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Content

THE
CORPORATE NETWORK

**Social
Neo-Capital**

Social Neo-Capital

How Social Media Changes the Process of Value Creation

Michael Mallek and Kathrin Baum

Our paper suggests that the process of value creation has changed from a production economy over a knowledge-based economy to today's network economy, which is characterised by tightly interwoven relationships between different actors of the economic market. This shift has made it indispensable for enterprises to open their organisations – not only to increasingly global markets but also to the civil society. Along with this fundamental change, the idea of capital has also been changing. Social Capital is a key success factor that can be understood as the ability to access and use resources embedded in one's network. We demonstrate that individual and collective interests have been converging in the economic system while the traditional understanding of capital remains effective. Social Capital even reinforces this understanding as we show that those enterprises that integrate Social Capital along the entire value chain increase the firm's value significantly. That is to a high degree due to the influence of Social Media, as we will outline. Subsequently, the theoretical foundation of capital is extended to a new concept: Social Neo-Capital. Finally, examples from economic practice clarify the transformation of Social Neo-Capital into economic profit and underline that the inclusion of Social Neo-Capital in the value creation process offers new possibilities to increase profits in a range of branches and increase both, the enterprise's value and society's well-being.

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1. Introduction

Wyndham Lewis already wrote in 1948 in his famous work America and Cosmic Man, "The earth has become a big village" (Lewis 1948: 21). Also other scientists, like the philosopher McLuhan, used similar terms to describe the effect of new technologies that were able to overcome physical distances like telephones and air transport.[1] Today, we still use the picture of a village to explain the merging global world but our focus is put especially on the internet which led from a village to a 'global village', surpassing all ideas of Lewis and McLuhan. The globe has been contracted to a 'village' in which nearly every person is interconnected with all the other members of the community and in which instantaneous movement of information from every quarter to every point at the same time is possible (cf. Wikipedia 2011a: Global Village). In this 'village', people share their car with others in car sharing programs, or they offer their couches to strangers from the internet. We empathise with people thousands of miles away, from other cultures and backgrounds when suffering from or striving for democracy like in North Africa. A new dimension of cooperation and togetherness with the core of society can also be noticed in the global business world. Enterprises are investing millions of dollars in Open Source projects like Linux, working with thousands of professionals, other companies, and even competitors without monetary compensation in a virtual network. As we show in various real-life examples in the last section, enterprises even make societal needs their own main challenge.

We suggest that all these developments are related to an immaterial resource of networks, called Social Capital. We will show that Social Capital, which arises within social relationship and networking communities, leads to corporate success, profits and at the same time societal progress. Successful companies are best in investing in Social Capital and transforming it into profits by creating 'shared value' – value that simultaneously benefits customer groups, the company itself, and the society as a whole (cf. Porter/Kramer 2011: 64ff.). The value creation perspective remains individual-based and capitalistic insofar as companies invest and run a business always with the expectation of a surplus return on that investment. As this value creation or capitalisation respectively happens without externalities for society but rather in line with societal progress, we call this rethought capital: Social Neo-Capital.

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1 See McLuhan 1962: The Gutenberg Galaxy: The making of Typographic Man and McLuhan 1964: Understanding Media: The Extension of Man.

To understand the mechanism between this process of global merging, Social Capital, and economic profit, this paper starts with the description of the changing idea of value creation (section 2). We concentrate on the evolution from classical factory production (section 2.1) into a knowledge-based economy (section 2.2) towards a network economy (section 2.3) based on relationships between different market and societal groups. The second step (section 3) presents the theory of Social Capital, which deals with the subject of values included in social connections and created by them. Section 3.1 summarises and compares the four most important concepts on Social Capital, pointing out two perspectives of its beneficial effect: the group and the individual perspective. The theoretical basis of the mechanism of mobilising Social Capital for value creation in a sense is subject of section 3.2. The last part of this section (3.3) mirrors our new understanding of Social Capital, the so-called Social Neo-Capital, as a synthesis of the different views introduced in the previous sections. The next step of the paper (section 4) is to describe how Social Media influences Social Capital especially by initiating new dimensions of information flow (section 4.1) and its radical transparency (section 4.2). Section 5 illustrates the transformation process of Social Neo-Capital into economic profit: we will respond to innovative processes of input (section 5.1), the new production processes of network economy (section 5.2) and rethought opportunities of output procedures (section 5.3). These parts of value creation will all be clarified by economic examples from practice. Finally, the paper gives an outlook in section 6.

2. The Evolution of Value Creation

2.1 Production Economy

"According to neo-classical thinking, the entire business process can be considered to be a combination of labour and machinery used for the purpose of creating and exploiting goods" (Gutenberg 1951, in: Kuppler 1988: 7).[2] The quote underlines that neoclassic economics interprets value creation as the pure production of goods. In this understanding, only very few well-educated employees

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2   "Erich Gutenberg (1897-1984) was an influential German economist. He is considered the founder of modern German business studies after World War II. Gutenberg used microeconomic to explain the functioning of the enterprise. Therefore he also developed a new production function. With a system of inputs and outputs under management control he explained how a firm could be efficient" (Wikipedia 2011b: Erich Gutenberg).

are necessary for a thriving company, as no special knowledge is needed for the usual production process. Only a few supervisors are responsible for a constant workflow and a small number of managers organise the production process. To maximise profit, much of the emphasis is placed on the value chain efficiency. Enterprises in neoclassical understanding are closed systems,[3] so only parts of the value chain are of interest for the company's decision making; it starts with the incoming raw material or partially installed products and ends ultimately in the hands of the customer. This strict interpretation of scope calls for separation of responsibility stages and activities, and therefore enterprises have to be structured in strict hierarchical order of command and control to be profitable manufacturers. To prevent friction losses, misunderstandings and everything else that could foil the principle of purpose limitation, only one direction of communication exists – from the top to the periphery. This pyramidal arrangement of superior and subordinate elements should guarantee that work-procedures run quickly and transparently.

One of the first scientists to work out a theory which offers guidance on how to make work-procedures most efficient was the American mechanical engineer F. W. Taylor. He had noticed natural differences in productivity between workers, depending on various causes, like talent, intelligence, education, and motivation. The knowledge about this different working capacity, together with the findings from many empirical time and motion studies, constitutes the basis of Taylor's plant management: the 'Scientific Management' (cf. Wolf 2003: 77, Rudolph 1994: 12). Taylor's aim was that his scientific work would be implemented in reality. His recommendations, first published in 1911, therefore consist of four main principles (cf. Taylor 1919: 38ff.):

- Strict rules and detailed instructions given by the management to ensure efficiency.
- Personnel selection by systematic tests adjusted to the best workers.
- Dividing manual work from mental work.
- High division of labour in small operation procedures.

To motivate the employees to speed and high quality, Taylor proposed a payment, depending on the individual amount of production. Furthermore, he postulated better production conditions

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3 "A closed-system perspective views organisations as relatively independent of environmental influences. The closed-system approach conceives of the organisation as a system of management, technology, personnel, equipment, and materials, but tends to exclude competitors, suppliers, distributors, and governmental regulators. This approach allows managers and organisational theorists to analyse problems by examining the internal structure of a business with little consideration of the external environment" (Heil, K. in: Encyclopedia of Management).

consisting of good lighting and climatic circumstances, as well as breaks for the workers. Factory plants that utilised Taylor's concept in absolute pure form could even double their production (cf. Wolf 2003: 13). Figure 1 illustrates an enterprise A which grows to A' by utilising Taylor's principles. The enterprises in A's surrounding area are from other branches (highlighted white), like B, or they are much smaller than A', therefore do not pose any competition to A'. As the surrounding of A has no big influence on the success of A, it is not included in its the value creation process.
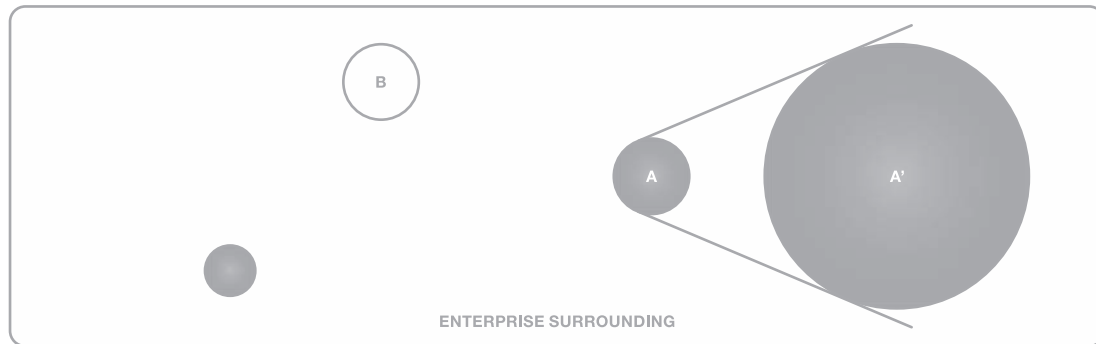
FIGURE 1: ENTERPRISE SURROUNDING (OWN SOURCE)

A well-known example of the perfect realisation of division of labour and assembly line work was the production of the "Model T", an automobile produced by Henry Ford's Ford Motor Company from 1908 to 1927. For that reason, the concept of mass production in its pure form is also called "Fordism". In today's automotive industry, assembly line work is still relevant to improve productivity. But while this form of corporate structure was seen as the most successful one in the twentieth century, today this generalisation does not have universal validity anymore. The traditional understanding of a profitable enterprise includes the idea that value creation is independent from its surroundings; of course, also neoclassic knows profit is influenced by the amount of demand, prices of raw material. In this respect, the surroundings of an enterprise is of relevance, but there is no cooperation with other actors of the economic system. The enterprise's value decisively depends on perfect organisation of the production process.

FIGURE 2: SHIFT IN LABOUR FORCE FROM MANUFACTURING TO SERVICES
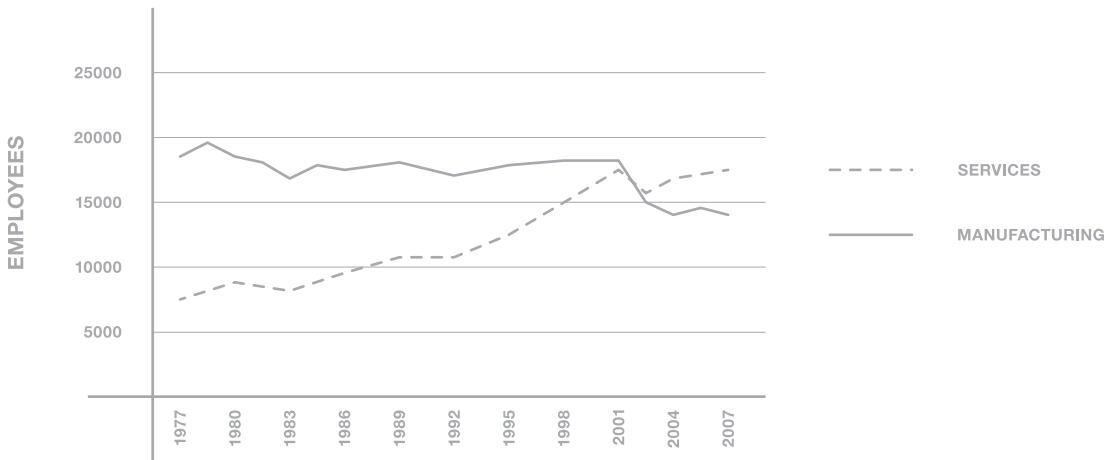THE UNITED STATES (1977-2007) (SOURCE: IN: MILLS / SNYDER 2009: 3)

2.2 Knowledge Economy and Human Capital as its Most Important Factor

The effectiveness of Fordism was due to the stable environment of the early twentieth century, characterised by closed markets, modest claim of customers, and little competition. The mechanised production plants needed only very few skilled workers as the simple routine activities could be fulfilled by rather non-skilled, instructed workers (cf. Reihlen 1999: 272 and Laszio 1999: 25).

With the end of the cold war in the final decade of the 20th century, a new understanding of the value of freedom and diversity arose and the conditions organisations were confronted with changed very quickly, and with it, competition increased and economic growth declined (cf. Leibold 2005: 15). Resulting from globalisation, markets started growing together and became more international. Cross-border transactions became the order of the day. Enterprises had to rise to the challenge of tough international competition by flexible adaption and rapid learning (cf. Persch 2003: 1ff.). In addition to this, the emergence of the internet intensified the effect of competitive pressure. Customers are able to compare prices of products offered by different suppliers, and they can share information about the products' quality. Information became easily accessible and cheap (cf. Kotler/Keller 2006: 25). Consequently, mass-produced goods are mostly produced in

the so-called low-wage countries, where the costs of the work force are very low. So in the western countries, the manufacturing industry decreased and the service sector started growing. Currently, about 80% of Americans are employed in the services sector. The number of manufacturing jobs has fallen dramatically over the past several years. From 2000 to 2005, the U.S. lost approximately 17% of manufacturing jobs (dropping from 17.3 million to 14.3 million) (cf. Mills / Snyder 2009: 1).

These dramatic changes in the way we work and the emergence of a globally networked society means that efficiency cannot be achieved by separations of production processes and hierarchical structures anymore. Taylor's and Ford's approaches can no longer cope with the ongoing change in demands of the global economy (cf. Leibold 2005: 15). In 1923, Ford wrote in his book "My Life and Work": "Any customer can have a car painted in any colour that he wants so long as it is black" (Ford, H. 1923, in: Wikipedia 2011c). This motto should not be the direction sign of an enterprise today anymore because the competitive situation has changed. Today, there are plenty of suppliers that offer their services and products to the customer; to be successful, enterprises need to fulfil individual customer wishes. In this so-called New Economy,[4] customised products are affordable for many people, which is also because also of the easy access to information through the internet. In Taylor's and Ford's time, the free market could not lead to optimal resource allocation, as this is only possible provided that there is absolute information transparency, balanced market power and mobility. Normally, suppliers have better information than consumers. Austrian economist Hayek was already uncomfortable with the world economy. In his essay "The Use of Knowledge in Society", he argued already in 1945 that creating a "rational economic order [...] is a problem of the utilisation of knowledge which is not given to anyone in its totality" (Hayek 1945: 519). The Principal-Agent-Theory deals with the negative consequences of this asymmetric dissemination of information and shows that it leads to collective losses: "The digital technology could end this imbalance of power and information access" (Kotler/Keller 2006: 25). Both the consumer and the supplier have the possibility to gather information on respective contract partners, can compare the different offers and therefore they can analyse the supply and demand situation better. Altogether this results in a better price-performance ration and a more efficient resource allocation.

The activities of many successful companies have mirrored the shift from manufacturing to services. For example, General Electrics (GE) has developed from a $79 billion firm in 1996 to a $173 billion firm in 2007. Meanwhile, its overall profit margin increased from 9% to 13%. These

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4   The New Economy is a term to describe the result of the transition from an industrial/manufacturing-based economy.

figures mirror the development of GE from a producer of electrical goods, like refrigerators and other white goods, to a multinational conglomerate enterprise that operates through very different segments, including the energy sector, the development of special technology for infrastructure and financial services. GE was aware of the new demands of the customers and raised the challenge of the economic shift from the production economy to the knowledge economy. Production of most goods and services of this economy mostly depends on the skills of agents involved in production. The value of companies in the so-called knowledge economy depends on human capital, which is defined as person-bound knowledge in the employee's mind. The most important factor in a knowledge economy's success is not the quantity of production but the quality of the offerings that can only be generated by educated employees, as they are in possession of specialised skills and tacit knowledge. Figure 3 illustrates an enterprise D, which includes much human capital (white triangles). To interact with the company's surroundings, like customers and suppliers, the company borders are open (shown by dotted lines). The hard competition in the knowledge economy is shown in figure 3 by other enterprises, like E, that also bind best-educated employees by contract and with them specific knowledge.
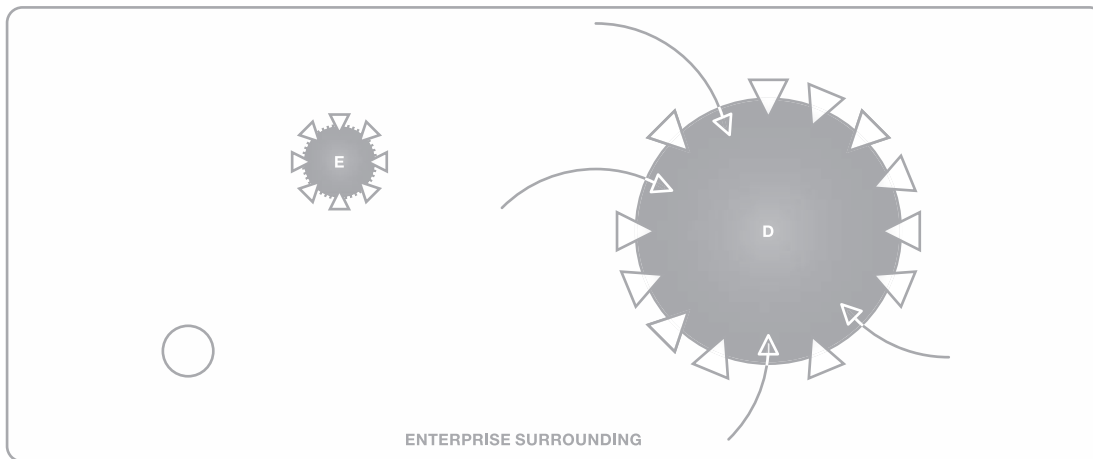

FIGURE 3: SPECIFIC KNOWLEDGE BOUND BY CONTRACT AND COMPETITION
IN THE KNOWLEDGE ECONOMY (OWN SOURCE)

In the knowledge economy, employees can be seen as repositories of inventory, as tacit knowledge exists only in people's heads (cf. Mills/Snyder 2009: 10). In knowledge companies, one needs to focus on the production and coordination of specialised knowledge to create sustained competitive advantages. In this context, production and utilisation of knowledge is seen as the central ability of the firm.[5] The special feature about knowledge is that it can be shared with others and still is not reduced; actually, the opposite happens: it is growing and with it the organisation's success. That is the reason why organisations allow individuals to combine and leverage their knowledge. "The new source of wealth is knowledge, not labor, land or financial capital... the intangible, intellectual assets" (Leibold 2005: 16). The more human capital a company has bound by contract, the more valuable it is.

2.3 Network Economy and its Future-Oriented Value Creation

In the last few years, knowledge, information, and people who know how to use them have made companies successful. But progress never stands still and so knowledge economy has also developed. Today we have reached the age of networking economy, in which the

> "walls seem to have collapsed – between nations, between industries, between sectors of the economy, between organisations and symbiosis are becoming the order of the day, as evidence in the increasing incidence of alliances, mergers joint ventures, cross functional project teams and communities of practice" (Leibold 2005: 15).

Enterprises started realising the value of interdependences, rather than differences, and independencies, through initiatives such as simultaneous development networks.[6]

> "Every now and then new technologies and ideas are developed that are so profound, so enormous, so comprehensive that they change everything. For instance think of the printing press, electric bulb, the car or the manned flight.

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5   For further reading see for example Teece, Pisano and Shuen, 1997.
6   Read more about the change from a bureaucratic organisation to the network economy in Rethink The Organisation: Identities in Network Organisations – New Directions for Engagement and Cooperation (cf. Pecher/Rüngeler/Zuber 2010).

It doesn't happen often – but if it happens, the world changes forever" (Kotler/Keller 2006: 7).

