainable Lifestyles and the Quest for Plenitude: Case Studies of the New Economy*, New Haven: Yale University Press, 95–123.

Franchi, M. & A. Schianchi (2011) *Scegliere nel Tempo di Facebook: Come i Social Network Influenzano le Nostre Preferenze*, Roma: Carocci.

Fukuyama, F. (1996) *Trust: The Social Virtues and the Creation of Prosperity*, New York: Free Press.

Granovetter, M. (1973) 'The strength of weak ties', *American Journal of Sociology*, 78:1360-80.

Granovetter, M. (1985) 'Economic action and social structure: The problem of embeddedness', *American Journal of Sociology*, 91:481-510.

Godbout, G.T. & A Caillè (1998) *The World of the Gift*, Montreal: McGill-Queen's University Press.

Grieco, M. (1987) *Keeping It in the Family: Social Networks and Employment Chance*, London: Tavistock.

Gui, B. & R. Sudgen (2005) *Economics and Social Interaction: Accounting for Interpersonal Relationships*, Cambridge: Cambridge University Press.

Hämäläinen T.J. (2007) 'Social innovation, structural adjustment and economic performance', T.J. Hämäläinen & R. Heiskala (eds) *Social Innovations, Institutional Change and Economic Performance: Making Sense of Structural Adjustment Processes in Industrial Sectors, Regions and Societies*, Northampton: Edward Elgar, 11–74.

Hanneman, R.A. & M. Riddle (2005) *Introduction to Social Network Methods*, Riverside: University of California, Riverside. Accessed from http://faculty.ucr.edu/~hanneman/.

Hochschild, A.R. (2012) *The Outsourced Self: What Happens When We Pay Others to Live Our Lives for Us*, New York: Metropolitan Books.

Krippner, G.R. (2001) 'The elusive market: Embeddedness and the paradigm of economic sociology', *Theory and Society*, 30, 775–810.

Laamanen, M., S. Wahlen & M. Campana (2015) 'Mobilising collaborative consumption lifestyles: A comparative frame analysis of time banking', *International Journal of Consumer Studies*, 39 (5):459–67.

Lasker J., E. Collom, T. Bealer, E. Niclaus, J. Keefe, Z. Kratzer, L. Baldasari, E. Kramer, R. Mandeville, J. Schulman, D. Suchow, A. Letcher & A. Rogers (2011) 'Time banking and health: The role of a community currency organization in enhancing well-being', *Health Promotion Practice*, 12 (1):102–15.

Lazzarato, M. (1996) 'Immaterial labour', in M. Hardt & P. Virno (eds) *Radical Thought in Italy: A Potential Politics*. Minneapolis: University of Minnesota Press, 133–149.

Lin, N. (1982) 'Social resources and instrumental action', in P.V. Marsden & N. Lin (eds) *Social Structures and Network Analysis*, Beverly Hills: Sage, 131–145.

Lin, N. (2001) *Social Capital: A Theory of Structure and Action*, London and New York: Cambridge University Press.

Malinowski, B. (1922) *Argonauts of the Western Pacific: An Account of Native Enterprise and Adventure in the Archipelagoes of Melanesian New Guinea*, New York: Dutton.

Mauss, M. (1924) Essai sur le don. Forme et raison de l'échange dans les sociétés archaïques. *L'Année Sociologique*, I:30–186.

Milgram, S. (1967). The Small World Problem. *Psychology Today* 1 (1):60–67.

Moeller, S. & K. Wittkowski (2010) 'The burdens of ownership: Reasons for preferring renting', *Managing Service Quality: An International Journal*, 20 (2):176–91.

Mutti, A. (2003). 'Le teorie della fiducia nelle ricerche sul capitale sociale', *Rassegna Italiana di Sociologia*, 4:515–36.

New Economics Foundation (2001) 'Time banks: A radical manifesto for the UK', London: RAP.

North, P. (2014) 'Complementary currencies', in M. Parker, G. Cheney, V. Fournier & C. Land (eds) *The Routledge Companion to Alternative Organization*, London: Routledge, 182–94.

Owyang, J. & A. Samuel (2015) *The New Rules of the Collaborative Economy*, New York: Crowd Companies.

Pais, I. (2012). *La Rete che Lavora. Mestieri e Professioni Nell'era Digitale*, Milano: Egea.

Pais, I. & L. Del Moral (2015). 'Collaborative economy and the digitalization of timebanking: Opportunities and challenges', *Studi di Sociologia*, 19:3–21.

Pais, I. & G. Provasi (2015) 'Sharing economy: A step towards "re-embedding" the economy?' *Stato e Mercato*, 105:347–77.

Papacharissi, Z. (ed.) (2011) *A Networked Self: Identity, Community, and Culture on Social Network Sites*, New York: Routledge.

Polanyi, K. ([1944] 2001) *The Great Transformation: The Political and Economic Origins of Our Time*, Boston: Beacon Press.

Polanyi, K. (1957) *Trade and Market in the Early Empires*, Glencoe: Free Press.

Podda, A. (2017) *I Legami che Creano Sviluppo. Capitale Sociale e Politiche di Rete. Applicazioni di Social Network Analysis*, Roma: Ediesse.

Portes, A. (1998) Social capital: Origins and applications in modern sociology, *Annual Review of Sociology*, 24:1–24.

Sahlins, M. (1972) *Stone Age Economics*, New York: Aldine.

Salvini, A. (2005) *L'Analisi delle Reti Sociali. Risorse e Meccanismi*, Pisa: Plus-Pisa University Press.

Schroeder, R.F.H., Y. Miyazaki & M. Fare (2011) 'Community currency research: an analysis of the literature', *International Journal of Community Currency Research*, 15 (A):31–41.

Seyfang, G. (2004) 'Working outside the box: Community currencies, time banks and social inclusion', *Journal of Social Policy*, 33 (1):49–71.

Schor, J. (2014) 'Debating sharing economy', Great transition initiative. Accessed October, 17, 2017 from http://www.greattransition.org/.

Schor, J.B. & C.J. Fitzmaurice (2015) 'Collaborating and connecting: The emergence of the sharing economy', in L. Reisch & J. Thogersen (eds) *Handbook on Research on Sustainable Consumption*, Cheltenham: Edward Elgar, 410–25.

Sombart, W. (1916) *Der Moderne Kapitalismus. Historisch-Systematische Darstellung des Gesamteuropäischen Wirtschaftslebens Von Seinen Anfängen bis zur Gegenwart*, Berlin: Dunker & Humboldt.

Sudgen, R. (1984) 'The supply of public goods through voluntary contribution', *The Economic Journal*, 94:772–87.

Turner, H. (2007). 'Mystery shopping', in M. van Hamersveld and C. de Bont (eds) *AaVv, Market research Handbook*, Chichester: Wiley & Son, 333–46.

Trobia, A. & V. Milia (2011) *Social Network Analysis,* Roma: Carocci.

Watts, D.J. (1999) 'Networks, dynamics, and the small-world phenomenon', *American Journal of Sociology*, 105 (2):493–527.

Zapf, W. (1991) The role of innovations in modernization theory. *International Review for the Sociology of Sport*, 2 (3):83–94.