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P2Pvalue Consortium
Project objectives

- **Development of a software platform**
  - Understand, experiment with, design and build a collective intelligence techno-social federated collaborative platform that will foster the sustainability of communities of collaborative production.
  - Deploy several customised nodes of the federated platform in which real-world communities will interact, participate, and collaboratively create content.

- **Theory and Policy**
  - Develop CBPP theory, based on multidisciplinary and multi-method research on CBPP, and determine the factors for success, productivity, and resilience in communities (“best practices”).
  - Develop a set of value metrics and reward mechanisms that incentivise the participation of citizens in CBPP.
  - Simulate the new sustainability models proposed, showing how robust they are in the face of diverse community conditions.
  - Verify the compatibility of the proposed models with innovation policies and provide a series of policy recommendations for public administrations to encourage CBPP-driven social innovation.

- **Data and Resources**
  - Provide a directory of existing CBPP communities, together with their main characteristics.
  - Maintain an open web-based CBPP archive, with the collected data-sets, surveys, reports, Open Educational Resources and open-access publications, freely available to other researchers and third-parties under an open copyleft license. This includes a project public repository with all code available as free/open source.
Executive Summary

In the first section, a historical overture attempts to develop a deeper understanding of the qualitative causations behind the different perspectives of value. The inquiry concerns a theoretical exploration of how value is created and rewarded and the extent that their interrelation affects human behaviour. It is suggested that the evolution of different perceptions is contingent on the wider socio-economic context, concerning the dominant economic system and productive structures. Some contemporary perceptions are discussed in the framework of the information economy, and a review of the literature examining the concept of reward systems is elaborated. Different types of rewards and motivations are investigated in the way they shape and influence human behaviour. The following section presents the outcomes of early trials to introduce reward and recognition systems to Teem, and discusses how they relate to the theory. Based on these trials, some design guidelines for future work are provided. A conclusion suggests a tentative model to explore the possible trade-offs of value and rewards and the way they affect human social and economic behaviour.
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1. Theory of Value and Reward Systems

1.1. Introduction

Amidst times of rapid change in the economy and society brought about by the ever-spreading ICT revolution, a wide spectrum of aspects influencing human interaction, as well as individual and collective behaviour, are being re-defined. The current review focuses on two interrelated concepts: value and rewards.

Previous work within the P2Pvalue project (WP1) has elaborated on value creation in commons-based peer production (CBPP), aiming to develop a deeper understanding of new perceptions of value. CBPP poses significant challenges on traditional theory of value, as it introduces disruptive modalities of productive relations and interactions. While traditional theories have focused on labour and price to develop measures of value, in CBPP communities these measures appear to be irrelevant. Statistical data (Tasks 1.1 & 1.4) have shown that the majority of contributions in collaborative production are not based on formal contracts, while more than half of the cases did not hold any labour relations at all. At the same time, the output of CBPP does not possess any exchange (market) value on its own and is thus not a subject of price mechanisms. Nevertheless, in at least half of the cases it has been reported that some type of monetary interaction has been in use among the community members, while more than two thirds of the CBPP cases analysed use an internal system to measure or evaluate contributions.

Moreover, statistical analysis (Task 1.1) has distinguished six different dimensions of value: community building; objective accomplishment; monetary value; social use value; reputation; and ecological value. In relation to these dimensions, digital ethnography (Task 1.3) has also shown a variety of different conceptions among the cases, while there is diversity in the perspectives by which value is assessed, based on the individual, community or society point of view. It is thus apparent that a pluralistic approach with regards to value is being developed in the realm of CBPP.

The main inquiry of this section is to explore theoretically how value is created and rewarded and to what extent does their interrelation affect human behaviour. A detailed review of the concept of value in the history of economic thought is annexed to this document, where we attempt to provide a deeper understanding of the qualitative causes of different perspectives on value, in relation to the wider socio-institutional context. In the following sections, we elaborate on the transformations of value with the emerging dynamics of the information economy. Subsequently, a review on reward systems is provided, covering the basic concepts from management and incentives theory.