What has happened is that the speed and complexity of decision-making have increased as well as the acceleration of technological change. The Internet has developed. It is not a one-way means of communication anymore, like it was at the beginning, when it called pictures of showcases to one's mind. In those days, there was no dynamic information flow. The internet was static and actually not very useful in daily life. Today it is an instrument of interaction. The term Web 2.0 defines an internet that facilitates participatory information sharing, interoperability, and collaboration on the World Wide Web. The Internet has become fast and always up to date; today it is nearly impossible to imagine a business day without this technology, especially for research purposes and communication. Users of the Web 2.0 are able to interact and collaborate with each other, for example by using Social Media, forums and blogs. Information technology facilitates the coordination of complex activities that are required nowadays and helps to make substantiated decisions (cf. Kotler/Keller 2006: 31). Transaction costs have fallen by means of better information and more and more transactions are not executed hierarchically in the enterprises anymore but coordinated in markets or performed electronically. As today almost any information is available within a very short period of time, the demand for pure information and encyclopaedia knowledge will decline soon. In order to be successful, an enterprise of the service sector needs human capital. It requires specialists who develop creative and innovative solutions that are directly adapted to customers. Furthermore, it particularly needs intensive relations and close relations, both with the customers, the suppliers, and the business partners, and with all the other stakeholders that can give input in the production process or that can influence the output process in any way. In this new economic situation, competitive advantages do not only result from property rights any more, they can be understood as effects of social contacts (cf. Pardo del Val/Welbourne 2008: 3). By the end of the 20th century, the motto of efficiency of the old production economy changed from 'ever more in ever shorter periods of time!' to 'ever better and ever more innovative!' Today, in an increasingly networking and integrated world, the motto 'ever closer, ever more together, ever more flexible and all this in real time!' should apply. This is only possible if enterprises become open systems and integrate the resources of their surroundings – in other words, if they become collaborative networks.

Figure 4 shows enterprises in the network economy that are interconnected (shown by grey lines). In the network economy, competition between companies is being increasingly reduced

to a comparison of the ability to manage a collaborative network bringing together groups and individuals for achieving certain ends. Competition, therefore, actually takes place between collaborative networks.
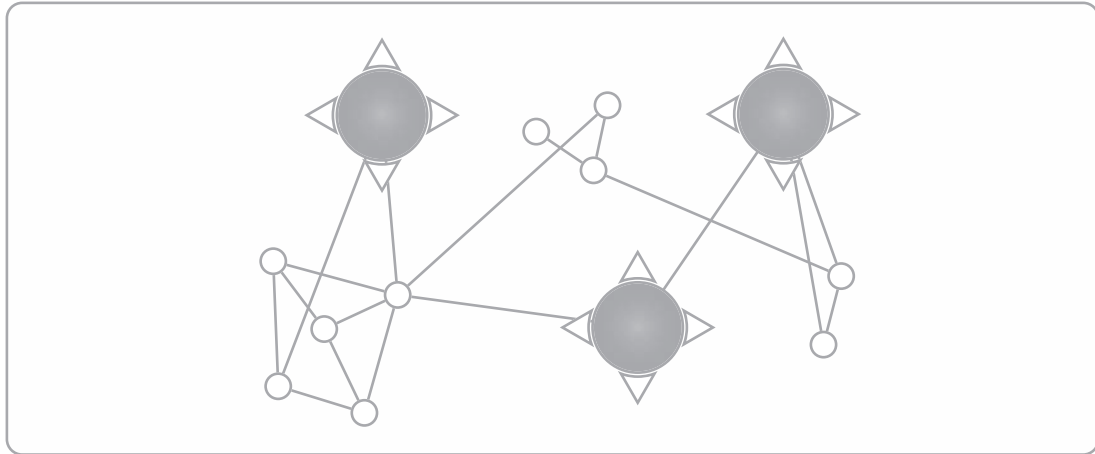
FIGURE 4: INTERCONNECTED ENTERPRISES IN THE NETWORK ECONOMY
(OWN SOURCE)

3. Social Capital Theory

3.1 Two Perspectives on Social Capital

The concept of Social Capital originally grew out of sociology and political science to describe resources that are available to individuals, resulting from their membership in community networks (cf. Kawachi et al. 2010: 3ff.). The term Social Capital has already been defined in 1916 and goes back to the work of Hanifan (cf. Fuchs 2006: 83). In connection with the success of the firm, the issue of Social Capital is relatively new.

"In contrast to financial capital, which resides in people's bank accounts, or human capital, embodied in individuals' investment in education and job training, Social Capital is described to exist in the structure and quality of social relationships between individuals" (Ottebjer 2005: 6).

According to results of scientific research, Social Capital plays an important role in the functioning of community life across a variety of domains. For example, it can be shown that it has a positive influence on the prevention of juvenile delinquency, the development of norms of labour market attachment, the unproblematic functioning of democracy and political government and the further development of economic growth. Generally, there are two perspectives on Social Capital that can be identified, related to the level at which return or profit is conceived. In one perspective, the focus is on the use of Social Capital by individuals – how individuals access and use resources embedded in social networks to gain returns, like finding better jobs. In this relation perspective, Social Capital is similar to human capital. Investments can be made by individuals with the expectation to return some benefit or profit. We will explain the process of investment and transformation of Social Capital into economic profit in more detail in section 5. The main points for analysis in this perspective are, according to Lin, "(1) how individuals invest in social relations, and (2) how individuals capture the embedded resources in the relations to generate a return" (Lin 2008: 8). The second perspective on Social Capital focuses on the group perspective, with discussions on "(1) how certain groups develop and maintain more or less social capital as a collective asset, and (2) how such a collective asset enhances group members' life chances" (Lin 2008: 8). The central interest of this perspective is to explore the elements and processes in the production of the maintenance of the collective fortune; nevertheless, it recognises the need for individuals to interact and network in order to develop payoffs of Social Capital. Another important component of this view is how norms and trust, as well as other values of a group, are necessary in the creation and upholding of the collective asset.

3.2 Different Notions of Social Capital in the Literature

The group perspective is typically traced to one of the following three sources: Pierre Bourdieu, James Coleman and Robert Putnam. They understand Social Capital as resources of collectives. These resources develop within social relations of society and can be used through network connection.

But while Putnam assumed Social Capital is a resource belonging to everybody that participates in society, Bourdieu and Coleman have the opinion that Social Capital is reserved to group members. Especially Bourdieu's Social Capital theory has an excluding effect, as he attributes it to different social classes that use their Social Capital to demarcate their milieu affiliation.

The French sociologist Pierre Bourdieu was probably the first researcher who extended the idea of economic capital to other areas such as culture and social life. His concept of Social Capital must be seen in connection with his theoretical work on the issue of social classes and the connected different forms of social inequality. In the early nineteen-eighties, he developed a theory of capital which suggests four forms of capital: economic, cultural, symbolic and Social Capital. Cultural capital can be understood as cultural products that are embedded in the human mind, such as educational qualifications like academic degrees (institutionalised state) as well as in humanly created objects such as pictures, books or machines (objected state) and finally cultural capital in its third form, the embodied state, consisting of permanent dispositions in the individual person as the so-called habitus, which is the result of the socialisation of a certain social space.

> "I developed the concept of 'habitus' to incorporate the objective structures of society and the subjective role of agents within it. The habitus is a set of dispositions, reflexes and forms of behaviour people acquire through acting in society. It reflects the different positions people have in society, for example, whether they are brought up in a middle-class environment or in a working-class suburb. It is part of how society produces itself" (Bourdieu 2000: 19).

Symbolic capital conveys the demarcation of different milieus, social classes or groups. It includes specific cultural resources that are exclusively reserved for the members of the milieu. According to Bourdieu, Social Capital consists of institutionalised networks such as a family, a class or a political party – but also of networks held together only by the material or cultural exchanges between their members. It is "the aggregate of the actual or potential resources which are linked to possessions of a durable network of more or less institutionalised relationships of mutual acquaintance and recognition – or in other words to membership of a group – which provides each of its members with the backing of the collective-owned capital, a 'credential' which entitles them to credit, in the various senses of the word" (Bourdieu 1986: 248). Therefore Social Capital is a collective good that benefits only the individual belonging to the group. Bourdieu emphasises that the amount

of Social Capital depends on the size of the network of connections that a person can effectively mobilise and on the volume of capital (economic, cultural and symbolic) possessed by each member of the network (cf. Bourdieu 1986: 249). In Bourdieu's theory of social classes, Social Capital is responsible for the process of preserving and reproducing class structures within society, especially through mediating economic capital.

Similar to Bourdieu, the American sociologist James Coleman occupied himself with different social backgrounds of the American population. But his aim was not to explain how social classes develop, but how they influence the success in academic achievement and adolescent behaviour. In his work "Social Capital in the Creation of Human Capital", Coleman (1988) focuses on the mechanisms and the role of Social Capital within the family structure. With Social Capital as a theoretical tool, he brings together two different perspectives of social actions: a social perspective and an economic perspective. In the social perspective, social norms are essential in explaining the individual's actions; in the economic perspective, individuals are seen as self-interested and independently acting, whose foremost ambition is to maximise their utility. Coleman defines Social Capital as

> "a variety of entities with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors – whether persons or corporate actors – within the structure. Like other forms of capital, social capital is productive, making possible the achievement of certain ends that in its absence would not be possible" (Coleman 1988: 98).

Coleman identifies three forms of Social Capital: obligations and expectations, information channels and norms. Social Capital does not, unlike human capital, exist within the actors themselves, but in the structures of the relations between the actors. Coleman described the same connection between the size of the network and its beneficial effectiveness as Bourdieu did: the bigger a person's network is, the bigger is its room for manoeuvre. But he thought a person is able to influence and enlarge its own Social Capital by providing services to others, because in this way, conversely, consideration can be expected. Bourdieu always highlighted that a person's Social Capital is fixed to his social class. Another factor of Coleman's concept that differs to the French variant is the function of trust. While it is unimportant to Bourdieu, it plays an important role in Coleman's concept. Similar to Putnam's understanding of the concept, he showed that a group within which

there is extensive trustworthiness is able to reach much more benefit than a group with less of these attributes (cf. Ottebjer 2005: 12).

Putnam's understanding of Social Capital has an important difference to Bourdieu's and Colman's. Although Social Capital develops through social connection and relations within a society, Putnam does not see a value in the social network itself. For him, Social Capital can be seen as traditional civic engagement, mirrored, for example, in the form of voter participation, newspaper reading and civic associations. All three components of Social Capital explained by Putnam are general moral resources of the community – first: trust; second: social norms and obligations; third: social networks of citizens' activity, especially voluntary associations. Especially mutual trust among citizens leads a society to a flourishing associational and democratic life, a conclusion which arose from Putnam's studies about the economic differences of Italy's south and north (cf. Putnam 1993: 6-7). He found out that "the [northern] communities did not become civic simply because they were rich. The historical record strongly suggests precisely the opposite: They have become rich because they were civic" (Swartz et al 2004: 253, in: Putnam 1993). Putnam argues on a societal perspective, looking upon Social Capital as a collective asset, available to everybody. This is what makes the distinct difference between his opinion and the others presented in this paper. Despite all the differences shown between the three theories of Bourdieu, Putnam and Coleman, it can be seen that they all root in the same thing. They all point to the importance of social networks of different types and sources that lead to enterprise and beneficial outcomes.

The other comprehension of Social Capital can be much different to the group perspective approach of Bourdieu, Coleman and Putnam, which regards Social Capital as a collective or public good to employ or deploy in the broad context of improving or building social integration and solidarity. The other approach is more in line with liberal thinkers such as Adam Smith and John Stuart Mill and takes the individual perspective. However, this perspective does not ignore the economic status of the collective (e.g. wealth, prosperity etc. of a nation state) but rather regards it as being determined by the aggregation of the individuals' economic states within the collective. The core hypothesis of the individual perspective understanding of Social Capital, of which the sociologist Lin is its greatest representative, is: "One major factor to the economic status is the individual's social capital which is the access to and use of resources embedded in its social network" (Lin 2001: 9). The premise behind the notion of Social Capital according to Lin is rather simple and straightforward: investment in social relations with expected returns (cf. Lin 2001: 6). Thus the very core notion of Lin's Social Capital theory is therefore no different to that of classical theory:

investments with the motive of capturing surplus value and enhancement of collective economic status by enhancing those of individuals within that collective. Nan Lin therefore calls his theory of Social Capital "a form of "neo-capital theory" (Lin 2001: 8).

3.3 The Mechanism of Social Capital Mobilisation

What is the nature of returns on investments in social networks and how can Social Capital be built and capitalised? Before answering these questions, one must know that the individual approach is based on the comprehension of economy and value creation described as network economy in section 2.3. We then must take a look into what kind of resources may be embedded in networks, how one can invest in order to build up Social Capital, and how Social Capital is capitalised, in other words transformed into profits.

Contacts in a network can have access to and power over the same pool of resources, resources that are alike or differ from each other. This differentiation is crucial as motives for network investments can either be to get access to additional sources that are not already part of one's pool of resources (instrumental motives) or to maintain and secure an already possessed pool of resources, or accessible resources, respectively (expressive motives). Second, a resource can be embedded in
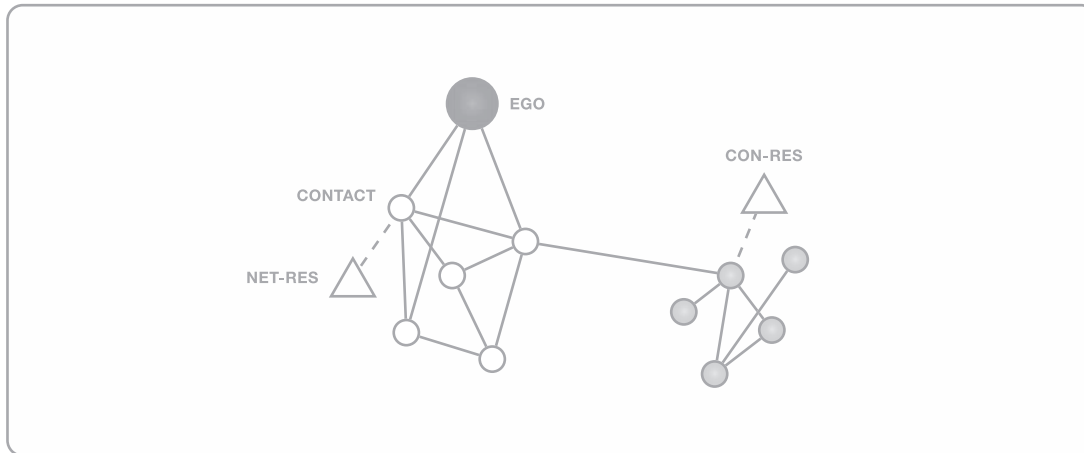

FIGURE 5: EMBEDDED RESOURCES (OWN SOURCE)

one's ego-network (network resources) and thus represents accessible resources, or it can lie outside of the ego-network and therefore has to be mobilised through a contact (contact resources) as shown in figure 5. The yellow contact on the right periphery of the ego-network serves as a "helper" to the resource of the green contact. Finally, though Social Capital as the access and use of resources embedded in a social network must be regarded as an immaterial asset, the resources can be both tangible (e.g. when machines are shared in a syndicate) and intangible.

To show how one can actively build, thus invest, and capitalise Social Capital, we first need to take a look into what forces influence one's Social Capital in the first place. Every individual, company, institution etc. in society is integrated in a social network to at least a minimum degree, and as diverse perspectives and studies on Social Capital may be, it is agreed that the ability to build a network depends heavily on the given position in a network and the structure of that network – in sum, the social structure. The social structure creates competitive advantages in pursuing certain ends and thus better connected people enjoy higher returns (cf. Lin 2001: 32). Two types of variations define what it means to be "better" connected: structure and position. Structure is characterised by many variations, such as economy, technology, and participation in the social, cultural, and political arenas. We discussed three factors for these variations and their impacts in the group perspective on Social Capital. Position, on the other hand, refers to the characteristics of ego which occupy certain positions within a structure and is expressed in power (e.g. position in a hierarchy, authority etc.), wealth and reputation (cf. Lin 2001: 21). The core mechanism of mobilising Social Capital lies within the significance and flow of information. The importance of information becomes clear in the absence of such as Hayek describes it:

> "The economic problem of society is ... not merely a problem of how to allocate 'given' resources – if 'given' is taken to mean given to a single mind which deliberately solves the problem set by these data. ... it is a problem of the utilisation of knowledge which is not given to anyone in its totality" (Hayek 1945: 519).

Social networks can provide for such relevant information on available goods, sellers, buyers, and products. Yet the paradox situation is that we typically have the strongest relationships to contacts with the least valuable information and visa versa. Strong contacts (displayed in fig. 6 as solid lines) usually belong to the same group and thus tend to have the same sources of information, which makes them more redundant.
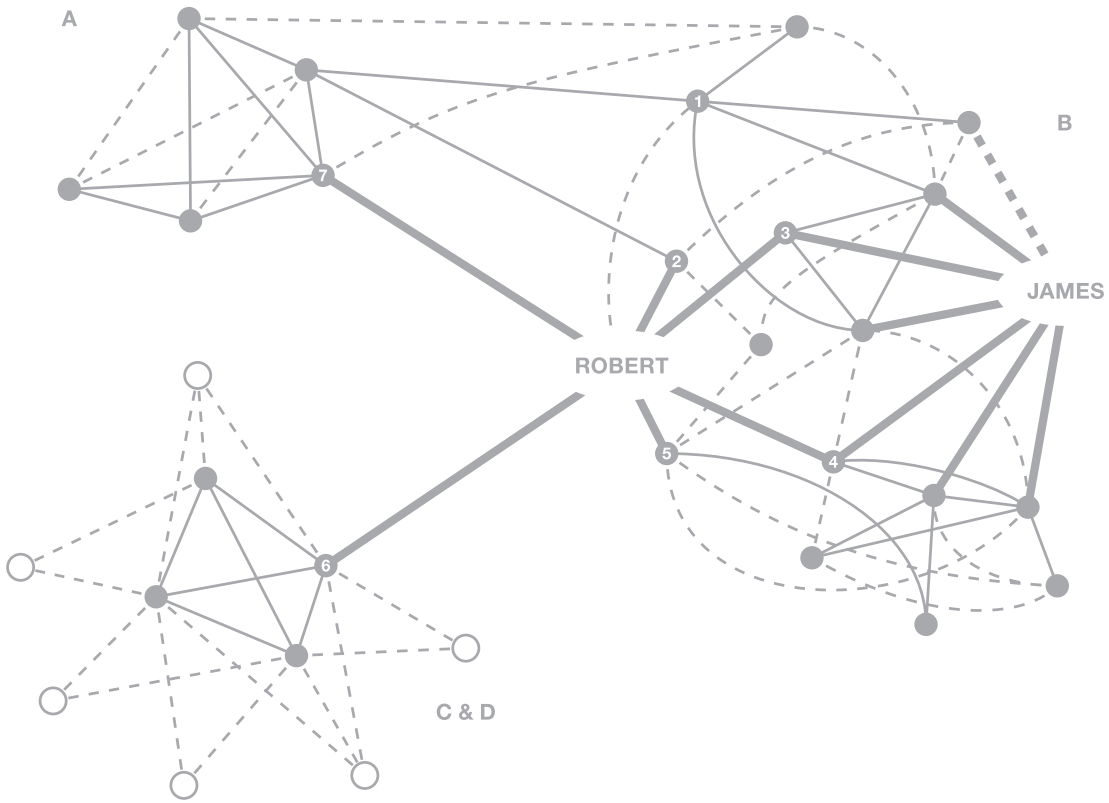
FIGURE 6: POSITIONAL VARIATIONS AS REASONS FOR INEQUALITY IN
SOCIAL CAPITAL (SOURCE: BURT 2001: 33)

Figure 6 visualises positional variations as reasons for inequality in Social Capital. In other words, why some people are more enabled to access and use resources embedded in a social network than others. Both Robert and James have six strong ties (solid lines) and one weak tie (dotted lines). Both

share the same network and have the same overall volume (direct and indirect ties) of connections, therefore there are no structural differences, but Robert has certain significant positional advantages. Whereas James is only directly connected to members of group B, most likely homogeneous contacts, Robert is also directly connected with group A and C, contacts who are likely to have access to different resource pools and can therefore be essential for instrumental actions. The positional differences hold to be significant for accessing and using embedded resources. For one, Robert has fewer redundant contacts connecting him with members already indirectly connected to. Furthermore, Robert is a broker in the network as he is the network bridge that connects James with group C. If that relationship were broken, there would be no connection between group B and C. Robert also has a higher betweenness score as he brokers more indirect connections than James. Figure 1 shows that almost half of indirect connections run through him, which is above average (cf. Burt 2001: 33ff.).

To conclude, Robert is more directly connected to heterogeneous contacts. The information he gets from direct contacts contains fewer redundant bits of information. Positioned at the crossroads of different groups, Robert is quick to learn about activities and important information of all three groups, and he controls the information flow to a high degree since he is a network bridge or indirect contact to many in the network. These facts give him a disproportionate say in whose interests are served when the contacts come together and makes him a 'tertiusgaudens' (literally, 'the third who benefits') as he brokers information flow between others. Additionally, having a network position that yields such benefits, Robert is perceived as very attractive as a contact and is likely to be a candidate discussed for inclusion in new opportunities. Burt calls an individual in a network like Robert an "entrepreneur in the literal sense of the word – a person who adds value by brokering the connection between others" (Burt 2001: 35). The core hypothesis therefore is: the better connected an individual, the more entrepreneurial opportunities he is able to exploit. A successful entrepreneur is successful in building network bridges yielding entrepreneurial opportunities by connecting different heterogeneous groups and contacts. In essence, investing in Social Capital is building and maintaining relationships strategically. We now outlined strategic measures of Social Capital that will serve for the evaluation of the investments and leave detailed answers on tactical measures on how to establish and maintain relationships to customer relationship management literature.

3.4 The Synthetical Understanding of Social Capital – The Social Neo-Capital

The different approaches to Social Capital, from a group perspective (e.g. Bourdieu, Coleman and Putnam) versus from an individual relational perspective, seem to entail a major discrepancy. The group perspective approach requires closure in social relations and social networks (Bourdieu 1986, Coleman 1990), whereas the relational perspective benefits from open networks. More explicitly, Coleman puts emphasis on the creation of collective Social Capital through a moral community and it is closure, ergo excluding outsiders, that maintains and enhances trust, norms, authority, sanctions, etc. The key idea is that networks with closure – that is to say, networks in which everyone is connected such that no one can escape the notice of others, which in operational terms usually means a dense network – are the source of Social Capital (cf. Burt 2001: 37). Bourdieu, with a stronger class perspective, also emphasises the importance of closure as membership in the group is based on a clear demarcation (e.g. nobility, title, family) to preserve the group's dominant position and reproduce group solidarity. However, close networks are relatively beneficial to preserve or maintain resources (expressive motives), but to obtain additional resources (instrumental motives), open networks promise to have a relative advantage due to the previously described effect of network bridges. Most scholars agree that to some degree, Social Capital can not be clearly distinguished from one perspective to the other but must be seen from a group as well as an individual perspective since institutionalised social relations with embedded resources benefit the group both collectively and individually (cf. Lin 2001: 8ff.).

We believe that a new business focus on Social Capital cannot only resolve the dilemma between companies' economic success and negative externalities for society but will also leverage value creation to new heights. Social Capital sets the scientific groundwork for Michael E. Porter's theory of shared value. Porter believes that a new comprehension of economic value will "give rise to the next major transformation of business thinking" and will "unleash the next wave of global growth" by moving beyond the trade-off between providing societal benefits and tempering it with economic success; instead, creating economic value in a way that also creates value for society leads to the principle of shared value. "Shared value is not social responsibility, philanthropy, or even sustainability, but a new way to achieve economic success. It is not on the margin of what companies do but at the center" (Porter/Kramer 2011: 64 ff.). As we have outlined various approaches to Social Capital with their diverse hypotheses, we come to the conclusion that in their core they can be integrated into one idea: Social Neo-Capital. The boundaries between group

perspective and individual perspective are becoming increasingly obsolete as network economy is spreading and networks are intertwining. Whereas big global enterprises such as General Motors, Ford, General Electric and Standard Oil used to pursue total control of the whole value creation process by vertical integration, value creation is now taking place increasingly in more open virtual networks. In those networks, companies are just integral parts. Competition thus is taking place less between companies but rather between networks, and the companies with the best network succeed (cf. Kotler/Jain/Maesincee 2002: 18ff.). The concept of Social Neo-Capital arises with the hypotheses that every individual or organisation has a personal network in which it has access to embedded resources (micro-network). These personal networks are again interconnected and part of a greater network (macro-network). Social Neo-Capital expresses the ability to use and access resources embedded in these networks.
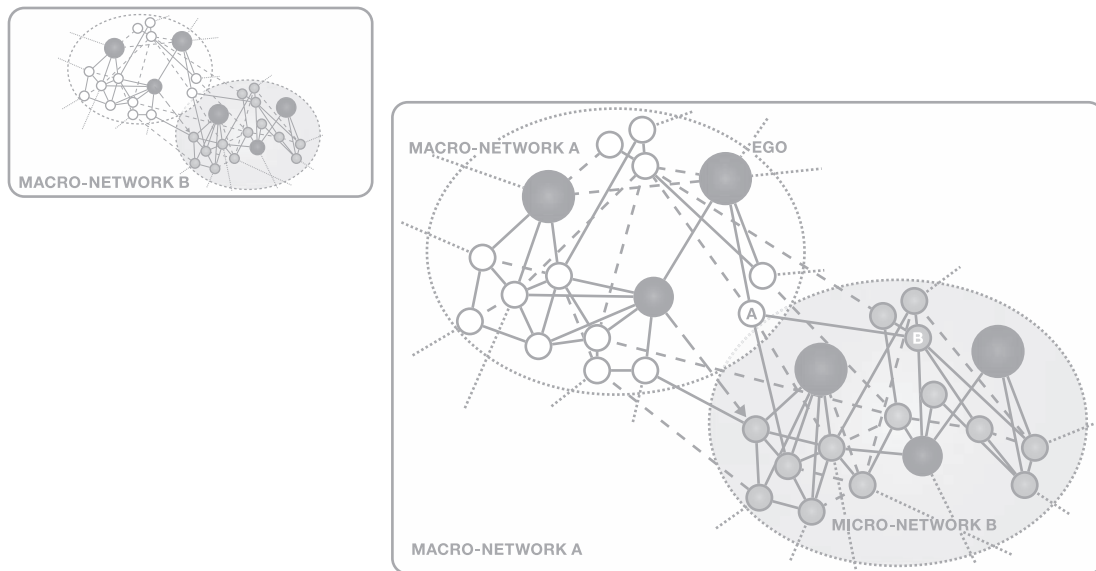

FIGURE 7: MACRO- AND MICRO-NETWORKS (OWN SOURCE)

More precisely, companies are embedded in macro-networks (white rectangle in figure 7). These can be regarded as national or transnational societies or, in the broadest sense, the global society, with common institutions such as formal ones like common trade and civil law, common regulators

such as antitrust division and the exchange supervisory authority but also informal institutions such as press and other media, and, not to be underestimated, moral values. As Porter mentions, "strategy theory holds that to be successful, a company must create a distinctive value proposition that meets the needs of a chosen set of customers" and he continues …

> "however, companies have overlooked opportunities to meet fundamental societal needs and misunderstood how societal harms and weaknesses affect value chains… managers have focused most of their attention on the industry, or the particular business in which the firm competes […] [and] failed to grasp the importance of the broader business environment surrounding their major operations" (Porter/Kramer 2011: 66-67).

Expanding the business focus means expanding one's market perception beyond the embattled markets of typical target groups and embracing new opportunities. A vast number of opportunities are uncovered only by thinking about business in shared value creation. Shared value, for one, is grounded in interdependencies of businesses and macro-networks.

> "Social harms or weaknesses frequently create internal costs for firms – such as wasted energy, or raw materials, costly accidents, and the need for remedial training to compensate for inadequacies in education" (Porter/Kramer 2011: 65).

Studies on development prove that it is not the pool of natural resources but the efficiency and complexity of cooperation on which a nation's wealth and prosperity is based. Generating negative externalities means shrinking one's market. The opposite proves to be fruitful as an example of Coca Cola shows. The Coca Cola Corp. faces a beverage market with a high degree of market rivalry with little possible market growth. Coca Cola Corp. saw that it could only expand by actively building up new markets and started to invest in developing countries, helping to develop local structures in cooperation with NGOs and local administrations. The investment is on a very indirect, collective perspective. Nonetheless, it is surely not altruistic. The Coca Cola Corp. first creates the circumstances for people in the new markets to be able to buy Coke before selling it to them, generating a surplus on the investment. For instance, Coca Cola Corp. at first secures a water supply sufficient for their bottling plant and the local water needs.

4. *Social Media*

4.1 *The Impact of Social Media on Social Neo-Capital*

As we have outlined the concept of Social Neo-Capital, we will now describe what impact Social Media has on Social Capital and how it reinforces the realisation of the Social Neo-Capital concept in practice. Defining Social Media is not a trivial task. Quite obviously, people associate Social Media with Facebook, Twitter and blogs; however, the true meaning is grasped not by its instruments but by its functions and characteristics. There is something more to the word 'social' than just enabling interpersonal interaction or communication. Social Media, in our understanding, is not just a technological development but has actually influenced communication, economy and society. We believe this development in its various facets can be traced down to two major phenomena: User Generated Content (UGC) and Open Source.

Technological progress has made it possible for people to easily and economically publicise content to an audience of millions by providing them with cheap software and services. Today millions of people publicise their thoughts, their creative work, or their advice on the Internet and together they have an audience bigger than any other mass media. The phenomenon extends from users publicising books as amateur writers through print-on-demand services like lulu.com; users writing, maintaining and sharing the world's biggest and most up-to-date encyclopaedia that is Wikipedia.org; sharing all kinds of videos on youtube.com, of which many amateur videos are watched by millions; discussing all kinds of subjects by writing blog articles and comments, and much more. On the other hand, technological developments have made it possible for millions of people to interact, collaborate, create and share value with each other at marginal transaction costs and often without formal administration. One of the most impressive examples is the open source project Linux on which thousands of individuals, groups and businesses work together without direct monetary compensation. Whereas Open Source used to be a non-profit project of wildly mixed together programmers working on the project besides their job, now companies like IBM, Hewlett-Packard and Sun Microsystems have joined Open Source projects like Linux, investing millions of dollars but still with no direct monetary compensation (cf. Vickery/Wunsch-Vincent 2007, Blumauer/Pellegrini 2009).

Why do people and even businesses create something of value without the prospect of monetary compensation? According to the frequent Wall Street Journal contributors Hayes and Malone,

the reasons lie both in intrinsic motivations (e.g. fun, experience and learning from generating content) and extrinsic motivations. Extrinsic motivation results from expecting a return for one's given value – an exchange of values (cf. Hayes/Malone 2009: 150). The whole economy is based on the principle of 'do ut des' (lat.) – I give so that you give. Money was introduced to facilitate the exchange of goods and services. There is something dramatically new in the New Economy where people create and share value in Social Media. This is not to say that the principle of reciprocity has been replaced. Users in Social Media still expect an exchange for their input. What has shifted is how they expect the exchange. Money has proved to be an invaluable intermediary exchange vehicle people trust in. In Social Media, something even more abstract and intangible replaces money as such an intermediary – i.e. Social Neo-Capital. In Social Media, network economy has realised its fullest potential. The reasons lie explicitly in a few principles harnessing network economy and Social Neo-Capital.

4.2 New Dimensions of Information Flow

What distinguishes the Internet from other media is the dimension of connectivity. Online content is interconnected with each other through hyperlinks that create a net of millions of interconnected web pages. Social Media like blogs, Twitter and Facebook have leveraged this connectivity to new heights. Whereas in the "read-only" Internet of the early days in which only a fraction of all Internet users were able to produce, connect and pass on information, with Social Media, now any user can do so. Information aggregation and search engine technology have made it possible to easily find information enabling the flow of information even into highly fragmented niches relevant only to small interest groups. We are facing a never before seen accessible variety and mass of information which leads to a dramatic change in market transparency, possibilities for market research and communication (cf. Anderson 2009: 63ff.). As essential information about the market become more easily accessible, companies are in a better situation to understand and anticipate customer needs How Social Media can be used to make statements about future trends, public opinion, chances and risks will be explained in more detail in section 5.1. But it should be noted that according to Peter Gloor, a scientist from MIT, people who have a huge network are more successful than people without these connections. He claims: "If you want to be successful, don't be a star, be a galaxy" (Gloor 2011: Swiss Cyber Storm).

4.3 Radical Transparency

This new mass and variety of information and authors leads to a new dimension of transparency. Information is shared on any possible topic. Product reviews often reach an audience of thousands or even millions. Thus there is a clear shift in information power from powerful individuals or groups like providers to the masses, to minorities, or to the consumer. In Social Media, everyone gets a say. We see this radical transparency in dramatic examples like Wikileaks, dellhell (an unsatisfied customer reaches an audience of millions and activates thousands of other unsatisfied customers to assert their claim) and the public revelation of plagiarism and corruption but also in less medial examples in every-day life when a friend tells us about his or her positive or negative experience with a company, or forwards us a blog or online newspaper article on a politician.

The new exchange intermediary is a social asset such as social recognition, trust, reputation or social debt like a sense of duty to return a received favour. All these social assets are expected to build Social Neo-Capital and thus help to reach certain ends. Reciprocity in this system is often much more understood as an indirect change of values in a way Max Weber understood social interaction as "a mutually coordinated and adjusted ego-behaviour […] The social relationship may exist solely in the chance of social reciprocal behaviour" (Weber 1980: 13). Or as Lin describes it: "Unlike economic exchange, where reciprocal and symmetric transactions are expected in the short or long term, social exchange may not entail such expectation" (Lin 2001: 19). What is expected is that the recipient and the surrounding social network acknowledge the asymmetric transactions that create social debt for the recipient (A) and social credit for the one who creates and shares the value (B). The acknowledgement is crucial for A to maintain his relationship to B as B is only willing to share value if public recognition in the network will spread his reputation and thus increase his Social Capital (cf. Lin 2001: 19).

5. The Transformation Process of Social Capital

5.1 Input Processes in the Network Economy

Now, as Social Capital has been shown in its different scientific versions and in our perspective that can be seen as a combination of the group and the individual perspective, we want to show

how this capital can be transformed into economic profit. As it is shown in section 4, Social Media can be seen as a storage place for Social Neo-Capital. It facilitates the connection of people, which is prerequisite for Social Neo-Capital. On the other hand, it collects and stores the Social Capital of different groups. These resources now can be used to create value to the firm in an absolutely new way.

As shown in section 2.2, the flow of information is the most important factor in the mechanism of mobilising Social Capital. The easy access to information of nowadays has changed the marked situation of asymmetric power between contract partners and provides a collective betterment. Information also offers the possibility of expanding the traditional idea of business. Therefore the large number of opportunities beyond the embattled markets of typical target groups need to be taken into account and the idea of shared value creation needs to be transformed into reality. To get an idea about future markets, which are determined by global social requirements, the normal market investigation doesn't work any more. Companies need to get into direct contact with their stakeholders. There were many scientific approaches presented that showed the importance of stakeholder dialogues, mainly focusing on moral arguments. Although demonstrating the sustainable effects of stakeholder orientation, the simple and simultaneously convincing reason to make these efforts to take care of stakeholder interests has not been fulfilled. Stakeholders are likely to know their needs of tomorrow best themselves. By using modern Social Media technologies, the problems of time exposure and financing that always accompanied stakeholder dialogues can be solved. It is not difficult any more to organise a huge number of people that have interests in the company's decision-making processes. Facebook and other social networks show the possibility of handling millions of users. The more people the better, because all their needs, information and creative ideas must be known to create innovative new products and services. For example, IBM and Siemens have recognised the need for shared value solutions. They recognised the global megatrends as climate change, water shortage, urbanisation, demographic development and aging societies. IBM is working on a project called 'smarter planet', while Siemens is developing products for smarter cities currently being tested in Ludwigshafen. The energy company E.ON also uses new technologies for communication with its stakeholders. The increased public awareness of energy issues, such as nuclear energy, makes it very important to explain the companies' position and make decision-making transparent. E.ON also gets input by their sometimes hard critics. In 2010, E.ON launched a microsite (eontalkingenergy.com) and a sponsor channel on YouTube that provides a platform for conversations to take place on key energy-related issues. E.ON moderators

reply to comments to ensure a two-way dialogue. Companies that do not consider their stakeholders' opinions will have the same unpleasant experience that Kryptonite had. The American company had some security problems with a bicycle lock. But instead of announcing it and stopping its production, the company tried to hide the fault. By now, this is the most outstanding example of stakeholders' influence through Web 2.0. A customer posted a video which showed how to pick the expensive locks with a biro. At the beginning, Kryptonite tried to ignore the film but as the video got thousands of clicks within such a short period of time, they had to start an exchange operation with millions of dollars in costs. This occurrence shows the importance of stakeholder consideration, as today they have power and the possibility to get their rights simply through the free market and supported through their connection. But it is not only the stakeholder dialogue that gives input for research and development. Gloor claims that Social Media allows the prediction of the future (cf. Gloor 2009). His thesis is based on the assumption that tomorrow people do what they say today – provided they do not lie. Gloor calls his method of trend forecast "dynamic social network analysis". The renowned scientists Nicholas A. Christakis and James H. Fowler presented compelling evidence for the strong influence of social networks on people's lives. They showed the profound power of the social context on one's tastes, health, wealth, happiness, beliefs, even weight, as they explain how social networks form and how they operate. For example, people smoke because their friends smoke and they quit smoking because their friends do so (cf. Christakis/Fowler 2009: 7ff.). Gloor utilises the influence social networks exert on the members for his trend forecast: more precisely, he analyses so-called swarm movements. Gloor illustrates this figuratively: While in Paris, he and his family were lookingfor a good restaurant. The first day, they followed the stream of tourists to Montmartre in the city centre. The food was very expensive and acceptable, but not really of high quality. This was the intelligence of the mass. The next day, they asked the concierge where to go. He recommended an excellent restaurant, with delicious food but even more expensive. This is what Gloor calls the intelligence of the experts. In the end, Gloor and his family followed a group of locals and they arrived at a nice restaurant with cheap prices and very good dishes. On this third day, the family used the intelligence of the swarm. A swarm is a group of individuals that pursues the same target and is decentrally organised, like ants or bees. Swarm intelligence can be described as collective behaviour of self-organised systems, natural or artificial (cf. Bonabeau et al. 1999: 1ff.). The tool Gloor developed filters out information from the Internet, by combining data from different Social Media, like Facebook, Twitter and Wikipedia, with the weighting of the several information sources differing depending on the topic of the forecast-question. For

example, if Gloor wants to know how political long term trends are. To work out forecasts on the presidential elections, web information is much too slow, so swarm intelligence is needed. For this reason, Internet forums and Internet blogs are scanned. Experts are needed to make propositions on stock market trends, so online news, Wikipedia and email correspondence are used as the information foundation. Gloor was able to show that social networks contain things most people do not even know that can be known. Answers to questions like: "Is a meteorite going to fall on the earth, tomorrow?" cannot be given, but it is possible to prognosticate economic development, political sentiments or other trends, as they already exist as dormant and hidden unknown knowns in society. These unknown knowns can be understood as Social Neo-Capital, which only needs to be discovered to benefit companies and economic markets, as well as individuals and groups.