1.2. Value in the information economy

Previously we argued that CBPP is rapidly challenging the traditional theories of value, through the introduction of new modalities in production relations. Rigi and Prey (2015) advocate that informational content alone does not possess any exchange value, as it is non-rivalrous and it can be reproduced at negligible cost and time. CBPP surfaces as a new form of social production in the information economy, unsealing a political economy which goes beyond the traditional value theory and
negates the conventional canons of value altogether (Rigi & Prey, 2015). It should be recognised as a new mode of production, different from private for-profit or public state-owned production. Its product does not possess exchange value for markets but rather use value for a community of users/ producers. Hence, the produced information does not classify as a commodity but rather as a universal commons, embodying use values. Subsequently, social media companies employ labour to exploit this information and provide services, thus creating exchange value.

On the other hand, Marx (1976) unveils an antagonistic relation of use value and exchange value in capitalist production. The first serves the collective social interest, whereas the second individual private objectives. This relation is further eradicated in the context of information, due to its non-rivalrous form. Consequently, exchange value is only possible to be imposed on information through artificial scarcity and enclosure of the information commons. Therefore, the price extracted from information can be better understood as a form of monopoly rent (Rigi & Prey, 2015).

1.3. Reward systems

The design and application of effective reward systems has been a concern in various scientific disciplines, from psychology and behavioural sciences, to social theory and management literature. In general, reward systems can be described as a set of processes through which behaviours are directed and motivated to achieve a certain individual or collective goal (Jansen & Van Glinow, 1985). Within an organisation, reward systems guide agents to engage, or at least try or pretend to engage, in activities that are rewarded and abstain from the ones not rewarded (Kerr, 1975).

It has been argued that reward systems, when properly designed, can be a key contributor to organisational effectiveness (Lawler, 1987). A multifaceted framework is used to encompass a wide range of motivational factors and rewards, including monetary and non-monetary and related to individual or collective behaviour. A basic dichotomy encountered in most theoretical approaches is one between intrinsic and extrinsic rewards (inter alia: Pinder, 1998; Amabile, 1993; Bartol & Srivastava, 2002; Frank, 2011). These are further elaborated below:

**Intrinsic rewards** are related to the job content and derive from performing a task or a job itself. They concern the satisfaction derived from undertaking and completing a challenging job, the sense of achievement and self-esteem, but also the development and improvement of the relevant skills and competences and self-actualisation.

**Extrinsic rewards** are related to external circumstances from the task or job in question. They are related to the job context and originate from external sources. They mostly include material rewards, such as payments, bonuses and other monetary rewards, but also fringe benefits, security, promotion and advancement, as well as threats of punishment or competition.

In contrast to intrinsic motivations, the sources of extrinsic motivations can be manufactured, for example by introducing reward schemes for particular contributions. Such offers of rewards can increase contributions; however, they can also introduce biased incentives, which may lead to an overprovision of one kind of contribution at the cost of another kind, and they can undermine intrinsic motivations.
Monetary compensation represents probably the most fundamental extrinsic reward in the workplace, while it is widely considered as one of the primary determinants of behaviours and motivations (Gerhart & Milkovich, 1992). Moreover, different types of rewards can be proved to be more effective according to the specific sector of the organisation and the type of the job in question. For example, intrinsic motivation is thought to be the main determinant in jobs requiring individual creativity (Amabile, 1993; Bartol & Srivastava, 2002).

Motivation theories in principle assumed the effects of intrinsic and extrinsic rewards to be operating additively (Porter & Lawler, 1968; Frank, 2011). On the contrary, ‘cognitive evaluation theory’ (Deci & Ryan, 1985) suggests that extrinsic rewards, especially monetary rewards, have primarily a negative impact on intrinsic motivation. There has been widespread scholarly discourse on this issue, with different analyses making a case for extrinsic rewards positively affecting feelings of self-determination, which benefit intrinsic motivation (Eisenberger et al, 1999), while monetary rewards have been suggested to also have a symbolic meaning when used in recognition for achievement, also reinforcing intrinsic motivation (Lawler, 1990).