5.2 Production Processes in the Network Economy

Companies do not seek to build up a value creation system of contacts strictly bounded by contracts. Production processes are increasingly carried out in more open collaborative networks encompassing different stakeholders such as suppliers, customers, society and even competitors. In addition, vertical integration has evolved into virtual integration as described in section 2.3. Thinking of value creation in an open network of members not bound by contract is still unconventional but a set of companies proves how this can lead successfully ahead of competition. When Goldcorp, a Canadian gold mining company, was at the brink of bankruptcy in 2000, CEO Rob McEwen knew that it would take a miracle to save his company. Inspired by the open source project Linux, he took all his courage to make a step no one had ever made in the industry. In fact, the industry believed it was suicidal to share the heart of a mining firm. Goldcorp published its geological data on the Web for all to see and challenged the world to do the prospecting, announcing $575,000 in prise money for the best methods and estimates. 1,000 virtual prospectors from 50 countries participated. A network of geologists, graduate students, management consultants, mathematicians and many other professions came up with capabilities and results the industry had never experienced before. The virtual network around Goldcorp identified 110 targets, of which more than 80% yielded substantial quantities of gold. The return on the investment of a half million dollars proved to be well worth it. By 2007, gold worth well over $3 billion had been found. Exploration time has decreased by 2 to 3 years, generating a dramatic cut in costs in four years.

The under-performing $100 million company Goldcorp has risen to a $9 billion cutting-edge best performer (cf. Tapscott/Williams 2006: 10ff.).

Facebook recently published all the instructions and specifications of its newly self-developed datacenter and servers for all to see. What is new is that the technology was first developed to completion in a traditional way by technicians hired or contracted by Facebook and then opened up to be transformed into an Open Source project for further improvements. Although Facebook owner Mark Zuckerberg would be well able to make profits by selling the technology, he published he is expecting greater benefits than those of the sale. The future holds whether he was right and the project will be accepted by the Open Source community. Facebook made a major effort of developing a technology that is said to be cutting-edge. One would think the 'greatest networker of all' knows how to achieve the acceptance and contributions of the Open Source community. Another shining example of value creation in open networks is the enterprise Threadless. It started as a platform for t-shirt designers and became a highly profitable medium-sized business. At Threadless, designers upload t-shirt designs for all to see and rate. The winning designs will then be realised and the t-shirts will be sold on the platform. As the design processes are completely "outsourced" to the community, Threadless has major cost advantages. On the other hand, the designers, although receiving no wage, earn social recognition and are able to see their design worn by others. Moreover, they can buy their own t-shirt at a price much lower than they would have to pay without Threadless' economies of scale.

5.3 Output Processes in Network Economy

Marketing is experiencing major changes triggered by Social Media. The approach of influencing customers through promotion is becoming more and more obsolete. Instead, people inform themselves about products and services through transparent informational sites like price comparison platforms and rather rely on trust building information from peers. Word-of-mouth marketing and Public Relations therefore become the focus in marketing. Customers or other stakeholders are to be incorporated as the major promotional driver. However, an approach of trying to establish strong relationships to every customer alike can hardly be effective. Strong relationships require high involvement bilaterally and a high frequency of contact. It stands to reason that not every customer will be willing nor able to have a strong relationship to all providers he interacts with. Instead, a company should rather identify highly influential people and try to establish a strong

relationship to them. The marketing researchers Iyengar and Van den Bulte from the Wharton Business School show that opinion leaders and their social networks can be a critical success factor for promotions. They further show that opinion leaders are not necessarily high volume users of the respective product or service. In fact, opinion leaders do not have to be customers at all. To identify them, once more companies have to tap different networks. Instead of identifying false self-reported opinion leaders by personal surveys, surveys should rather try to identify true opinion leaders by asking the prospect for referrals and thus activate network dynamics (cf. Iyengar et al. 2011: 17ff.).

Threadless, on the other hand, does not have to do any promotion at all as their customers are "prosumers". These prosumers are involved in the value creation process and automatically feel the desire to obtain the output. Another form of prosumers are lead-users. Lead-users are activated by social rather than monetary motivations. For instance, they get free samples of products first before product launch to try them themselves and to pass their experiences on to their social network, which in turn grants the lead-users social acknowledgement. Companies, on the other hand, receive customer feedback and social influence into the social networks of customers.

6. Summary and Outlook

The main objective of this paper has been to show the eminent role of networks in today's value creation. We believe that Social Neo-Capital, which on the one hand arises within social networks and on the other hand can be understood as the network itself, is able to increase the value of enterprises, if it is included in all processes of operation. Section two served to create a basic understanding of the development of value creation. We showed the shift from the production economy, where simple workers were seen as factors of production that could be replaced by others without any greater difficulties, to the knowledge-based economy. Unlike the production economy, this type of economy is based on specialised knowledge. Therefore human capital is the most valuable property of enterprises, the most important ingredient to foster success. In the last part of section two, we suggested that the development of economy has proceeded and that the concept of knowledge economy needed to be enlarged into the idea of a network economy. The main features of this new economy are comprehensive networking, opening of the organisation, cooperation with other participants of the economic system and a real revolution in the perception of value creation. Section three then dealt with the Social Capital theory. The four best-known and

most influential concepts of Social Capital, the work of Bourdieu, Coleman, Putnam and Nan Lin, were illustrated and the similarities and differences were emphasised. Based on this study of the scientific literature, we conceptualised a new understanding of Social Capital – the idea of Social Neo-Capital. The enormous influence of Social Media on both the creation of Social Neo-Capital and the possibilities for the transformation process of Social Neo-Capital into economic profit has been examined in section four. The focus has been especially put on the new dimension of information flow and the radical transparency resulting from Social Media. The actual transformation process and the illustration of Social Neo-Capital inclusion in the value creation has been the main component of section five. In this part of the paper, we turned to economic practise and described, using examples of enterprises from different branches, how Social Neo-Capital can be integrated in the processes of input, production and output. Enterprises striving for sustainable success need to think beyond the traditional value chain. They are increasingly facing a competition between open and virtual networks in which the enterprise's function goes back to the root of the entrepreneur in its very literal sense – a person or organisation that adds value by brokering the connection between others. The extent of success of doing so is expressed in Social Neo-Capital and profit as capitalised Social Neo-Capital.

Social Media not only reinforces the network economy facilitating relationships but it has also increasingly revealed responsibilities in complex economic organisations, providing for market transparency and promoting communication between all different stakeholders. All these boost the importance of Social Neo-Capital and internalise what has long been externalised by companies at the expense of society's well-being. We are still rather at the beginning of the network economy and there is a lot of progress yet to come. Successful companies already focus on shared value benefiting the individual as well as the collective with a longer-term orientation. They invest in their own Social Capital as well as in the Social Capital of society, which to them is nothing else than the broader network they are embedded in. We showed that doing so is not some altruistic behaviour at the expense of competitiveness. Instead, practical cases show that such investments can be highly profitable for companies and should rather be regarded as straightforward investment with expected surplus return – therefore Social Neo-Capital.

As we extrapolate the historic trend of the value creation system to an ever more open network economy, it stands to reason that it will not remain just an alternative way of doing business but a conventional one that cannot be ignored. In Social Media we see more than technology. It is a phenomenon that changes the way we create value and will bring about the tipping point for

the network economy. Social Neo-Capital investments may for now be an approach to build up a competitive advantage. After having reached the tipping point for the network economy, it may distinguish which players stay in the market and which ones have to go. Successful companies will work in cooperative networks; they establish them, manage and make use of them strategically and for mutual and globally sustainable benefit. It stands to reason that companies that hang on to obsolete value creation approaches with a narrow business perspective will lack Social Neo-Capital and will eventually lose sight of entrepreneurial opportunities and risks that can only be clearly and duly seen and grasped with the help of a network.

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Management 2.0

THE
CORPORATE NETWORK

Management 2.0

Face-to-Face in a Globalised Polis

David Schad and Felix M. Schirmer

This article gives an outlook on the future of management. It reflects the socio-technical (r)evolution of web-based communication and its implications for management practice. The paper begins with a general overview of the development of the Web accompanied by the immediate improvements for the corporations. Out of these investigations we suggest that corporations still have not realised the importance of new management models. Therefore, we define Management 2.0 and explain the underlying new mindset referring to a corporation's self-image. The urgent need of new management models is made clear with the assistance of the ancient idea of the Greek polis. From an Aristotelian perspective, we analyse the face-to-face collaboration and openness for large corporations in today's globalised world and absorb Solomon's idea of a corporate community. In order to support companies on their way to Management 2.0 and to describe their online engagement and their benefits, we have developed a Maturity Model and will present it as our road map to Management 2.0 in the last section of this article. We show the role of corporate Social Web engagement in the evolution towards Corporate Communities and the benefits of tapping the Social Web's knowledge and Social Capital. In doing so, modern software tools are mentioned to demonstrate that Management 2.0 is already practicable. Finally, our vision of a completely decentralised and self-organised corporation is described as Management X.0.

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1. Introduction

"If you look five years out, every industry is going to be rethought in a social way", thinks Mark Zuckerberg, the founder of Facebook, the world's largest Social Network so far (Gelles 2010). The newest Google product called Google+, another Social Media platform which is assumed to be one of the fastest growing social networks (cf. Qvist 2011: 24). It is a sophisticated and even more beneficial network since the platform depends on people's search habits and recommends in search results what your networks like. Data collecting is simplified and can even be predicted and thus not only private persons but also companies can profit from it. All this shows that our fast moving worldwide societies are increasingly connected by means of Social Media. This has a lasting impact not only on the way we communicate and the way we work but also on our business culture. Especially a fundamental change of the management system can be observed and shall be illustrated in this paper. We develop an understanding of a complex socio-technical evolution to get a better insight into the change of management. The change in companies' existences accompanies this and must be precisely regarded.

We first take a look back on the evolution of web-based communications up to today's Social Web (section 2). We then present our definition of the next version of management that is supported by this development: Management 2.0. This term was coined by Gary Hamel who announced a revolution in management primarily regarding the understanding of corporations and the way people are motivated (section 3). With assistance of Robert C. Solomon, a philosopher who managed to apply an Aristotelian approach to modern business ethics, we then take a look at this from a very different angle. The ancient Greek concept of a city-state (polis) offered the great advantage of face-to-face collaboration through openness. Aristotle's idea of a community can be transferred to Management 2.0, which internalises this ideal for today's globalised corporations (section 4). Corresponding to the evolutionary steps of the technological development, we then present our maturity model of companies' internal usage of web-based communication. The model can be seen as a road map for companies to develop from Management 1.0 to Management 2.0. We name some interesting tools, list the benefits of these tools and show that Management 2.0 is already possible and not too complicated to utilise. What might be possible in the future is described in section 5. Eventually, we describe our vision of the future's future: Management X.0 (section 6).

2. *Groundwork: The Evolution of Web-Based Communication*

Twenty years ago, the World Wide Web, an internet-based hypermedia initiative for global information sharing, was born and changed the world in an unpredictable way.[1] Since then, the web has been an indispensable means of communication. Building on the internet as an open data network between computers, the World Wide Web today is a global standard. The term World Wide Web is often used as a synonym for the internet even though it actually refers to something quite different. The World Wide Web is a system of interlinked hypertext documents that can be entered via the Internet. Web pages may contain text, images, videos, and other multimedia elements and can be viewed with a web browser. Users can navigate between them via hyperlinks. The process of its development so far has led us from the initial so-called Web 1.0 to Web 3.0. The web between 1993 and 2003 is regarded as Web 1.0 (cf. Wang 2007: 27). It is a world of simple transactions, a place to actively search for and find information with little or no interaction among users. At the beginning of the 1990s, HTML pages which could be viewed through a Web browser and site building became the main characteristics of Web 1.0 (cf. Dahlen 2010: 459). However, there were few content creators in Web 1.0, with the vast majority of users merely acting as consumers of content and thousands of websites published primarily by experts in their specific fields (cf. Wankel 2010: 9). Web 1.0 elements were standard web pages acting more or less as brochures with image material and facts & figures. The most influential communications medium derived from Web 1.0 is e-mail.

Finding a clear definition of Web 2.0 is far more difficult and elusive, simply because there is no single, commonly accepted one. The term Web 2.0 can be traced back to the publisher Tim O'Reilly, who was searching for a title of a conference dealing with the companies that survived the dot-com collapse after the speculative bubble covering formerly booming internet-based companies burst in March 2000. The first use of the term became an overnight sensation; the feedback from industry to public was enormous, using Web 2.0≠ as one of the most-hyped technology terms (cf. Governor/Hinchcliffe/Nickull 2009: 2). Far from having crashed, O'Reilly stated that the web itself was more important than ever, with excitingly interactive new applications and sites popping up at a surprising rate. Exactly this idea of an interactive web marked a turning point and is the

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1   In August 1991, the World Wide Web inventor Tim Berners-Lee invited people for the first time to access websites on other computers via his hypertext transfer protocol (http) using a browser. We understand this to be the birth of the internet as we know it – yet this is highly disputed with ages ranging from below 15 to over 40 years (cf. Ryan 2010).

characteristic feature of the second new born version of the web. The enormous advancement of the interactive Web 2.0 becomes obvious when comparing the Encyclopaedia Britannica with the free online encyclopaedia Wikipedia. With the apparent establishment of the internet, Britannica's publishing house made a lot of effort to survive the change. After unsuccessfully having published CDs, the company moved its encyclopaedia set to the web, where it was free to anyone. The fundamental idea was preserved: the company still relied on experts and editors to create its entries. In contrast, Wikipedia was open to anyone willing to contribute, trusting the community instead of installing standard quality management. People all over the world interested in certain topics can edit or re-edit articles they think are incomplete or incorrect. Even though this idea of a voluntary non-expert encyclopaedia with shared creativity was a bold step, Wikipedia passed the test and has become the most widely used and often fastest reference source. A report in the magazine Nature compared science articles in the two encyclopaedias and suggested that Encyclopaedia Britannica articles are often only marginally more accurate than Wikipedia articles (Vossen/Hagemann 2007: 57). Social networking sites such as Facebook and MySpace are often held up as prototypical examples of Web 2.0, primarily due to their social networking aspects which include the user as a first-class object, but also due to their use of new user interface technologies.

There has been a significant shift in Internet traffic as a result of a dramatic increase in the usage of Web 2.0 sites. Most of the nearly half a billion users of online social networks continue to use Web 1.0 sites. Many sites are even hard to categorise strictly as Web 1.0 or Web 2.0. For example, Amazon.com was launched in the mid-1990s and has gradually added features over time. The principal content (product descriptions) is curated rather than user-created, but much of the value is added by reviews and ratings submitted by users. Profiles of users do exist, but social features such as friend links, although present, have not been widely adopted. With the democratisation of Web 2.0, every user has access to the instruments necessary to become a creator of content himself and is able to exchange content of any kind (text, audio, video), to tag, comment or link. Numerous technological aids have been created to maximise the potential for this content creation. The catchphrase to describe this new kind of user is "prosumer", which implies that the user now is consumer and producer at the same time. If these prosumers get involved, innovation, awareness and enthusiasm quickly and vigorously flow on a huge scale (cf. Camarinha-Matos 2009).

The term Social Media is closely linked to Web 2.0. It is broadly defined as any form of computer-mediated communication where individuals are addressable and, as a consequence, able to interact on a person-to-person level; forms of social media thus range from chat and instant

messaging to media sharing, blogging, and social networking services (SNS). "Social Media refers to activities, practices and behaviours among communities of people who gather online to share information, knowledge, opinions and interests using conversational media" (Safko/Brake 2009: 6). Similarly, Cook and Hopkins (2008) define social media as the internet tools which "allow for far greater levels of two-way interaction, discussion and conversation" and which facilitate "the conversational web" (pp. 1, 2). Many of these platforms have been launched in the last few years; for instance, social network sites such as YouTube and Bebo were launched in 2005 and Twitter and Facebook (for all users) in 2006 (Boyd/Ellison 2007). The rapid technological developments and diverse ways users have adapted social media platforms make it difficult to predict which platforms will remain popular even for six months. People sign up for online communities to share their interests, to discuss their hobbies or simply (and mostly) to connect with their friends. The main difference to the former Web 2.0 communities is that people do not appear as an imaginary virtual identity with fake names but a digital version of their actual real-world identity. This characteristic can be seen as a further development of the Web 2.0 towards a Social Web. Another step in the development of the web, which is expected in the future, is Web 3.0 or Semantic Web, a term coined by Tim Berners-Lee. This is where artificial intelligence and the web converge. The computer is expected to understand, categorise, and use information like humans do. A good example for conceiving what the developed Web 3.0 will be like is a still fictional mobile personal information assistant. The user makes queries using natural language, and the assistant answers by extracting and combining information from the entire web, evaluating the information found while applying Semantic Web technologies (cf. Wahlster et al. 2006). The development and future of Web 3.0 is yet to come, but it will be a revolutionary step forward.

In the developed countries, younger people, especially those born and raised since the establishment of the internet ('digital natives') are presumably signed up for at least one Social Network and more and more of the older people ('digital immigrants') are doing so too – both for private and professional use. In fact, the Social Web, with its ideals of free and transparent information and the value of networking, is quickly becoming a way of life or, to be precise, a central point of it. People can easily work together no matter how many thousands of kilometres they are geographically separated. Some authors already declared 'cooperation' as the leading technology for the sixth Kondratiev wave of economic upswing displacing "information technology" (Friedag/Schmidt 2009: 282). Social Web tools are easy to understand and use, they are usually free or at least have

free basic functions (freemium) and people can easily and quickly sign up. [2] Social interaction via mobile devices is rapidly increasing and will overtake stationary internet usage. As more and more people connect online to communicate and collaborate, access to personal information (including localisation) is becoming a whole new market. This trend of global connection of billions of individuals and organisations is often thought of as leading to some kind of estrangement. To some extent, this may be true but actually it offers the possibility to socialise in a face-to-face way.

3.   Management 2.0: The Evolution of Management

> "Management is out of date. Like the combustion engine, it's a technology that has largely stopped evolving, and that's not good. Why? Because management – the capacity to marshal resources, lay out plans, program work and spur effort – is central to the accomplishment of human purpose. When it's less effective than it could be, or needs to be, we all pay a price" (Hamel 2007: X).

The evolution of web-based communication clearly led to powerful communication and collaboration tools. The management system, though, seems not to have evolved as much since its successful rise in the early 1900s. In the following, we will refer to it as Management 1.0. Gary Hamel classifies it as "ancient" and calls for revolution, guaranteeing a "fundamental change" with enormous advantages for those willing to lead towards a new way of running companies. The reason for this "almost inevitable" change is the role that the traditional management system plays today: it is a limiting factor. It provoked a "crisis of values that drains creativity and effectiveness" (Roberts 2010: 9). The individual within a corporation lacks the most motivating value: passion and internal motivation. When an employee is told to do a certain job and his (external) motivation is the money he gets paid and perhaps a chance to get promoted sometime, he will do the job, but he will not be engaged.[3] To access his full potential, the employee needs internal motivation and passion – and what, if not the belief in a higher purpose, could achieve this? Let us have a look

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2   Social Web tools are mainly Social Networks (e.g. Facebook, XING, LinkedIn). They include more and more once standalone services as, for example, Google+ comes with applications for video chat, mailing, media, and file sharing.