On a more holistic analysis, Amabile (1993) has proposed a model of “motivational synergy”, where intrinsic and extrinsic motivation interact, positively reinforcing each other. Potential combinations are supported by two mechanisms: (a) extrinsics in service of intrinsics: extrinsic factors positively contributing to intrinsic motivation (‘synergistic extrinsic motivators’), for example, confirming one’s competence through reward, recognition, and feedback; and (b) motivation-work cycle match: motivation matching the stage of the ‘work cycle’ i.e. using the right motives where they are mostly needed, according to the stage within a work process, for instance from idea to prototype in a problem-solving process.

In a comprehensive meta-analysis of experimental studies, Cameron et al. (2001) offer a detailed description of the interactions between external rewards and intrinsic motivations. According to their analysis, the effect of rewards depends on the nature of the reward, and the relative interest of the participant in the task at hand. The authors identify three scenarios in which external rewards can have a positive effect on free-choice intrinsic motivations:

1. Rewards offered for tasks of low interest to the participant.
2. Verbal rewards for high-interest tasks (positive feedback).
3. Tangible and expected rewards for exceeding others on a high-interest tasks. (This can foster competition.)

In all other cases, rewards either undermine intrinsic motivations, or have no significant effect on outcomes.

Heneman & Schutt (2002) propose a different approach, moving towards an integrated philosophy of rewards, which includes opportunities for broadening of skills and competences, the design of more meaningful jobs and more flexibility for individuals to choose among different sets of rewards they value the most. At the same time, the importance of intangible aspects has been increasingly discussed in affecting business success and organisational culture, such as information sharing, and the way they are reinforced by reward systems (Bartol & Srivastava, 2002).
1.4. Motivation in collaborative processes

Different types of reward systems have been identified to be at work outside the limits of the traditional workplace or even outside the limits of work relations as such. Marwick et al (2010) identify a set of motivations which influence young people in sharing personal information: online socialisation, including the reinforcement of intimacy and personal relationships, identity building and reputation and popularity (“micro-celebrity” Senft, 2008: 25). Furthermore, those attributes have been shown to shape an integrated culture, demonstrating high levels of trust among individuals and motivations to create and disseminate content. This in turn is linked to rewards related to the self-conscious construction of identity, reputation and socialisation (Senft 2008; Marwick & Boyd, 2011).

Some activities can be perceived as intrinsically motivating because they satisfy a basic desire, and as a result can evoke pleasurable experiences. In psychology, sixteen such basic desires have been identified, including desires for influence, knowledge, autonomy, social standing, companionship (Reiss, 2004). Their fulfilment yields intrinsic feelings that are specific to the desire: influence yields a sense of efficacy, knowledge yields a sense of wonder, companionship yields fun. Such intrinsic motivations can be strong drivers for action, and they can have an important role in the decision to participate in CBPP initiatives (Nov, 2007; Budhathoki & Haythornthwaite, 2013). However, their structure is particular to each person, and it takes time and effort to identify them during platform design, and to appropriately address them.

Contributor motivations are important drivers for sustained participation. When they are appropriately considered in the platform design, contributor motivations can provide triggers for action, and yield rewarding experiences that can sustain contributor engagement for long periods. However, when the contribution experience comes in conflict with existing contributor motivations, participants are unlikely to remain active.

The introduction of competition may provide effective extrinsic motivations for some contributors, but it may also demotivate. Competition can be a motivator for achievement-oriented participants, while it can harm enjoyment for others (Tauer & Harackiewicz, 1999). Furthermore, low achievement in a competitive environment can be discouraging. For example, in a citizen science project it was found that competition motivated high performers, but demotivate others who were not in the leading group (Massung et al., 2013).

On the other hand, there are many opportunities for community platforms to foster participation by providing better support to their contributors. In volunteer communities, participation is often constrained by the capacity and ability of their contributors. Some of these can be addressed with interventions, for example by reducing barriers to entry, nurturing novices, and by fostering a belief that participation is possible and will be welcomed (Bishop, 2007).

Designers should also consider the affective structure of the platform: the degree to which it fosters the development of social relationships and group cohesion. Affective structures are built by processes of affiliation (“getting in contact with each other”), impression formation (“getting to know each other”), and interpersonal attraction based on affection, status, and competence. The resulting relationships support common understanding, an orientation towards cooperation, and the desire to remain part of the group (Kreijns et al., 2003).
2. Rewards and Recognition on Teem

We engaged in an evaluation study to confirm that propositions made in the literature can be reproduced in the context of the Teem platform. We will first describe the evaluation process, and summarise our findings. In the following section we then propose design guidelines for CBPP platform developers which are derived from these findings.

2.1. Evaluation Process

In an initial evaluation phase we prepared screen mock-ups for a proposal management workflow, intended for use by CBPP communities. The mock-up included member comments, notifications of community activity, and rewards for contributions in the form of badges. We presented these mock-ups to five participants in separate semi-structured interview sessions. Three participants were active participants in CBPP communities, two were novices. Four Participants were women. All were unfamiliar with Teem. Participants were first introduced to the general intention of the mock-ups. They were then invited to discuss potential uses, and to enact one or more specific scenarios using the mock-ups. Sessions ended with an open conversation about participant perceptions, including personal preferences and concerns.

Explicit rewards (in the form of badges) were found to be controversial among participants, as was anticipated by the motivational theory. Two participants expressed a strong dislike of gamification mechanisms and competitive processes. We confirmed this finding with a supplementary analysis of the 234 responses of the CBPP survey which were collected as part for Task 1.4. Here, survey responses suggested that women participants were more likely to express a desire for recognition rather than rewards, for by being recognised as author of a high-quality contribution, rather than a high-ranking position on a leaderboard.

Evaluation was concluded with a confirmatory design phase, with a focus on testing design alternatives based on these findings. This involved two design iterations: an initial screen mock-up, and an implementation of a mechanism to receive feedback and recognition by collaborators. These designs were presented to three participants, with the intention to broadly confirm that the updated implementation corresponds to the theory and prior empirical evidence.

2.2. Evaluation Findings

Virtual badges and medals for certain types of contributions. In interview trials with prospective contributors, we experimented with virtual badges as a means of incentivising certain kinds of contributions. We found that the badges introduced a gender bias: some contributors were more interested in these rewards than others. Based on this observation, we anticipate that a reward system involving badges risks the introduction of a systematic participation inequality. In motivational terms, this outcome could be interpreted as the introduction of competitive dynamics into an environment that is fundamentally based on cooperative motivations. Competition can come in conflict with the intrinsic motivations of some participants, for example because it interferes with their desire for a communal experience, or because it introduces a public challenge to fight for social standing.

Peer feedback. We developed a software prototype which allowed participants to give thanks for particular kinds of contributions. In trials, this prototype received positive feedback. This is supported by the motivational literature discussed
above: for high-interest tasks (tasks where the contributor is intrinsically motivated), verbal rewards can provide additional external motivation.

“Liking” a project. We implemented a mechanism to “like” a group or project, which is used by participants to show appreciation for particular initiatives. In motivational terms, this can be considered a form of an intangible or verbal reward: a public form of showing appreciation. In the implemented form, this reward does not introduce explicit competition: projects are not ranked by number of likes, and are not compared to other projects in terms of likes. As a result, we expect that the introduction of this kind of reward does not interfere with intrinsic contributor motivations.

Acknowledging founders. On Teem, creators and early members of groups and projects are listed in a more prominent position than those who join later. This is a means of providing recognition to those who show early initiative. In motivational terms, this risks the introduction of biased incentives: it incentivises the creation of new groups. However such a prominent ranking is also subject to social validation: it is only meaningful once other people have joined the same group or project. Founder status is arguably more important for larger and highly active groups, while acquiring founder status of a large number of small and inactive groups has little inherent social value. For this reason, we believe that in the current form, prominently listing founders is an appropriate form of social recognition. However we also expect that we may need to revise the mechanism as the community matures. In particular, it may become a target for gaming by individuals with a large following; and it does not always provide attribution to the right person, for example in groups where late joiners have taken on important coordination functions.