3   In the "Towers Perrin Global Workforce Study 2007-2008" titled "Closing the Engagement Gap: A Road Map for Driving Superior Business Performance", only 21 per cent of nearly 90,000 employees worldwide said they were "engaged" in their work.

at Hamel's argument that management has more or less stopped evolving. Apart from soft skill trainings, which have developed to a huge degree to become a constant in management education, we can definitely see a huge leap forward in the essentials of management. Management is largely dominated by communication, and communication has apparently evolved immensely. Management has become not only an international but a globalised challenge as large corporations are not limited to certain regions anymore. They are not bound to their country of origin or even a single continent. Management is broadly influenced by society, and society experiences a far-reaching socio-technical transition. Hence, management has evolved, but so far it has been a rather passive adaptation. Now experts like Hamel demand not only to actively build the future, but to start a revolution.

This seems rather bold, as what comes next will just be a logical step in the evolution of management, although it will clearly be a fundamental change. First of all, we need to rehash keywords such as Enterprise 2.0, simplification, flattened hierarchies, decentralisation,[4] or collective intelligence, but what this redefinition process actually means is usually left undefined. Hamel chooses a different, rather interactive approach by denying the existence of a single correct answer. He demands imagination from his followers to participate in building the future instead of waiting for the trends to come. And this is already part of his understanding of Management 2.0, as innovation, creativity, renewal, change, and especially passion are his keywords (cf. Hamel 2007). He demands all of them from modern corporations that are willing to prepare for the future. As we have shown, the socio-technical transition includes (social) networking in which people are connecting with one another via internet. The possibilities opened up by today's World Wide Web and its collaboration tools mark the key difference between the non-collaborative, hierarchical traditional Management 1.0 and the (r)evolutionary next level interactive Management 2.0, and can be seen as the initiation of a new mindset.

This new mindset is characterised by all the possibilities that the innovative web provides to companies: meritocracy, modern participation, decentralisation and openness, in particular, openness towards new ideas and the way they are generated, and openness towards vanishing hierarchies and a rising understanding of the relationships within the company as a community. The underlying phenomenon is described as 'groundswell', a "social trend in which people use technologies to get the things from each other rather than from traditional institutions" (Li/Bernoff 2008: 9).

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4   The famous management thinker Peter Drucker introduced definitions such as simplification, flattened hierarchies or decentralisation already in the 80s to the business world.

Once accepted, this trend can be used for various benefits as people connect to share knowledge with each other. Examples reach from open source programming to communities for virtually everything, for example, reviewing and recommending movies (like the internet movie database imdb.com), music (like last.fm) or clothing styles (polivore.com). All this exchange is web-based and can be analysed to access a formerly unknown treasure, namely collective intelligence. Collective intelligence in this sense is not only efficiently shared knowledge but also a flow of shared intuition often unconsciously produced in the collaboration of individuals. This can be used for trend forecasting for instance by analysing the data streams of Social Networks. Prosumers add value to the so-called Social Capital by becoming part of a collective intelligence. Social Capital describes a density of trust resulting from the individual's membership in community networks. Social Capital consists of resources accessible through social connections and it contains resources of other individual actors to whom an individual actor can gain access through direct or indirect social ties (cf. Lin 2001: 43). This involves the value of actual or potential relations of individuals within and between community or Social Networks as well as the knowledge of individuals or groups being available on the web (e.g. open-source programming). It contains sources of collective intelligence that lead primarily to corporation and beneficial outcomes.[5]

Management 2.0 is the application of the open mindset to a collaborative leadership model for the purpose of utilising the groundswell trend. It is flexible, fast and faithful as it is innovative, has to react instantly and is highly transparent. Moreover, this demands corresponding leaders. "The art of letting go" by Buhse and Stamer (2008) describes the difficult process of transforming a traditional enterprise into a community, with the key challenge to trust the collective. But as today's world, especially in terms of globalisation, has become extremely complex, splitting decision power among many people seems to be a fitting solution to this problem. Online open innovation projects like the Management Innovation eXchange are encouraging people to join the quest to reinvent management, thinking of it as a radical upgrade of the technology of human accomplishment.[6] In practice, Management 2.0 can only be applied with the help of modern Social Web technology, making it a merge of the ideas of the Social Web and traditional management. This should not be confused with the so-called Social Media Management, as this simply is the management of a company's online presence and not a management system realised through Social

5 Social Capital is discussed in the article "Social Neocapitalism" in this publication.
6 The MIX (Management Innovation eXchange) is an open innovation project supported by famous partners like McKinsey&Company, Dell and the London Business School. It can be found on www.managementexchange.com.

Web applications. The attempt to control the Social Web presence from within the otherwise rather non-collaborative company even seems to be an opposing strategy. Management 2.0 addresses a movement comparable to the "own mini-groundswell within the company" that enables companies to "embrace the groundswell of customers outside it" (Li/Bernoff 2008: 199). This way, the once opposing strategy of actively influencing the external Social Web identity of a company has been transformed into a natural part of most internal processes. Hence it basically includes a system of Social Media Management 2.0. The approach of Management 2.0 creates companies that are as "nimble as change itself […] innovative from top to bottom" (Hamel 2007: 41) and that are awe-inspiring places to work by offering individual self-fulfilment within the company. To adopt the new Management model to corporations, openness is needed. That is where Aristotle gets into the game as openness can only be achieved through an operating community.

4.   A Globalised Polis: The Aristotelian Approach

> "According to Aristotle, one has to think of oneself as a member of the larger community – the Polis for him, the corporation, the neighborhood [sic], the city or the country (and the world) for us – and strive to excel, to bring out what is best in ourselves and our shared enterprise. What is best in us – our virtues – are in turn defined by that larger community, and there is therefore no ultimate split or antagonism between individual self-interest and the greater public good" (Solomon 2004: 1022).

Aristotle's major emphasis was on living the 'good life' and having a 'good city-state'. The good life can be achieved if virtues are fully exhibited. He eschewed the idea of profit and distinguished two types of economics: 'oikonomikos' and 'chrematisike'. The first one translates as 'household trading' which Aristotle recognised as a community-based economy and as essential in the working of any society. This economy can only be achieved if people live a life of virtue (a good life). Aristotelian virtues include for example courage, temperance, liberality, justice, pride, friendliness or honour. He condemned the second type of economy, 'trade for profit', as being devoid of virtue, fundamentally parasitic and turning people away from the community. A polis is the foundation of a community-based economy. This ancient Greek word which would today correspond to a

city-state includes the democratic idea of citizenship in an independent, autonomous self-governed community. The polis is the ideal framework to fulfil the conditions for a modern corporation. Solomon was one of the first thinkers who referred to Aristotle for his illustration of corporations as such communities. He emphasises Aristotle's views concerning the importance of community and argues that virtues Aristotle recognised as valid can be assigned to corporations. For Solomon, businesses and corporations are communities that positively reward people's virtues. By no means did Solomon ignore individual and cultural heterogeneity when he adapted the Aristotelian idea of the community to our modern world.[7] Today's more and more required specialisation induces this adaptation and clashing individual interests strengthens this definition of a community. But corporations are not isolated city-states, not even the biggest and most powerful of the global players. Both corporation and individual are also part and parcel of a larger community, which may be understood as the society. Everyone has a multiple citizenship, finally somehow linking everyone to one another over several intermediate steps. The community is designed to "bring out what is best in ourselves" (Solomon 2004: 1022), corresponding to Aristotle's conception of 'areté' (which can be understood as excellence), and in return defines certain virtues to be obtained and this way assigning us to units of morality. According to the idea of areté, we are defined by our habitual actions. Our job often is our most influential habit and therefore it is our job that defines us. By taking the place within the community that corresponds to our capabilities, it lets us be the person we want to be: we not only get to be successful, we get to live a decent life rewarding us with highest human good, 'eudaimonia' (which can be understood as happiness), in the process. This happiness is nothing less than an entirely good life, with all of its parts in balance (cf. Solomon 2001: 252). This is the higher purpose to get us engaged: when we pursue a goal with passion, we can achieve maximum performance resulting in individual happiness and a good life. Management 2.0 uses this view to achieve the central purpose of management: to get people involved in accomplishing target-oriented tasks as effectively and efficiently as possible. This is realised by engaging people in their work through intrinsic motivation, as they not only identify themselves as part of the company but also enjoy their tasks.

As pointed out by Solomon, this engagement serves the greater public good as well. In terms of our relationships with other individuals, we are a part of the community, which implies a

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7   Robert C. Solomon (1942-2007) was a professor of philosophy at the University of Texas, USA. After working as a consultant for various companies including Motorola and IBM, he developed the Aristotelian Approach as a program in business ethics, emphasising the value of integrity (cf. Solomon 1999).

democratic, decentralised way of decision-making. What the Management 2.0 mindset implies is not to see "business as business" (Solomon 2004: 1022) simply for the purpose of individual interests. Business is seen as a human institution in service to humans and aims to switch to a truly collaborative model. We have to understand it as a part of the society serving both the individual interest and (thereby) the greater public good – consistent with financial interests. According to our understanding of Management 2.0 combined with the Aristotelian Approach, people in Corporate Communities identify with the corporations they see themselves part of and take pride in working in a self-fulfilling position. This way they engage passionately and massively increase creativity and efficiency, just as Hamel wants modern management to be. As this concept depends on powerful communication and collaboration tools, it is directly connected with the achievements of the Social Web and its successors.

5.   *How to Apply: The Maturity Model of Management 2.0*

In 2009, McKinsey conducted a survey to find out "How companies are benefiting from Web 2.0". 69 per cent of the 1,700 responding executives reported that their companies have gained measurable business benefits through Social Media engagement. More effective marketing, better access to knowledge and more innovative products were the chief reasons for the distinct answers. The results even show that the greater the use of Web 2.0, the greater the benefits – regardless of industry. Moreover, despite the last recession, most companies were willing to continue investing in Social Media. But so far, the companies have interacted with only 35 per cent of their customers online and as they so far merely see it as a marketing channel, there has been little effort to apply the socio-technological change to their organisation itself (cf. Bughin/Chui/Miller 2009). Apparently, there is a huge interest in the opportunities of the Social Web, but the implementation is still rather cautious.

We use a maturity model to show how to evolve towards the Corporate Community in the sense of Management 2.0 using Social Web technology. As we mentioned above, this technology is the tool to create a whole new understanding of the corporation and one's place in it. This implies that the costs of change are mainly indirect, as they arise in the process of bringing the tool into service. The new technology can help corporations to fully enjoy involvement, flexibility and collaboration. Our maturity model corresponds to the evolution of web-based communica-

tion described above. It was developed to classify a company's Social Web engagement and most notably to give the company a road map of how to transform itself from Management 1.0 to Management 2.0 taking Aristotle's understanding of community into consideration. It states six levels of companies' integration of online communication services from traditional Management 1.0 to Management 2.0. These levels are categorised in three periods to distinguish between different types of motivation of the usage of the applications and to show the different benefits accompanied by the periods: "presentation" for representation and contact, "involvement" for tapping the Social Capital and "community" for using collective intelligence. There is no clear status quo concerning the maturity level of the entirety of companies engaged in the Social Web, as it is an individual process that depends on the line of business, the size of the company and especially the corporate culture (or corporate philosophy, whether explicitly communicated or not). The development from Management 1.0 to Management 2.0 does not have to start automatically at the first level, as for example, many internet start-ups tend to be founded within and as a part of the Social Web and therefore begin their development at level 3 or above. Also, the Social Web engagement does not have to reach the final level: while the mere online presence makes sense for most companies, every further step is not useful per se but can even be a risk depending on the line of business. For example, companies of the armaments industry might not want to enter into a direct dialogue with the web community via chat rooms or other communication tools. The reason for it is obvious, as these companies would provide their opponents with an easy target by using communication tools.

5.1 The First Period: Presentation

The first period shows us the enablement of companies' representation through Web 1.0 and Web 2.0 techniques. Therefore a comprehensible distinction between these web evolutions is needed. The basic use of the web is to transport information, and it is Web 1.0 technologies that offer the easiest way to reach this goal. Companies build their own (static) websites on which the visitor can find information about them on demand. The sites usually are not interactive and visitors remain consumers who cannot contribute to the sites, apart from perhaps posting comments. The style of Web 1.0 websites is rather impersonal, descriptive and fact-based and creates a distanced and shuttered atmosphere for visitors. The visitor is usually expected to be someone who is not directly part of the company, such as customers, people looking for a job or secondary stakeholders (e.g. the media, the general public or interest groups). Such web engagement is comparable to an

online version of a brochure, offering facts about the company, career options and contact forms. Especially small and medium-sized enterprises (SME) are at this level of online engagement. In our model, 'Information' (Level 1) is the first of the six levels. Web 2.0 features, on the other hand, are interactive. The most important are individualised web pages, user generated content (e.g. with blog services like Wordpress, media sharing sites like YouTube for videos or Flickr for personal photo and Wikis for knowledge of any kind) and web applications. The latter have many of the characteristics of desktop applications, but can be used online. For example, Google Calendar, a free time-management web application or Microsoft's Office Web Apps which allow users to access documents directly from anywhere within a browser, share files and collaborate with other users online. Successful mediums of communication are online communities (e.g. DeviantART which provides a platform to exhibit and discuss art works of any kind) and video and voice calls (e.g. Skype or Apple's FaceTime which can also be used for video chats). Since Web 2.0 offers an immensely broader range of ways to communicate with individuals, companies enter a 'Dialogue' (Level 2) with their primary stakeholders (e.g. customers, stockholders and even employees) and reach the next level of online engagement towards Management 2.0. This gives the users at least the feeling of openness and participation and often leads to improved customer service, again strengthening the customers' identification and satisfaction rate.

5.2 The Second Period: Involvement

The second period can be divided into two types of involvement known as 'personal involvement' (Level 3) and 'process-oriented involvement' (Level 4). Both go hand in hand with the development from Social Media to Social Web. In the first level of 'involvement', companies seek to use Social Media to achieve personal involvement. Companies start to use the web as a means of access to the Social Capital mentioned in section two. Not only can websites be individualised by offering a personal login, now employees can identify with their company by linking to it and to their colleagues like "I work at company x with colleague z". And, more importantly – as companies at this stage view Social Media above all as a marketing channel – their customers can click on a button to show their appreciation of their brands and products ("like" on Facebook, "+1" on Google+), comment on their posts and take part in contests and surveys. This way, they do not

only connect emotionally with these brands and products,[8] but also act as a multiplier, carrying their appreciation on to their friends. By socially connecting with corporate Social Network pages, one becomes a "friend" who gets access to special promotion, news and information channels and thereby has something to talk about and to cite on his Social Media platforms. Hence, Social Media analysis tools are powerful and easy to use elements in market research. A visionary tool for market research and trend scouting in the Social Web is Condor, developed at the Massachusetts Institute of Technology (MIT). As it not only analyses Social Media platforms and typical Web 2.0 applications for trends, but can also analyse internal communication flows for important relations, it is an efficient way to optimise communications (cf. Gloor/Cooper 2007).

Web 2.0 already has a huge democratisation capacity, as it pushes transparency and involvement; with Social Media and the Social Web, this trend is intensified. This leads to process-oriented involvement, meaning the involvement of customers (and ultimately primary stakeholders) into the actual working process by influencing product design, or participating in submitting marketing ideas.[9] Process-oriented involvement sees the community as a potent and infinite pool of creativity. Products and also company-internal matters can be solved not just through a small group of decision makers but through an environment of company-involved people. The new mindset towards the Social Web linked with the stage of process-oriented involvement can be regarded as the key criterion of Management 2.0. To tap their full potential, people need to be enabled to work together in real-time from anywhere. This is offered by collaboration suites like Google Apps and Microsoft Office 365, both including standard office applications, e-mail and organiser functions and data sharing for an annual fee not less than $864 per user over the course of three years for Microsoft Office 365. Coming as web-based software on demand, it is a cloud computing technology. Even though these solutions are presented as cost-effective alternatives to offline office suites, they have possibly not yet reached nearly the same acceptance in its target group, the SME.[10] There is a simple

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8   The idea of "Emotional Identity" is discussed in detail in the same-titled paper in this publication Hofman/Habebnschuss/Sonnenberg 2014:181.

9   An infamous example of a failed viral marketing campaign is the attempt to let the Facebook community vote for user-made label design of Henkel's washing-up liquid "Pril" in 2011. The campaign "My Pril" successfully attracted more than 50,000 participants – but the community chose two line drawings the company did not want to put on the market: the so-called "rage guy", a male face expressing serious disappointment, and a fried chicken with the slogan "tastes deliciously like chicken". By appealing to the exclusion of immoral content in the conditions, Henkel ignored the democratic decision. After vehement protest of the community, at least a limited edition of the "Rage Guy" was announced.

10   According to a recent study of PwC, 80 per cent of the computing officers interviewed think that cloud computing is irrelevant and about 30 per cent do not even know the term. The press release can be found on http://www.pwc.de/de/pressemitteilungen/2011/skeptischer-blick-auf-die-wolke-cloud-computing-ueberseugt-mittelstand-noch-nicht.jhtml (accessed: 10.01.2014).

reason for that: companies' typically conservative attitude towards fundamental workflow changes. Apart from these fee-based suites, various free applications can be found. File sharing can be done with Dropbox, a very successful and fast growing web-based file hosting service, where users can store and share files and folders with others. Direct communication is possible via multiple platform tools like Meebo, a social platform connecting users with their friends. Google Docs is the best example for a sophisticated work grouping, as it allows users to simultaneously edit text documents. This real-time collaboration with other users creates the situation that no train of thought will be lost. Setting up websites with content management systems is enabled via tools like Joomla! and managing communication channels via Social Media Management systems like Spredfast.

5.3 The Third Period: Community

In the last period, companies will finally have fully adopted the new view towards their community and use the opportunities of collective intelligence available to them for complex forecasting. This is what they consider themselves to be: Corporate Communities (Level 5), a network of people connected with each other and to the Social Capital surrounding them, with common goals and shared values. There are already brilliant tools, which help to involve a community in corporate decision-making processes while simultaneously using collective intelligence. Prediction Markets are a dynamic way of making measurements by aggregating opinions similar to what the stock market uses. The process of aggregating opinions is better at forecasting than almost all participants in the market are and they can be any forecast you are trying to measure (cf. Hubbard 2010: 257). With Prediction Markets, collective intelligence can be efficiently used for "bottom-up forecasting" (Hamel 2007: 241), or as Kammerer explains it: They basically work like "a stock exchange with a Web-based platform, people deal with information derivatives. They wager on the success of new strategies, innovations, solutions and projects. If their estimates change – the prices change. The price index creates an enormous transparency" (Wiek 2008: 25). An idea for a tool offering a solution to the problem of rewards within a community is given by Social Micropayments. It is based on the known concept of the micro donation system flattr. Registered users can pay an amount every month (minimum 2 Euros) and then click Flattr buttons ('flattring') on sites the users think of as worth being rewarded to share the money. But instead of sites, colleagues can be supported through communication networks.[11]

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11   The idea of "Social Micropayments" is described in detail, with special regard to the very important topic of trust in dealing with communities, in the same-titled paper Andresen/Weiß 2014:249.

The communication consists of a compliment and a combined feedback of the colleagues. Thanks to intrinsic motivation, social capital is created which can help to overcome and solve dilemma situations. In the long run, Social Micropayments are able to implement and allocate values to companies.

Eventually the sixth level, effectively the perfection of this idea, is what we labelled the 'Meritocratic Swarm' – an organisation which is completely decentralised and self-organising. Everyone's merits will be used reasonably within this organisation and it will be supported by intelligent and autonomous software. We call this vision Management X.0. This final level of our maturity model overshoots the Corporate Community by far, being based on the idea of swarm-like organisations. The swarm is a self-organising crowd of people sharing basic interests and collectively pursuing certain targets.