3. Design Guidelines for Future Work

In general, rely on the intrinsic motivations of contributors. As a first step, ensure that the contribution process does not pose barriers to the fulfilment of existing intrinsic motivations. Address any sources of frustration and other contribution barriers. As a second step, identify instances where the fulfilment of intrinsic motivations may require additional workflow support. For example, to ensure that contributors can find tasks that interest them, provide a public list of open issues, and keep it up to date.

Where possible, prefer verbal rewards to tangible rewards. Identify instances where completion of a task warrants an explicit acknowledgement. Consider who is most suited as a messenger: a system message may be easiest to provide, however a verbal reward by a team member may have greater impact. Remind community members to provide verbal rewards, either in subtle ways (by allowing comments on contributions) or in overt ways (by encouraging feedback as part of a notification workflow).

Avoid introducing competition where it may harm the intrinsic motivations of some contributors. This includes leaderboards, and other prominent forms of comparative evaluation. While competitive aspects may motivate some contributors, they may be discouraging to others, and can undermine cooperative values of participating groups and members.

Identify low-interest tasks that do not find a contributor, and consider rewarding contributors for their completion. Carefully consider what biases this may introduce, and what side-effects this may have. For example, might it discourage contributions to other, high-interest tasks? Might the rewards increase contribution volume at the cost of contribution quality?
When designing features to support particular activities, explicitly state the intrinsic and extrinsic motivations which can support a desired behaviour. Then design the feature in a way that specifically addresses these motivations. Be mindful that the structure of people’s motivation differs: not all motivational triggers work for all people. Be particularly aware of instances where a motivational trigger can interfere with other intrinsic motivations, as is the case with competition and tangible rewards. In this case, introducing a feature may improve the behaviours of some people, but can have an overall negative effect on the community. Consider whether it is possible to design such features in a way that makes them useful to those who care, but easy to ignore for everybody else.

4. Conclusions

As both value and rewards are influenced by human perceptions and interactions within a certain context, a tentative synthesis of value and rewards could be provided, based on two basic dichotomies: For value, we distinguish between objective and subjective perceptions, while for rewards, between intrinsic and extrinsic rewards. These two dichotomies could provide a framework to assess a multiplicity of different attitudes in human socialisation.

For instance, Adam Smith attempted to define an objective measure for value and used labour time that is employed in the production of commodities. In turn, labour wage as a form of reward constitutes a type of extrinsic reward, offering compensation for the sacrifice of labour time. On the other side of the spectrum, we have observed the role of reputation as a reward for sharing knowledge and co-creating content in networks. Reputation is more relevant with subjective perceptions of value, related to sentimental and affectionate evaluations of a multiplicity of agents. In-between fall endless possibilities of relations, which are correspond to different perceptions of value and rewards. The following figure represents schematically these relationships.
Figure 1: The location of various possible motivations according to their positions on scales of intrinsic/extrinsic reward and subjective/objective value.

5. References


ANNEX

I. Value in the history of economic thought

Before the establishment of capitalism as the dominant economic system, various philosophical and practical traditions had developed concepts of value. In antiquity, the Greeks had a normative perspective in relation to wealth, in the broader sense, focusing on what constitutes a 'good life' and ethical questions of justice. Aristotle in Ethics (1897) discusses value as expressed almost exclusively in the exchange of two things. However, he does imply a distinction between value in use and value in exchange, arguing that the latter is subordinate to the former, as it is the usability of any good that makes someone desire it in an exchange. Aristotle understands people’s demand for each other’s goods or services as a standard of measurement of their value. In turn, representation of demand in money serves to equate the different types of labour applied to produce different types of things, so that they can be exchanged (Sewall, 1901).

Aristotle’s approach on value within the general concept of justice is representative of the general perception of the economy in the Greek and Roman thought as subordinate to political and ethical issues. Therefore, economic phenomena were not investigated for their own sake (Sewall, 1901). This, however, did not hinder the development of a very sophisticated economy, including an integrated financial system. The Christian theologians and the scholastics of the 13th century, led by Albert the Great and Thomas Aquinas, have incorporated the Aristotelian theory of justice and economic exchange to crystallise the doctrine of the 'just price', which reflected the true value of commodities in exchange (Baldwin, 1959; Sewall, 1901).

Baldwin (1959) supports the position that the Aristotelian perception of value was based on the subjective factor of need or want, while objective aspects, such as labour and expenses, have been later added in his analysis by Thomas Aquinas. Overall, the unifying element of the approaches of antiquity and the medieval philosophy was that value has been thought to serve a broader social necessity rather than a rational economic aim and in connection to ethical and legal considerations (Sewall, 1901). Analytical approaches were fundamentally normative and economics were considered to be part of justice and moral philosophy (Baldwin, 1959).

The centuries succeeding the middle ages are marked with the emergence of the nation state and the development of trade. The focus has gradually been shifted away from ethics and the pursuit for the just price, towards a more practical approach. As the economic system was becoming increasingly based on exchange, the conception of value as exchange power had inevitably dominated economic thought (Sewall, 1901). In this sense, money was the primary good acquiring exchange value and the concept of value for commodities had become interchangeable with price.

In the evolution of the conception of value there is an apparent connection with certain historical conditions. More specifically, the perception of exchange value is gradually emerging, first with the establishment of a money economy and the division of labour, where individuals produce to exchange and, second, with the development of industrialisation (Sewall, 1901). From classical Greek and Roman thought, through the medieval philosophy of the scholastics and canonists, to the economic analyses of the industrial political economy of classical economists, certain historical developments influence and transform the general perception of value. In the following paragraphs, a brief historical evolution of the concept of value from the 18th to the early
20th century is provided, following the development of the political economy of the time. The analysis concerns the evolution of the perceptions of value provided by some of the most influential economic writers. For reasons of brevity and comprehension, the general historical context and the broader economic thought that formed this perception exceeds the limits of the current paper.

Smith in the Wealth of Nations (1776) arguably provides the first complete theory of value, which is comprehensive within his conceptualisation of the political economy. He explicitly states and explores the basic dichotomy between 'value in use' (utility) and 'value in exchange'. In his analysis, Smith claims that the first is not a determinant of the latter, neither necessary nor a prerequisite and uses his famous example with water and diamonds to underpin his argument (Smith, 1776: IV).

A key starting point for Smith’s definition of a measure for value is the division of labour. In a society with established and developed division of labour, exchange is the means through which people seek to satisfy their needs, as they produce alone only a small fraction of the necessary goods or services. Therefore, they have to exchange the products of their own labour to those of other people's labour. In this sense, Smith sees labour as the sole real measure of exchangeable value of all commodities, because the value of any commodity in exchange 'is equal to the quantity of labour which it enables him to purchase or command' (1776: I.V.1). Smith rejects the idea that a commodity, such as gold and silver in his time, itself varying in quantity and its own value, could be an accurate measure of value for other commodities. On the contrary, 'the toil and trouble' in which one gets into in order to produce any commodity, laying down a specific portion of his 'ease, his liberty and his happiness' (ibid: I.V.2) as the price one is actually paying for any other commodity, is always the same, assuming an ordinary physical and mental state. Therefore, Smith argues that labour is not varying in its one value and alone can function as 'the ultimate and real standard by which the value of all commodities can at all times and places be estimated and compared. It is the real price; money is their nominal price only' (ibid: I.V.7).

Ricardo was initially less interested in a definition of value for its own sake, but had to develop one, in order to resolve the problems of distribution of social product (King & McLaren, 2015). In the third edition of Principles (1821) we find his view on value, at first, as a critique on Adam Smith, regarding the distinction of value in use and value in exchange. For Ricardo utility is not regarded as a measure of exchange value, it is however essential to it (1821:11). Utility, in turn, is associated with scarcity and the necessary expenditure of labour, while exchange value is regarded as the only one concerning economic analysis (Hollander, 1904). However, Ricardo holds that the labour theory of value applies to the great majority of products, which can be reproduced almost without limits by the employment of human labour and under competition (Ricardo, 1821:12). Ricardo accepts the idea of an absolute (positive) value, associated with the cost of production, including wages for labour and profits of stock for the capital employed. However, his focus was not on the value of the commodity itself, but rather on its relation to other commodities, i.e. the exchangeable value (Hollander, 1904).