Finally, our idea of Management X.0 viewed from around 2025 is as follows: After having already had a huge impact on society in general and management in particular, the web kept evolving and became increasingly intelligent in the way that software is now able to decide on its own, which information is relevant and which is not. This ability of computers not only to exchange and categorise but to interpret, process and relate information is labelled semantic in which humans are capable of using the web to carry out tasks. It leads to a final wave of ultimate decentralisation of companies: Corporate Communities are no longer run by certain persons or functionaries but by autonomous software. Based on the individual profile and capabilities of each member of the Corporate Community, the software decides whom to give a limited power of decision to in order to solve a certain problem, and takes it away afterwards so that he or she is an equal, highly motivated member of the swarm again. This is a meritocratic organisation as power is bound to merits such as expertise, experience, intelligence and ethos. Every member of the swarm usually has the role he or she wants to work in the most – except if put in charge. Then the individual decides in the interest of the community on the basis of their corporate values and virtues. The disadvantage is that people working together do not have the possibility to elect their representatives and cannot be elected themselves to guarantee that decision power is solely based on situational competence and not social soft skills and self-marketing campaigns. Those working in corporations designed as Meritocratic Swarms are highly regarded in society as they are following humanistic ideals.

PERIOD	LEVEL	ONLINE MANAGEMENT	BENEFIT	WEB EVOLUTION	TOOLS	
PRESENTATION	1	INFORMATION	REPRESENTATION AND CUSTOMER CONNECTIVITY	WEB 1.0	WEBSITES, YAHOO, EMAIL, NEWSLETTERS	MANAGEMENT 1.0
PRESENTATION	2	DIALOGUE		WEB 2.0	WIKIPEDIA, FLICKR, YOUTUBE, SYKPE	MANAGEMENT 1.0
INVOLVEMENT	3	PERSONAL INVOLVEMENT	TAPPING SOCIAL CAPITAL	SOCIAL MEDIA	FACEBOOK, GOOGLE+	MANAGEMENT 2.0
INVOLVEMENT	4	PROCESS-ORIENTED INVOLVEMENT		SOCIAL WEB	CONDOR, DROPBOX, MICROSOFT OFFICE 365	MANAGEMENT 2.0
COMMUNITY	5	CORPORATE COMMUNITY	USING COLLECTIVE INTELLIGENCE	CORPORATE SOCIAL NETWORK	PREDICTION MARKETS	MANAGEMENT X.0
COMMUNITY	6	MERITOCRATIC SWARMS		AUTONOMOUS SOFTWARE	STILL EXPECTED	MANAGEMENT X.0

FIGURE 1: MATURITY LEVEL OF MANAGEMENT 2.0 (OWN SOURCE)

6.   Conclusion: Brave New World!

The socio-technical evolution of web-based communication and online engagement has already had a huge impact on business culture. It affects the mindset towards the way corporations see themselves and the people they are related to. In the nearer future, new collaboration and communication technologies will be a key ingredient of the next version of management and change the idea of the company towards a Corporate Community. A thus far unknown potential of virtually direct communication among thousands of members of these communities, who can push themselves to peak performance and happiness at the same time simply by being passionate about their job is accessible. This releases a creativity that has been suppressed for a long time. The accompanying openness towards new ideas and change in all areas makes sure that people share knowledge with each other. Management 2.0 applies the openness mindset to a new leadership model and

can be seen as the successful transformation of a traditional company into a community. Social Web technology allows the application of this new model. Being an evolutionary process, the development towards Management 2.0 is not an option – it is inevitable. That is just what makes it so attractive to be one of the leaders of this process: to participate in forming the future and not having to abruptly restructure one's own enterprise in a couple of years. What is next is not settled at all but open to be formed. Again: Management 2.0 is not an option, but it is an opportunity. Thanks to this model and the new technologies, a fundamental human state which has been lost for years is becoming visible again: the concept of perceiving oneself as part of a community as Aristotle realised. And if we apply this to our modern business world: the concept of identifying with the corporations people work in and seeing themselves proudly as part of the company. This is the highly welcomed Corporate Community. Efficiently involved and intrinsic motivated people enjoy their tasks and act in a similar way in the community as a whole. With reference to Solomon, Management 2.0 engagement consequently serves the society and public good as well. If we are thinking further, we can observe developments towards a Management X.0 where decisions will be made by software and Meritocratic Swarms will be the mainspring of corporations.

We can only guess whether Aristotle would actually agree with us on the question of social networking and whether he would appreciate the idea of a software-run corporate swarm. But we know that we are excited about what the future of management will look like – and even more excited to take part in its shaping!

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Knowledge
Management

THE
CORPORATE NETWORK

How to Conduct Knowledge Management with Enterprise 2.0 Software

A Small and Medium Sized Enterprises Case Study

Philipp Schächtele

Web 2.0 software proves to be very successful in knowledge sharing on the Web. Wikis are very effective in collaborative knowledge generation, while social networks and micro-blogging platforms successfully use communication to generate knowledge. The reasons for that are low-threshold contribution possibilities and a clear overview provided by news aggregators, which both make contribution cheaper and more beneficial. Such software can also efficiently be applied in firms as Enterprise 2.0 software by adapting Web 2.0 concepts for enterprise needs. Communication-based knowledge sharing can be effectively applied for the codification of tacit knowledge by leveraging communication processes. In the case study, communication-based software is successfully conducted by a knowledge management system in software development.

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1. Introduction

Knowledge has always been an important requirement for economic production and services, for example, in craftsmanship or navigation. The idea that knowledge can be controlled, managed and measured as a resource of the firm, however, has only existed for a few decades. While the world's economy keeps growing, companies increasingly specialise themselves, while creating and collecting more and more knowledge about their products and services, technologies, markets and clients. Since most of this knowledge is stored as tacit knowledge in the heads of employees, it has to be made accessible to the organisation to allow optimal utilisation of the resource "knowledge" within a firm.

Although implicated by its name, knowledge management cannot directly control the creation and storage of knowledge, but must instead provide incentives for the employees to share their knowledge. Making tacit knowledge accessible to others usually requires its formalisation into spoken or written language. Since knowledge transfer and sharing is costly and there are few individual benefits on a short term basis, many companies fail to establish a culture of knowledge sharing. Information technology allows the collection, management, distribution and storage of enterprise knowledge in databases. These tools can be used to support and increase knowledge sharing in the firm; however, knowledge management software often proves to be less effective in knowledge sharing than expected, because little respect is paid to provide the right incentives for sharing. Web 2.0 software proves to be very effective in knowledge sharing in the Internet. Its concepts to improve knowledge sharing have been increasingly applied in firms and are called Enterprise 2.0 software. In this paper, we analyse how knowledge sharing is achieved using Web 2.0 software and try to apply these principles to knowledge management in the firm. In a case study, we test our hypotheses about knowledge sharing with Enterprise 2.0 software in a small team in a software development company.

The research question of this paper is: How can Enterprise 2.0 software effectively conduct knowledge sharing in the firm? We will respond to this question by rephrasing it into three working hypothesis. Each hypothesis will be discussed in a separate section. While section 2 and 3 are based on literature research, section 4 contains the discussion and formulates hypotheses how Enterprise 2.0 software can improve knowledge sharing. In section 4, these hypotheses are tested based on the results of a survey among project participants. We will summarise our findings in a conclusion.

In Section 2 Foundation of Knowledge Management, we will investigate the hypothesis "Knowledge Management Software can improve knowledge sharing by increasing the individual's motivation to share." The section provides a basic model of knowledge in the firm, how it is created and shared and how knowledge sharing can be influenced by corporate culture and knowledge management instruments. We will describe knowledge sharing as a prisoner dilemma situation and formulate requirements how software instruments can influence the individual motivation to share knowledge and increase knowledge sharing by reducing costs of sharing, searching costs and increasing the value of the shared knowledge. Section 3 Knowledge Sharing on Web 2.0 platforms investigates the hypothesis "Web 2.0 software is successful in motivating individuals to share knowledge on the Web". The section gives an introduction into Web 2.0 software and shows how knowledge is effectively shared with Web 2.0 software. In Section 4 From Web 2.0 to Enterprise 2.0, we start with the following working hypothesis: "Enterprise 2.0 is effective in conducting knowledge sharing in the firm". We try to transfer the Web 2.0 knowledge sharing models to Enterprise 2.0 knowledge management instruments. In this section, we will concertise this working hypothesis to five more detailed hypotheses, on how the two different types of knowledge sharing found in Web 2.0, namely collaboration-based knowledge sharing in Wikis and communication-based knowledge sharing, can be used as efficient tools for knowledge sharing in the firm. In 5 SME Case Study, we analyse if Enterprise 2.0 software can be efficiently applied as a knowledge management instrument in praxis. The hypotheses which were formulated in the former section are tested in a survey among team members.

2. *Foundation of Knowledge Management*

This section tries to corroborate the following hypothesis: Knowledge Management Software can improve knowledge sharing by increasing the individual's motivation to share. Before talking about knowledge management, we will describe the characteristics of knowledge as a resource of the firm and how this knowledge can be "managed", thus how it is shared and stored in organisations. A consistent knowledge-based theory of the firm has not yet emerged. However, we will describe a basic model of knowledge conversion and sharing in organisations, which will allow us to understand how knowledge management (KM) can be influenced and improved by information technology

when using knowledge management systems (KMS). At the end of the section, we will specify the hypothesis by formulating requirements for KMS to improve the individual motivation to share.

2.1 Characteristics of Knowledge

In 2.1 Characteristics of Knowledge, we define two types of knowledge which differ in terms of articulation and aggregation. In 2.2 Knowledge in the organisation, we describe how knowledge is converted and shared in the firm and how knowledge sharing can be interpreted and solved as a public good dilemma. In 2.3 Knowledge-based view of the firm, the firm is described from a new institutional economics perspective as an organisation, whose competitive advantage is determined by the management of the resource "knowledge". This view describes the efficiency knowledge management as the most important variable for economic success. In 2.4 Dimensions of knowledge management, we describe the role of corporate culture and which instruments management can use to affect the efficiency of knowledge sharing in the firm. The last sub-section, 2.5 The role of information technology, focuses on the potentials of information technology in knowledge management. We will summarise our findings by formulating requirements for knowledge management software to conduct effective knowledge sharing.

When talking about "knowledge", we have different things in mind. Therefore we need definitions of the different kinds of knowledge which exists in a firm. After describing a knowledge hierarchy, we will explain how knowledge in the firm can be characterised in terms of articulation and aggregation.
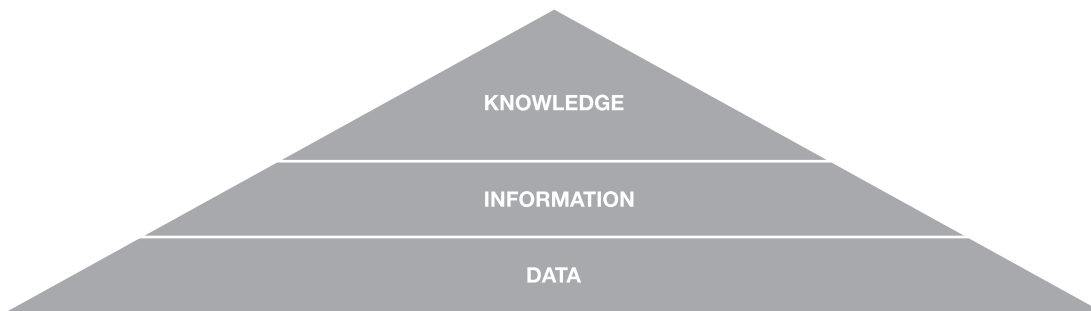
FIGURE 1 KNOWLEDGE HIERARCHY (OWN SOURCE)

The distinction between the concepts data, information and knowledge, which together form a hierarchy of knowledge, had first been made by Nicholas Henry (1974). While knowledge is individual and resides in human heads, information and data exist independently as texts, graphs, etc. for example on paper, hard drives or other media. Data is the most basic of these three concepts.

> "Data is a set of discrete, objective facts about events. In an organisational context, data is most usefully described as structured records of transactions. When a customer goes to a gas station and fills the tank of his car, that transaction can be partly described by data: when he made the purchase; how many gallons he bought; how much he paid" (Davenport/Prusak 2000: 2).

In an enterprise today, data is usually stored in some IT system like a database, an Excel-sheet or still in some cases still in traditional physical files and folders. Information consists of data, but adds context to it. It is often defined as "a flow of messages or meanings which might add to, restructure or change knowledge" (Nonaka 1994 in: Machlup 1983: 15). Information can be a letter or an e-mail, but also any other text, audio or video document. The context is created by the fact that messages usually have an author, recipient, or date which allow users to interpret the message more easily.

Knowledge had already been defined by Plato as a "justified true belief" (Gettier 1963: 121). This does not necessary mean that all knowledge must be true, but knowledge represents what humans considers to be true (cf. Kuhn 1962). The relation between data, information and knowledge can be summarised as follows: While information consists of interpretable data which has been enriched with context, it shapes individual knowledge or what one considers to be true.

Although that definition suggests that knowledge resides within the individual, it is still possible to transfer individual knowledge to information, which can be converted back into knowledge by other individuals (cf. Buckland 1991). In this paper, information which represents knowledge will also be called (explicit) knowledge, even though it does not longer reside within an individual.

Knowledge Articulation

When trying to understand how knowledge is articulated in the firm and how this affects the ability to transfer and aggregate it, it is important to understand the distinction between tacit and explicit

knowledge, terms which were coined by Polanyi. He stated that "we can know more than we can tell" (1966: 4) and called knowledge which is hard or impossible to articulate "tacit knowledge". As an example for tacit knowledge, he mentions the human ability to recognise faces and persons without being able to describe how this is achieved. According to Nonaka, tacit knowledge is "deeply rooted in action, commitment, and involvement in a specific context" (1994: 16). Tacit knowledge is also referred to as know-how.

Nonaka describes explicit knowledge as "formal and systematic. For this reason, it can be easily communicated and shared, in product specifications or a scientific formula or a computer program" (1991: 98). Explicit knowledge requires a deep understanding of an issue in order to articulate it (cf. Snow 1989: 9). If a person has explicit knowledge, he or she knows about something. According to our understanding of knowledge, explicit knowledge can be stored in both human heads or in some kind of document as information. The distinction between tacit and explicit knowledge is relevant for knowledge management because of its effect on transferability (cf. Grant 1996: 111). Explicit knowledge is formalised or can be formalised at low costs, which makes it easy to share, because it can be stored in information systems, accessed and copied at sero marginal cost (Stiglitz 1999: 308). Tacit knowledge, on the other hand, can hardly be codified, which makes sharing difficult and expensive.

Knowledge Aggregation

Knowledge in the firm can also be characterised by the degree of aggregation. The distinction between knowledge which is only known by single individuals and knowledge which most or all individuals in an organisation know about, which is called organisational knowledge, can also be made.

	INDIVIDUAL	ORGANISATIONAL
TACIT	CONSCIOUS	OBJECTIFIED
EXPLICT	AUTOMATIC	COLLECTIVE

FIGURE 2: DIFFERENT TYPES OF ORGANISATIONAL
KNOWLEDGE (CF. SPENDER 1996: 52)

While conscious and automatic knowledge are identical to the description of explicit respectively tacit knowledge on individual level, the social dimension of organisational knowledge brings in new concepts. "Social types of knowledge are either publicly available or collective and embedded in the firm's routines, norms and culture" (Spender 1996: 52). Objectified knowledge is formalised knowledge which is – within the firm – publicly available, for example, when stored in some kind of knowledge repository. Collective knowledge, on the other hand, is organisational knowledge closely linked to action, such as routines and norms, which are not formalised. Such knowledge, including common language, norms about reliability and commitment of the workers or best practices, is essential for communication and collaboration organisations.

2.2 Knowledge in the Organisation

In an organisation or firm, a lot of individual knowledge exists which needs to be shared within communication and collaboration processes to increase its value by creating organisational knowledge. In this sub-section, we first describe the SECI-Model, also known as the spiral of knowledge, which provides us with a basic model for knowledge sharing in the firm. Furthermore, we will characterise knowledge as a public good and describe how the motivation to share is influenced by the emerging public good dilemma.

Models of Sharing Knowledge: The SECI-Model

The SECI-Model was developed by Nonaka and Takeuchi at the beginning of the 1990s. It is based on "[t]he assumption that knowledge is created through conversion between tacit and explicit knowledge" (Nonaka 1994: 18.) and explains how existing knowledge isconverted to new knowledge within the firm. Four different modes of knowledge conversion are described which create a spiral of knowledge in the firm: Socialisation, externalisation, combination and internalisation. The SECI-Model is described as a spiral and not a circle because it does not recreate the same knowledge over and over again, but increases its value by the continuous conversion between theoretical and practical knowledge.

	... TO TACIT KNOWLEDGE	... TO EXPLICT KNOWLEDGE
FROM TACIT KNOWLEDGE	SOCIALIZATION	EXTERNALIZATION
FROM EXPLICT KNOWLEDGE	INTERNALIZATION	COMBINATION

FIGURE 3: MODES OF KNOWLEDGE CREATION
IN THE SECI-MODEL (CF. NONAKA 1994: 19)

Socialisation of knowledge describes the creation of new tacit knowledge from existing tacit knowledge. This happens through observations of experienced colleagues, for instance, when a journeyman learns about the tacit knowledge of the master craftsman by watching him as he performs a certain skill. The knowledge is gained through observation, which means that tacit knowledge is socialised without the use of language. Externalisation of knowledge describes the conversion of tacit knowledge to explicit knowledge. Knowledge gets externalised if somebody uses his experiences to create a metaphor, analogy or model (cf. Ibid: 20) which can formalised as spoken and written language. This allows him to share it with others.

Combination of knowledge describes the conversion of existing explicit knowledge to new explicit knowledge. This mode represents the types of knowledge creation most people would identify with knowledge management. Explicit knowledge is exchanged by individuals in meetings, telephone conferences, databases or other information systems. Within the process of knowledge combination, existing information gets sorted, re-categorised and re-contextualised, which creates new explicit knowledge. Combination of knowledge can also be performed by computer systems which process and combine existing data to new knowledge. An example for that is the visualisation of data as a graphical chart, which can be acquired by individuals more easily than the original data used to create the graph. Internalisation of knowledge is the conversion of explicit knowledge to tacit knowledge. Knowledge is internalised if an individual transfers explicit knowledge, which can be acquired by reading documentation or listening to the explanations of a co-worker (theory), to the ability of applying this knowledge (practice). The mode of knowledge internalisation is what many people would describe with the traditional notion of learning.

In this organisational knowledge creation theory, new knowledge is created by constantly converting existent tacit and explicit knowledge to new knowledge, while increasing individual

and organisational knowledge. Before promoting the SECI-Model, most existent knowledge in a firm is tacit. Externalisation of tacit knowledge creates new explicit knowledge. This knowledge can be shared more easily in the firm and can lead to the creation of new knowledge. By constantly repeating this process, both new individual and new organisational knowledge is created in the firm. Nonaka conceptualised the firm as a "knowledge creation function" which has to be optimised (2000: 10). However, knowledge sharing cannot be enforced by management, since employees can be encouraged but not forced to share their knowledge. Instead, efficiency depends on the motivation of the individuals to share their knowledge (cf. Osterloh et al. 2000).

Knowledge as a Public Good

Knowledge is often characterised as a public good. A public good has the following properties: Its consumption is non-rivalrous – that means that an additional individual can enjoy its benefits at sero marginal costs – and it is not possible to exclude anybody from consuming it (cf. Stiglitz 1999: 308). While nobody can get excluded from knowledge which is publicly accessible, firms try to protect their knowledge and exclude others from consuming it, which is why knowledge in the firm must be considered a club good from an external perspective (cf. Kaul et al. 1999: 5). Therefore, knowledge in the firm cannot be characterised as a global public good; however, there is the notion of a local public good (cf. Tiebout 1956).