In the same direction is also the analysis of J.S. Mill (1848), who goes further on to define value as 'the command which its possession gives over purchasable commodities in general' (1848: Part III.1.5). Further on, in his analysis of a measure of value (ibid: Part III.15), Mill rejects the classical view of measuring the value of a commodity by the labour needed for its production. He distinguishes this as being rather merely a measurement of the cost of production, whereas he implies that for value (that is value in exchange) there is no similar objective measurement.
Building on Mill’s views a group of scholars have further developed the perceptions of value from the classical political economists. Based on the concept of marginal utility discussed by following Jevons (1871), a whole new generation of economists has been influenced, including Leon Walras, Vilfredo Pareto and Carl Menger, as well as Milton Friedman and neoclassical scholars of the 20th century. Jevons (1871) describes an inverse relation to the utility (referring to the classical view of use value) of an additional unit of a commodity, with the number of units already possessed. His views have signified a turning point in economic thought, shifting from definitions of objective measurement of value, to perceptions of value subjectively assessed by agents in a free market (King & McLure, 2015). Some of the fundamental concepts of neoclassical economic theory, such as utility-maximisation and equilibrium, have emerged from this point of view (Walras, 1874; Marshall, 1890).

At the same period with J.S. Mill’s analysis, Karl Marx publishes the Communist Manifest and develops his critique of political economy, providing a completely different trajectory on the evolution of the classical economic thought. Marx’s labour theory of value vis-à-vis with commodity production lays at the very heart of his analysis. On a first level, Marx accepts his approach on the relation of labour and value (King & McLure, 2015). Fuchs (2010) provides a comprehensive interpretation of Marx’s approach, concluding that the value of a good is the total time that is necessary for its production. As regards the value of goods, Marx, much like the classical economists, distinguishes use value and exchange value; however he identifies respectively a qualitative and quantitative element in the two forms.

Meanwhile, Marx is also a severe critic of the Ricardian theory, to the extent that it fails to identify different modes of production. In the first volume of the Capital, Marx distinguishes the ‘capitalist mode of production’ from simple commodity production, as studied by classical political economists (King & McLure, 2015). Whereas in pre-capitalist conditions commodities would be valued in exchange according to the labour expended in their production, in capitalist production, he argues that ‘is not merely the production of commodities, it is essentially the production of surplus-value’ (1867:359). From this point of view, Marx’s theory of value is a completely new theoretical proposition, positioning as its main theoretical object the capitalist mode of production rather than value alone (Milios, 2015). This way, we may argue that Marx accepts labour time as a measure of the value of goods, but places the focus of his critique on the nature of labour, rather than labour as a measure.

Marx implies that in capitalism the fundamental aspect of goods is their quantitative relation with money, which allows them to exchange as commodities (Fuchs, 2010). Furthermore, he suggests that the exchange value of commodities does not hold any connection with their material substance or usability. In this sense, exchange value in Marx’s analysis is rather a manifestation of the structural relations than a direct result of labour. It is a ‘property’ that the products of labour acquire, which is only actualised in the market, through their exchangeability as commodities (Milios et al, 2002). Therefore, the production for exchange and profit in capitalism leads to an expression of value as a product of ‘homogenised labour processes’, what Marx encapsulated to the concept of abstract labour (1867:39). In contrast, concrete labour is related to the creation of use value, the qualitative element of goods, whereas abstract labour is associated with their exchange value, expressed in a quantitative relation with money (Milios et al, 2002; Fuchs, 2010; 2012).

The difference in Marxist analysis in relation to previous as well as to his contemporary approaches of labour theory of value, is the association he makes of the conceptualisation of value with the structural and productive relations. Marx, much like Smith and Ricardo, did distinguish between value of goods in absolute and relative terms, that is, as products of the labour embodied
in their production and as items of exchange as commodities. Similarly, the classical political economists did accept labour time as a measure of the value of commodities. The difference in Marxist labour theory of value, which is arguably of particular interest to our analysis in the next section, is the focus on the nature of labour in the capitalist mode of production. In the production of commodities the element of commensurability for products that embody qualitative different types and amounts of labour is essential for the exchange to take place. The classical political economists, even though they acknowledged the problem of incommensurability of labours, assumed that the market mechanisms would estimate the differences with enough precision for practical purposes (Meikle, 1995). Marx, in turn, implied that resolving incommensurability in exchange results in stripping the products of labour of their qualitative characteristics, which in turn deems the labour they embody as 'labour of equal quality' (abstract labour) (Milios et al, 2002).

II. Value in the information economy

The general understanding that subsumes the term ‘information economy’ is an economy in which production is associated with knowledge, communication and information, as opposed to other kinds of activities (Porat, 1977). The term is often used interchangeably with ‘post-industrial economy’ or ‘knowledge economy’, which have been objects of previous works conducted by Machlup (1962), Bell (1973), Drucker (1968) and others. In fact Porat (1977) acknowledges the fact that the rationale for his study of the information economy is indeed indebted to those insights and concepts. Following Castells (2010) we use the term as representative of ‘a specific form of social organization in which information generation, processing, and transmission become the fundamental sources of productivity and power because of new technological conditions’ (Castells, 2010: 21)

There is widespread scholarly dissent regarding the transformation of work and the nature of labour in the information economy. Consequently, the relevance of the labour theory of value has largely been dismissed in more contemporary views, which make a case for alternative approaches. More specifically it has been argued (Rullani, 2004; Arvidsson & Colleoni, 2012) that wealth creation in the information economy, as opposed to classical views, is increasingly dependent on socialised and networked productive processes. The individual toil and trouble is thereby becoming ever more difficult to identify and assess.

Furthermore, the increasing importance of ‘affect’ (Negri, 1999) has been claimed to form the basis for a new conception of value, as labour becomes immaterial (Hardt & Negri, 2000), that is more qualitative and ever more complex, both in individual and collective terms. To this direction also points out the increasing importance of intangible assets in corporate value assessment (Arvidsson & Colleoni, 2012). Value is increasingly created in collective cooperative processes a ‘multitude’ (Hardt & Negri, 2004) of diverse actors and is thus ‘less susceptible to control and measure in terms of the labour theory of value’ (Arvidsson & Colleoni, 2012:140).

The immeasurability of value (Hardt & Negri, 2000), apart from a rejection of the classical theory of value, also constitutes to a strong challenge for the conventional practices of management and accounting (Toms, 2008). This is coupled with the increasing importance of financial markets in the information economy, where the produced ‘value beyond measure’ (Hardt & Negri, 2000:355) is associated with an accounting system based on solely sentimental criteria. As Arvidsson & Colleoni (2012:141) claim: 'value created in such productive processes is more or less directly channelled to financial markets', whereas the latter ‘are not so much rational as they are affective'.
On the contrary, Fuchs (2012) contends that the labour theory of value remains relevant and uses the Marxist analysis to underpin his position. As was discussed before, Marx holds that labour in capitalist production there are two processes of labour identified: First, concrete labour, which produces use values and represents 'the everlasting Nature-imposed condition of human existence' (Marx, 1867:130). Second, abstract labour that creates the value of commodities (Fuchs, 2012:637). Fuchs's position is the activity of internet users is in fact labour that produces 'informational content' (Fuchs, 2012:187), which is commodified and exchanged by media advertisers. At the same time they constitute to the audience for advertising, while their attention as a commodity is actually measurable in terms of aggregated time of social labour (Fuchs, 2012).

In response to both approaches, Rigi and Prey (2015) advocate that informational content alone does not possess any exchange value, as it is non-rivalrous and it can be reproduced at negligible cost and time. At the same time, new forms of social production that are surfacing in the information economy, such as commons-based peer production (Benkler, 2006), unseal a political economy which goes beyond the traditional value theory and negate the conventional canons of value altogether (Rigi & Prey, 2015). It should be recognised as a new mode of production, different from private for-profit or public state-owned production. Its product does not possess exchange value for markets but rather use value for a community of users/producers. Hence, the produced information does not classify as a commodity but rather as a universal commons, embodying use values. Subsequently, social media companies employ labour to exploit this information and provide services, thus creating exchange value.

III. References