> "This perspective views knowledge as a public good that is socially generated, maintained, and exchanged within emergent communities of practice. […] Knowledge is a intangible resource that can be shared and spread throughout the community without losing its value, nor being consumed (used up) in the process of transfer" (Wasko / Faraj 2000: 156).

Not all, but only such knowledge which can be accessed by anybody in the firm can be considered public, thus objectified knowledge. To create public knowledge, individuals have to share their knowledge with others. Wasko and Faraj criticise that both organisation and individual often treat their organisational knowledge (e.g. documents or information in knowledge databases), respectively individual knowledge (tacit and explicit knowledge), like a private good instead of sharing it as a public good, thus not excluding anybody from accessing their knowledge. The reason for this is that

employees are opportunistic players who try to avoid costs, such as losing their reputation if their unique knowledge is known to everybody or – on organisation level – managers who overprotect organisational knowledge because of security reasons or to protect their own position in the firm.

Knowledge Sharing Dilemma

From an economic perspective, this problem can be described as a social dilemma or public good dilemma. It would be optimal for the organisation as a whole if individuals made their knowledge publicly accessible by sharing it. Individuals can profit from that, because commercial success of a firm usually also contributes to expected salaries and job safety. However, there are incentives on the individual level not to share individual knowledge. This causes a prisoner's dilemma situation (cf. Kaul et al. 1999: 7). In the following example, knowledge sharing equals cooperation and not sharing knowledge equals defection:

T (PLAYER DOESN'T SHARE WHILE OTHER PLAYER DOES SHARE): - 1   P (BOTH PLAYERS DON'T SHARE): -4

R (BOTH PLAYERS SHARE): - 2   S (PLAYER DOES SHARE WHILE OTHER PLAYER DOESN'T): -6

	P2: SHARING	P2: NOT SHARING
P1: SHARING	- 2 / - 2	- 6 / - 1
P1: NOT SHARING	- 1 / - 6	- 4 / - 4

FIGURE 4: PRISONER'S DILEMMA SITUATION FOR
KNOWLEDGE SHARING (OWN SOURCE)

The pareto-optimal solution would be the case where both players share their knowledge. Because each player is afraid that the other player won't share, which would lead to the worst payoff possible for the sharing player, the player doesn't share. So the dominant strategy is, like in any other prisoner's dilemma, to defect, thus not to share knowledge (cf. Cabrera/Cabrera 2002). Later in the paper, we try to solve this dilemma situation by increasing benefits and decreasing the costs of sharing to make cooperation the dominant strategy.

2.3 Knowledge-Based View of the Firm

The neoclassical economic theory of the firm ignores the important role of knowledge, since it is based on the assumption that there are sero transaction costs, perfect information and perfect factor mobility. We have already seen that knowledge conversion causes high transaction costs and is not mobile, as long it is not stored as information. The assumption of perfect information is also not compatible with knowledge as a resource since the lack of information and knowledge is fundamental for knowledge sharing.

The theoretical foundation to define a theory of the firm which is able to explain the importance of knowledge in the firm was laid by Coase's (1937) Transaction-Cost Theory and Simon's (1955) concept of Bounded Rationality in economic decision making. Coase argues that there are a number of transaction costs when using a market, such as search costs, information costs, bargaining costs, etc. The fact that these costs are lower within a firm compared to markets explains the existence of firms (cf. Coase 1937: 393). Simon stated that decisions are not made by rational individuals who have access to perfect information. His concept of bounded rationality "takes into account the cognitive limitations of [...] both knowledge and cognitive capacity" (Simon 1987: 266).

These and other findings in the field of new institutional economics lead to the resource-based view of the firm. This model understands the firm as a bundle of valuable resources, which "include all assets, capabilities, organisational processes, firm attributes, information, knowledge, etc." (Barney 1991: 102). Firms create their competitive advantage through the optimal application of these resources (cf. Barney 1991: 102). Since the focus of the model lies on understanding the successful application and does not constitute a micro-based theory, it is common to use the phrase "resource-based view" rather than "resource-based theory". The knowledge-based view of the firm understands knowledge as the most relevant resource of the firm and explains how the successful application and integration of knowledge leads to competitive advantage.

> "[F]irms have [...] institutional capabilities that allow [them] to generate and protect the unique resources and capabilities that are central to the strategic theory of the firm" (Liebeskind 199: 93).

The view can be understood as a special case of the transaction cost theory of Coase and Williamson:

> "Firms exist because they are able to avoid the costs associated with market transactions; the knowledge-based view simply focuses upon the costs associated with a specific type of transaction – those involving knowledge" (Grant 1996: 113).

Firms can avoid the high transaction costs of knowledge acquisition on the market by acquiring knowledge internally. Doing that – from a new institutional economics perspective – derives advantage from the fact that information, search, bargaining and enforcement costs are much cheaper within an organisation. Grant even argues that "knowledge is generally inappropriable by means of market transactions" (1996: 111), because intellectual property rights are – except for patents – hard to enforce. Another reason which makes knowledge transactions in an organisation more attractive lies in the nature of knowledge: If knowledge is transacted on a market, explicit knowledge can easily be "stolen", thus illegally copied and distributed by an opportunistic agent. Since knowledge is the most important resource of the firm, it must be protected and only be shared within the firm to protect the competitive advantage of the firm.

However, the knowledge-based view of the firm "is less a theory of firm structure and behavior as an attempt to explain and predict why some firms are able to establish positions of sustainable competitive advantage and, in so doing, earn superior returns" (Grant 1996: 110).

2.4 Strategy, Culture and Instruments for Knowledge Management

This sub-section will give a brief overview about the objective, problems and instruments of practical knowledge management. After defining knowledge management, two generic knowledge management strategies are described. Cooperative culture is identified as a critical factor for knowledge management (cf. Alavi et al. 2006), while its constituting rules and conventions have a strong impact on the individual's motivation to share knowledge. Therefore we show how this motivation to share can be increased through the use of knowledge management instruments. Knowledge management is an interdisciplinary subject which combines findings of human resource management, new institutional economics, industrial and organisational psychology, epistemology and information engineering and others (cf. Grant 1996: 110).

One single definition for knowledge management does not exist, but most definitions are similar in listing different synonyms for "knowledge" and "to manage". Thus the objective of knowledge management is to analyse, develop, control and store knowledge entities like patterns, rules, best practices, ideas, scripts, etc., in order to optimise the "knowledge function" of the firm to improve competitive advantage of the firm (cf. Demarest 1997: 374). Since knowledge creation is an individual activity, firms must find ways and instruments to learn about the knowledge of their members (cf. Grant 1996). In 2001, already "80% of the world's largest companies […] [conducted knowledge management] projects" (Rus / Lindvall 2002: 26).

Knowledge Management Strategies

Hansen et al. mention two generic knowledge management strategies: A strategy of knowledge codification and a strategy of knowledge personalisation (cf. 1999). While the strategy of codification seeks to converse individual knowledge to objectified knowledge, which is stored in knowledge management systems, the personalisation strategy identifies knowledge as something which is tied to individuals and should therefore be shared from person to person and not by using databases. Companies proclaiming a codification approach are for example Ernst & Young, Accenture and other consultancies which are specialised in IT consulting, like IBM. Companies known for using a personalisation strategy in their knowledge management are e.g. McKinsey, Boston Consulting Group and Bain. The implications of the two strategies, namely to promote knowledge sharing by using information technology respectively by encouraging individual knowledge exchange, are certainly not mutually exclusive, but can be combined.

Knowledge Management Requires a Culture of Knowledge Sharing

The biggest challenge in knowledge management is not the analysis of existent knowledge or knowledge sharing processes in the firm or the application of suitable instruments, but the establishment of a culture of communication and trust within the firm, which makes it attractive for individuals to share their knowledge. Schein defines the expression of an organisational or corporate culture "as a pattern of shared basic assumptions learned by a group as it solved its problems of external adaption and internal integration, which has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think and feel in

relation to those problems" (2010: 18). Johnson describes a cultural web in organisations, which is determined by routines, control systems, rituals and myths, power and organisational structures and symbols (cf. 1988: 85).

A culture of communication is based on the awareness of each individual that the creation and conversion of knowledge is fundamental for the success of their firm and therefore also contributes to their personal advantage. Bock et al. summarise aspects of such a culture: "a climate in which individuals are highly trusting of others and of the organisation, an open climate of free-flowing information, a climate that is tolerant of well-reasoned failure and a climate infused with pro-social norms" (2005: 90). If a corporate culture already exists in a firm carried by individuals who are willing to share their knowledge and document their work on their own initiative, there might even be no need for knowledge management initiatives. In reality, however, most firms have failed to establish such a culture, and knowledge sharing behavior is dominated by opportunistic interests as described in the knowledge sharing dilemma.

There is no universally valid strategy to change organisational culture, but there are certain guidelines to follow if an organisation tries to change its culture. Cummings and Worley suggest first to formulate a clear strategic vision which provides purpose and direction of the cultural change. To successfully implement a culture of communication and sharing, first the top management has to adapt its behavior to show the strengths of the new strategy (cf. Cummings/Worley 2009: 526). Without such exemplary behavior, cultural changes are likely to fail, because individuals will most likely not adapt a behavior which increases individual costs on a short-term basis, without seeing a long-term benefit.

Solving the Knowledge Sharing Dilemma

When motivating individuals to participate in such a cultural change, the knowledge sharing dilemma has to be solved in a way that cooperation becomes the dominant strategy. This can be achieved by changing the expected payoffs for knowledge sharing. More precisely, costs of sharing have to been decreased, the expected benefits from knowledge sharing must be increased and the unwillingness to share must become more expensive. Cabrera and Cabrera propose two ways to do so:

▪   A cooperation-contingent transformation, which can be achieved by some kind of reward, which can also be non-monetary, most notably social recognition for individuals who share

their knowledge. This would increase the payoff for sharing. In addition to their suggestions, the author of this paper also proposes decreasing the costs of sharing if possible, which could be achieved by the use of comfortable information systems, as will be described later.

- A transformation of the public good, which means that the "perceived value of the collective gain is increased. If the collective gain is greater for the individual than the cost, then the incentive to cooperate will be increased" (2002: 696).

The payoff structure is determined by corporate culture and applied knowledge management instruments. The next section will give a short overview of knowledge management instruments, before we analyse how information technology can achieve the transformations necessary to solve the knowledge sharing dilemma.

Knowledge Management Instruments

Knowledge management instruments are patterns of behavior, communication and cooperation which implement best practices of knowledge management (cf. Padmore et al. 1998: 605). Such instruments can be methods, processes, trainings, software systems, etc which have an influence on knowledge sharing. These instruments can be roughly categorised in three groups (cf. v. Loh 2008: 120):

- Individual and intellectual methods, which can be applied to knowledge conversion on an individual level. Examples are creativity techniques like mind mapping or brainstorming, but also the balanced scorecard, which can be used to identify and evaluate knowledge. These methods contribute to the conversion of tacit into explicit knowledge.
- Organisational methods, which improve knowledge conversion in groups. Such methods are mostly concerned with the creation of tacit knowledge (socialisation and externalisation) and aim to improve the corporate culture. A wide range of methods exist, such as job rotation, informal meeting places, manuals, training and mentoring programs. Since such methods promote the individual reflection about the knowledge conversion in the firm, they offer a contrast to the daily routine and always include several individuals; these methods are most suitable for improving the creation of a culture of communication and sharing of knowledge.

- Technological tools and software systems, which support especially the combination of knowledge.

Since this paper focuses on the role of knowledge management software, the role of information technology will be discussed separately.

2.5 The Role of Information Technology

In this sub-section, we give an introduction into information technology as a knowledge management instrument and formulate requirements for software instruments to improve knowledge sharing by increasing individual motivation to share knowledge.

Within the last two decades, an innumerable number of software systems have been developed to support knowledge management in the firm. Such systems are "designed specially to facilitate the sharing and integration of knowledge" (Alavi/Leidner 1999: 2). Information technology allows for the codification and formalisation of knowledge as explicit information which can be easily accessed by others. We will call systems which contribute to the sharing of knowledge in the firm knowledge management systems (KMS). The method of knowledge creation which can be identified with KMS is the combination of knowledge (tacit to tacit knowledge). KMS store highly abstract knowledge, like articles and manuals, but also less abstract pieces of information, including client address data, sales statistics etc., and make them accessible and interpretable to all individuals in a firm (cf. Foster et al. 2003: 1).

Besides their great contribution to knowledge sharing between individuals, KMS also offer the possibility to create knowledge which exists independently from individuals in the firm. While the knowledge of an individual who leaves the firm is no longer accessible, information stored in databases remain in the firm. Such systems also offer the chance for collaboration, which can lead to better quality of the stored objectified knowledge (cf. Wasko/Faraj 2000: 160). Information systems also offer features which cannot be provided by any non-digital methods or technology.

Information technology is able to store, process and search nearly unlimited amounts of data and information which can be accessed from anywhere.

Types of Knowledge Management Systems

A wide range of different types of systems for the management of documents, processes, projects, and clients have already emerged. Such systems are characterised as information systems, while knowledge systems are usually identified as some kind of searchable document repository or knowledge database which are able to store categorised articles and other files. The content of such knowledge repositories is often exclusively created for storage in this database. Meanwhile, information and communication systems are increasingly also understood as knowledge management systems as well (cf. Alavi/Leidner 2001: 132). In this paper, we will not make a distinction between information management systems and knowledge management systems, since it is not possible to draw a line between pure information and information that contains abstract knowledge. Instead, the optimal utilisation and combination of all existing knowledge and information which contributes to the competitive advantage of the firm has to be accomplished in order achieve effective knowledge management.

Information technology also offers the possibility to define business processes, workflows and tasks. Such technologies are usually applied to provide coordination, but can be also leveraged to improve the knowledge management processes. While the contribution of articles in knowledge databases cannot be enforced, the daily use of the firm's process management tool is mandatory, since individuals receive their work orders in these systems. The definition of business processes and their management play an increasing role since there is a movement towards standardisation in corporate culture; Spender sees a trend from "craft to system" (1996: 51), thus from tacit to explicit knowledge.

Requirements for Knowledge Management Software

We consider our hypothesis "Knowledge Management Software can help to improve knowledge sharing by increasing the individual's motivation to share" confirmed by literature analysis. We have learned that knowledge is a source of competitive advantage. The objective of knowledge management is the optimal utilisation of this resource. The SECI-Model describes how new knowledge is created and shared by a constant conversion of tacit knowledge to explicit knowledge and vice versa. This process can be positively influenced by the use of knowledge management instruments. KMS are able to store and share codified knowledge and provide access to a group of individuals. To be accepted and

actually used by employees, the knowledge sharing dilemma has to be solved by changing the payoff structure. Based on the suggestions of Cabrera and Cabrera (2002) described above, we will formulate the requirements knowledge management software has to meet to efficiently conduct knowledge sharing. Each requirement focuses on the improvement of a certain mode of the SECI-Model.

- Reduce costs and increase benefits of knowledge sharing to promote knowledge externalisation: KMS should reduce the individual costs of sharing by making it as easy and quick as possible to share knowledge. Furthermore, it should increase the benefits of sharing by encouraging social recognition and feedback from others.
- Increase the value of knowledge to promote knowledge combination: KMS should increase the value of knowledge by automatically adding context information and connecting existent knowledge to new knowledge.
- Reduce the cost of searching to promote knowledge internalisation: KMS should reduce the cost of searching by automatically informing individuals about knowledge which might be relevant for them and provide an easy and effective search.

Later in the paper these requirements are used to review the influence on knowledge sharing of Web 2.0 and Enterprise 2.0 software.

3.   Knowledge Sharing on Web 2.0 Platforms

3.1 Characteristics of Web 2.0

The success of Web 2.0 websites, like the online encyclopedia Wikipedia, video sharing platform YouTube or the social network Facebook have established new forms of communication and collaboration. In this section we want to investigate the hypothesis that "Web 2.0 software is successful in motivating individuals to share knowledge on the Web". We try to corroborate this thesis by explaining the incentives to share knowledge provided by such software.[1]

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1   Since this is a very new and fast developing field, we will also make use of some Internet sources in this section. The author also uses his personal experiences when describing the functionality and use cases of common social media platforms like Facebook and Wikipedia, since functionality descriptions cannot be found in scientific literature.

The buzzword Web 2.0 has been heavily overused in public media and marketing for nearly every topic which is related to the World Wide Web. This might be due to the fact that there is no short definition. Web 2.0 is specified as the conception of a new generation of software and software development.

The version number "2.0" indicates that the web has improved significantly from what now can be called Web 1.0. Web 1.0 software is identified with early approaches to build up profitable business models on the web which collapsed with the burst of the "dot-com bubble" in 2000. O'Reilly, who made the expression of Web 2.0 popular in 2003, formulated a list of features that determine whether an application can be called a Web 2.0 platform:

- Services, not packaged software, with cost-effective scalability,
- control over unique, hard-to-recreate data sources, that get richer as more people use them,
- trusting users as co-developers,
- harnessing collective intelligence,
- leveraging the long tail through customer self-service,
- software above the level of a single device,
- lightweight user interfaces, development models, AND business models (O'Reilly 2007: 36 f).

These characteristics aim for user-centered software design, which focuses on the development of services which can be used by individuals at low costs and with high benefits. In contrast to that, web and software development before Web 2.0 often focused on the implementation of a large quantity of features requested by the client; the actual user needs received only low priority. This resulted in software which was often uncomfortable to use and had therefore only limited success.

3.2 Knowledge Sharing With Social Media

Implementations of Web 2.0 technology are usually social media platforms. They can be broadly categorised in two groups which differ in the way they create new knowledge. The first group, which comprises social networks and blogs, focuses on knowledge created by communication. The second group of social media, which includes Wikis and folksonomy projects, aims on the collaborative generation of knowledge. It should be noted that collaborative content generation

often also involves some kind communication, but the main objective of such platforms is the generation of knowledge.

Both groups of software manage explicit knowledge. Collaboratively generated knowledge, like a Wikipedia article, isusually high quality, since it has often been edited and corrected by several authors (cf. Stvilia et al. 2008). Knowledge generated in communication, like on Facebook or Twitter, has the characteristics of messages and can only be fully understood by knowing its context, e.g. author, time of publication, recipient, hyperlinks and tags. First, we will describe characteristics of collaboration-based knowledge sharing. Second, communication-base sharing will be explained.

Collaboration-Based Web 2.0 Software

The first group of social media platforms aims at the collaborative creation of purposeful knowledge, e.g. encyclopedia articles, answers to specific frequently asked questions, collections of links to certain topics or open source software. Compared to the information shared in communication-focused social media, the collaborative creation of knowledge takes more effort. Such software usually also makes use of some lightweight moderated or democratic mechanisms to coordinate work (cf. Viegas et al. 2007).

Wikis are powerful tools to manage a database of knowledge articles, which usually contains the knowledge of several authors. The fact that an article has many authors and can be instantly edited has two advantages: (1) Lower costs: Due to collaboration, every author only has to contribute a small share to the article and does not have to write the whole article in one piece. This causes lower individual costs for the externalisation of knowledge. (2) High content quality: Because many authors continuously edit an article, everybody agrees on the created knowledge, which is more precise and objective compared to an article written by a single author (cf. Lee/Lan 2007: 60). Wrong or imprecise information can be corrected by other authors. Although all Wikipedia visitors also have the chance to contribute to an article, only a small group of people actually contributes. Less than 10% of the users are responsible for 90% of the contributions, while most users read, but never contribute to Wikipedia (cf. Ortega et al. 2008). High visitor numbers let us assume that the use of Wikipedia for knowledge acquisition is attractive, while most users refuse to contribute even though changes to Wikipedia can be made within seconds or minutes.

"Folksonomy" projects are another example for the collaborative creation of content. In folksonomy software, individuals annotate and categorise huge amounts of information by adding

common tags to this content. The phrase folksonomy stands for "a taxonomy created by the people" (Peters 2009: 154). Such software systems are used on the Web to categorise bookmarks, e.g. on the social bookmarking platform Delicious, or images, e.g. in Flickr. While in Wikis, software quality is assured by the fact that many authors correct each other, folksonomy projects leverage from the fact that important knowledge will be tagged by a large group of users, while unimportant content will not or only seldom be tagged. These are only two types of collaborative-based Web 2.0 platforms; however, others also exists, e.g. open source projects, which focus on the collaborative development of software.

Communication-Based Web 2.0 Software

The basic concept of social media communication platforms is to provide low-threshold contribution possibilities and to offer simple, but intelligent tools to access messages shared with other (cf. Burke et al. 2009: 945). Communication is based on simple data models, and usually provide the individual only a single text field to share his or her content, which is sometimes even limited to a certain number of characters (140 characters at Twitter and 420 for Facebook status messages). Although there are also powerful search mechanisms, most messages are accessed by using some kind of aggregator on their front pages (e.g. "News Feed" on Facebook and "What's happening" on Twitter), which show a stream of messages considered to be useful for the author. This information gets enriched automatically with context information, like author information (e.g. mutual friends and interests you have in common with the author), related messages or topics (e.g. by tagging and linking), addresser and recipient. Many messages on Facebook and Twitter are addressed to a certain person, but still visible for a group of people or even publicly. Communication in social media is usually a "many-to-many communication" (Keeble/Loader 2001: XX). Every person is both recipient and contributer of information. In practice, the news aggregator keeps communication flowing by being very effective in showing interesting messages to individuals. The algorithms used by the aggregators are sometimes quite complex (Guy et al. 2010: 197); in some cases, they only show all actions in reversed order. Readers can respond directly to these messages by typing into a text field which is usually placed directly below the message and without leaving the current page, which therefore is very quick and with very low costs. Common concepts of communication-based knowledge sharing are micro-blogging platforms, blogs and social networks. We will give a short introduction to micro-blogging platforms and social networks.

The front page of Facebook contains the "news feed". This is a news aggregator, which displays actions and updates of the user's virtual friends and group, which might be interesting for the user. This is achieved by complex and learning algorithms (cf. Freyne et al. 2010) and is an important reason for Facebook's huge success. Facebook succeeds in giving the user an interesting overview of thousands of information entities by evaluating user behavior, e.g. what the user liked, who he is communicating with, what he comments on, where he lives, and – when the exact position can be determined on mobile phones – what is happening around him. On the other hand, it takes only a matter of seconds to click the "Like"-Button or to post a comment, while the individual never has to leave the front page. New information is even pushed in live without reloading. Micro-blog and blog posts or Facebook status messages usually have only dozens to a few hundred readers, and they can easily get ten or more comments. Participation rates on communication-based platforms are very high; in an online study, 88% of Facebook users stated that they update their status, thus share information, at least once a week (cf. Köbler et al. 2010: 4).

3.3 Implications for Enterprise 2.0 Knowledge Sharing

We have shown that social media can – from a knowledge management perspective – be categorised into two groups, which focus on knowledge generation by communication, respectively collaboration. Both types externalise tacit knowledge from individuals to explicit knowledge stored in databases, provide knowledge combination by enriching data with context information and offering comfortable access to this knowledge, which makes internalisation for individuals as easy as possible. Therefore Web 2.0 platforms support three of four modes of the SECI-Model: Externalisation, combination and internalisation. The only mode of knowledge conversion not supported directly by social media is the socialisation of knowledge, since tacit knowledge resides in human heads and is not accessible to technology as long as it is not converted into explicit knowledge.

Our hypothesis "Web 2.0 software is successful in motivating individuals to share knowledge on the web" can be confirmed for both types of Web 2.0 knowledge sharing. It can be summarised that the reason for effective knowledge sharing are low-threshold contribution possibilities, useful responses and social recognition for authors. Communication-based knowledge sharing proves to have high participation rates, since every individual is both author and receiver of messages. In addition to that, such tools can be used easily: Questions are answered very quickly because they are read by several recipients. News is spread very often more quickly than with "official channels"

like press releases and public media. Wikis show a relatively low contribution rate compared to communication-based knowledge sharing. A reason for that might be the differences in terms of social recognition: While knowledge shared on Facebook will read be and most likely also responded to by Facebook friends, authorship in Wikipedia has a lack of transparency and shared knowledge cannot lead to any positive reaction or recognition. However, Wikis provide a unique way for the generation of collaborative knowledge, which creates knowledge of high quality by leveraging collaborative intelligence.

4. From Web 2.0 to Enterprise 2.0

4.1 Current State of Information and Knowledge Systems in Enterprises

As we have seen, both collaboration- and communication-based knowledge sharing platforms are effective in knowledge sharing. In this section, we try to corroborate our main hypothesis "Enterprise 2.0 is effective in conducting knowledge sharing in the firm". We will concretise this working hypothesis by formulating five hypotheses on how collaboration- and communication-based knowledge sharing tools can improve knowledge sharing in the firm. These new hypotheses will be verified in the case study.

Meanwhile there is hardly any firm in the developed world, which does not use some kind of knowledge management information system (cf. Spender 2006: 238). Because every company has unique requirements for information and knowledge management systems which depend not only on the information and knowledge which needs to be managed, but also existing processes and firm culture, companies often use several information systems which are connected or integrated with each other, like solutions by SAP or IBM.

Such information management systems, which are often summarised with the expression enterprise resource planning system (ERP), may include client and supplier relationship management, supply chain management, project management, content management systems and others. Tools which focus on communication, like email clients and groupware, are often used as separate solutions. Enterprise software usually runs on intranet or Internet server and can be accessed with a client application, while in the past systems were often only accessible via generic applications, e.g. former versions of Lotus Notes. Synchronously to the development of the Internet, many companies

established intranets during the 1990s, which are similar to the Internet, but are only accessible within the company network. Web browser-based applications have the advantage that they do not require installation and can be used on any device which has access to the Internet or intranet

Barriers

The use of enterprise information software is often complicated by several barriers, which increase individual costs of using the software. Some enterprise information systems can only be used on devices for which the proprietary software was developed (e.g. Windows computers) and sometimes only within the companies' intranet, which prevents remote access, e.g. from home offices and on business trips. Other barriers which make the use of information systems expensive are access restrictions, bad software ergonomics and usability.

Many companies use strict access restrictions within their information systems to protect their intellectual property and privacy of the clients. Individuals have only access to information, which is considered important for their work. Access to other information is prohibited and has to be requested from the management. Staff from the R&D department is often not able to access data from client relationship management, although it may contain a lot of interesting feedback from clients, which could be used for product enhancement. Access restrictions limit knowledge sharing and the creation of common knowledge (cf. Foray 2005: 78), thus the knowledge, which is shared by all employees. Protection of intellectual property is also an important implication of the knowledge-based view of the firm, but overprotection has a negative influence on knowledge sharing. Access control has certainly not only a negative influence on the access to existing knowledge, but also on the attitude of the individuals towards contributing information to systems, because they know that there is only a very limited number of people who have access to that information. This lowers the expected social recognition.

There are numerous reasons which are responsible for bad software ergonomics and usability: Confusing and unclear interface design, huge forms with a lot of required fields, slow loading times, unexplainable behavior, unfixed errors and bugs in the software and missing documentation, support and training (cf. Nielsen/Loranger 2006: 56). Bad software ergonomics are time consuming and lead to frustration. The lack of user-friendliness causes high costs in using information systems and has negative influence on both disposition to share and benefits of accessing the information systems. Another barrier is the need to get knowledge entities approved by managers, which makes

knowledge sharing expensive for both employees and management (cf. Ardichvili et al. 2003: 70). Firms must encourage their employees to share as much knowledge as possible and should avoid unnecessary control mechanisms. The existence of these barriers increases the cost of knowledge sharing and therefore conflicts with the requirements for successful knowledge sharing formulated in section 2.5.

Role of the IT Department

Information technology (IT) is a relatively young and fast developing tool for enterprises. When it became common in the 1980s and 90s, many managers and employees had very little knowledge about the background and the possibilities of these technologies (cf. Buckman 2004: 87). This is why all questions concerning information technology were delegated to and solved by an IT department. From the perspective of the regular staff, IT personnel spoke a foreign language, while IT experts believed others had nothing to contribute to information technology since they lacked background knowledge. Therefore they often ignored suggestions and feedback of members of other departments. The communication barrier between those who make software and their users is not a problem limited to enterprises, but a common problem in software development, which resulted in feature-oriented software development and poor usability. These are also characteristics shared by Web 1.0 software. Software developers focused on implementing requested features while paying little attention how they would actually be utilised by the users.

Although this problem has not yet completely been solved, common knowledge about information technology has increased dramatically during the last two decades. This eases communication between normal and IT staff and allows the users to articulate their requirements for software tools. Hence, Buckman proposes a change in IT culture by turning the IT department into a knowledge transfer department which does not focus on providing information to management, but on the movement and transfer of knowledge (cf. Buckman 2004: 93).

On the other hand, software developers have found ways to improve usability and flexibility of their applications. Methods of improving usability, e.g. user testing and agile development, like in Web 2.0 software development, have become increasingly common in enterprise software development, but are still far away from becoming standard. In his annual intranet design report, Nielsen identifies several trends, which describe the increasing implementation of Web 2.0 characteristics in enterprise software. Enterprise intranets today are "based on simpler thus more-used

features" (2011). He sees a trend towards implementing Web 2.0 features like comments, ratings and participation rewards. Besides, there was an increase from 30% to 60% among the participants from 2010 to 2011 who also had a mobile website. Nielsen sees continued trends in task-centered information architecture, news and dashboards, blogs, improvement of search quality and trainings. All of these improvements somehow remove barriers from knowledge sharing.

4.2 Comparing the Web and the Firm

Before trying to integrate Web 2.0 concepts into enterprise software, we want to investigate how a firm is comparable or different to the Web with regard to knowledge sharing.

Culture

The users of Web 2.0 software communicate with others because they know them in real life or because they have a common interest or hobby. In Web 2.0 software, they form a virtual community with its own culture consisting of formal and informal conventions on how to behave and how to use the provided tools and functions, which aim to provide effective communication (cf. Babbier 1996: 68). The community in Web 2.0 software also provides feedback to platform developers and requests new features.

    An organisation which wants to use knowledge management software already has an existing culture, communication and coordination processes. When collectively using software, employees would usually not see themselves as a community, but still as coworkers or colleagues using a software instrument. What a firm could learn from the web is to understand the use of software as an enriching cultural element, which has to be embedded appropriately into corporate culture (Robey / Boudreau 1999).

Motivation to Share

While both, users of Web 2.0 software and corporate information systems use software tools to share information, they do it for different reasons. The former use the software voluntarily to connect with friends, as a substitute for other communication (e.g. phone, text message, or e-mail) or to form virtual communities of interest (cf. Brandtzæg / Heim 2009). The latter use it because

their management wants them to. This is an important difference: Information is shared on social media platforms by individuals because it is beneficial for them to do so. Employees have to use the provided software, even if they would prefer other media for communication and knowledge sharing.

This is why firms should provide demonstrations and training for their members, in which the use of the application is taught to convince employees of the benefits of Enterprise 2.0 software. On the other hand, firms also have the possibility to give monetary benefits for sharing and respectively are also able to fire people who are not willing to use software tools to share their knowledge. While the use of software tools for certain business processes can be enforced by the company, the willingness to not only provide required information in a certain process, but also to share knowledge beyond that can only be successful if the individuals are willing to do so.

Information Access

Another difference, which was already mentioned before, is that most of the information generated in Web 2.0 software, especially in collaboration-based knowledge sharing, is usually publicly accessible on the Internet. Social networks also usually offer access control, which allows knowledge to be shared only among a small group of people. The more people who can access an information entity, the higher the chances are that this knowledge will be used for the creation of new knowledge.

We have already identified strict information access control as a barrier for content sharing. In the same way public access to information contributes to information sharing in Web 2.0 software, firms should try to make as much information publicly accessible within the firm and protect only sensitive information.

Kinds of Knowledge Shared

We have learned in the previous section that Web 2.0 software is able to share different kinds of knowledge, which can be broadly categorised into communication-based sharing with messages, and collaboration-based sharing, where knowledge is represented as articles, tag clouds or complex forms like source code. The concept of Web 2.0 software, however, is not limited to certain kinds of knowledge, but only suggests the use of simple data models, which can be flexibly applied by users.

Enterprise information data is usually stored in large databases, which are often too complex for efficient use. But since the whole IT infrastructure relies on these databases, they cannot be replaced by simple structures easily. To benefit from the increase in knowledge sharing provided by user-friendly Web 2.0 software, unnecessary existent data models have to be replaced, and their presentation to the user as an interface has to be simplified.

Competition

A public web platform has usually a lot of competitors, which offer similar functionalities. This is why Web 2.0 platforms are optimised to provide a good user experience. Especially the first steps of a visitor, like the start page, the registration process and the first step on a platform are designed to be as clear and easy as possible (cf. Burke et al. 2009). This competition leads to easy, but still powerful platforms, which try to gain a large share of their target group. Since companies usually offer only one information system for a specific task, employees cannot choose between different applications; therefore, there is no such thing as competition between software within one firm. However, there is competition between different solutions that management can choose from when searching for a suitable KMS. Therefore, these solutions compete with each other. Management does usually not choose software because of end-user interests like user-friendliness, but for other reasons like customizability and reliability. This is why traditional enterprise software is not optimised for usability in the same way the Web is.

We can summarise that even there are differences between the Web and the firm like access restrictions, there do not seem to be major reasons why Web 2.0 knowledge sharing could not also be applied in Enterprise 2.0 software.

4.3 Collaboration-Based Enterprise 2.0 Software

In this section, we try to apply Web 2.0 knowledge sharing concepts to the firm and discuss how they affect the SECI-Model and the individual benefits in knowledge sharing. Unlike communication-based Enterprise 2.0 Software, Wikis have e already been used for knowledge sharing in many firms.[2] A reason for that might be that Wikis are similar to the classical concept

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2   30% of enterprises surveyed in a McKinsey study reported in 2007 that they already use Wiki software, according to Happel/ Treitz 2008: 1 comparing McKinsey 2007.

of storing knowledge in document repositories, but furthermore allow collaboration and easier editing. Various free and commercial Wiki solutions exist, such as the free MediaWiki,[3] which is also used for Wikipedia. As we have seen earlier, writing Wiki articles is relatively expensive for individuals and is characterised by a relatively low contribution rate compared to communication-based knowledge sharing. It also lacks benefits like feedback and social recognition, because the authors are usually not visible on a Wiki page.

Effect on SECI-Model

As mentioned before, three of the four modes in the SECI-Model can be supported by information systems: Externalisation (tacit to explicit), combination (explicit to explicit) and internalisation (explicit to tacit) of knowledge. How do Wikis influence knowledge conversion in the SECI-Model? The externalisation of knowledge seems to be the most problematic element in the use of Wiki software: It is relatively expensive to share knowledge in an article, since one person has to be the first to create that article. This is a task that can last from a few minutes to hours, because the author has to find a structure and has to formalise his tacit knowledge. In addition, writing knowledge articles cannot be enforced by management, but is a voluntary task. Wikis also contribute to the combination of knowledge, especially by linking certain words to the corresponding Wiki articles. Furthermore, Wikis contribute relatively little to knowledge combination by adding context information, since its data model only consist of a plain text with links. Wikis are very effective when it comes to the internalisation of knowledge. When explicit knowledge is embedded in a comprehensive article, which provides a lot of context information for anybody to understand, it can be easily understood and therefore transferred very effectively to tacit knowledge.

Motivation to Share in Wiki Software

In the SECI-Model, the expensive externalisation of knowledge, thus the composition of articles, can be identified as the reason for low contribution rates. This is due to the high costs and little individual benefits of Wiki article authoring at an individual level. The high costs are caused by the fact that the individual who wants to share knowledge first has to navigate to the Wiki

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3   http://www.mediawiki.org (accessed: 10.01.2014).

and search if there is not already an article about the topic he or she wants to write about. The knowledge generation itself is costly, too, because the author has to do all the intellectual work of converting his tacit to explicit knowledge by first finding a structure for the article and then writing an universally understandable text about it. The benefits for the author are relatively small, since contributions are often not immediately recognised and responded to by others. It is hard to tell for readers which author contributed to an article, since the resulting Wiki article is a product of collaboration. In order to increase individual benefits for sharing in Wiki software, social recognition for contributions could be increased in Enterprise 2.0 Wikis. One improvement could be to show a list of contributors and the percentage of contribution next to the article. Employees who contribute a lot to the Wiki could also be publically and honorably mentioned by the management.

We can summarise that Wiki software proved to be very effective in the web and is increasingly used in enterprises for collaborative knowledge sharing. Little social recognition for the authors could be a limiting factor for knowledge sharing. We will rephrase this into two hypotheses about the use of Wikis in enterprises, which will be tested in the case study later:

> Hypothesis 1: Wikis are effective in creating relevant knowledge in Enterprise 2.0 software.

> Hypothesis 2: The lack of social recognition for Wiki contributors has negative influence on knowledge sharing in Enterprise 2.0 software.

4.4 Communication-Based Enterprise 2.0 Software

While Wikis are already relatively common in enterprises, communication-based Enterprise 2.0 software still remains in a niche existence. Because of its high efficiency in knowledge sharing in the web, it sounds very promising to utilise such software also in firms.

As examples for successful communication-based knowledge sharing on the web, we mentioned Facebook and Twitter, which both allow easy knowledge sharing, by lightweight and limited forms, and access, by using intelligent information aggregators, which summarise all information considered relevant to the user. Because of the low-threshold ways to respond, e.g. a comment box directly under the message, contributors will most likely receive immediate recognition and responses. A broad range of communication-based knowledge sharing software for enterprises already

exists, sometimes also referred to as Enterprise 2.0 software. Examples include the commercial project management tool Basecamp,[4] which can be considered a true Enterprise 2.0 application, because a lot of Web 2.0 characteristics are already used by 5 million users, and the commercial software-as-a-service platform Salesforce,[5] whichhas extended its broad range of products with the tool "Chatter",[6] which tries to add Facebook-like communication to its information systems in order to increase collaboration and communication.

Although such software promises to provide much better sharing of knowledge, it still finds relatively little application in firms. From a knowledge management perspective, such platforms bring out a paradigm shift from an explicit documentation via knowledge articles (e.g. in Wikis) to documentation through communication. Instead of understanding the creation of explicit knowledge as a separate task, knowledge creation can be integrated within regular business processes and by leveraging necessary and already existing communication processes for knowledge creation and sharing (cf. Jung et al. 2006).

A Sketch of a Basic Communication-Based Knowledge Sharing System

To provide the reader with an idea of what a basic communication-based Enterprise 2.0 software looks like and how it can be used for knowledge sharing in the firm, we will describe a stereotypical sketch of such a system. This sketch can also be understood as a simplified description of the project management system used in the case study later in the paper.

Enterprise 2.0 software runs on an Intranet or Internet server and can be accessed via web browser. Every individual with access to the system is provided with a user account which gives him access to certain – or for knowledge sharing even better – all knowledge entities in the system. If an individual has a problem, support request or idea, he or she can share this with others in a message. In technical terms, such a message and all its responses are called a ticket, case or task. Depending on the type of information system, e.g. project or client relation management, the individual has to provide some basic categorisation information, e.g. the project or client it relates to. The ticket can have a specific recipient which will be notified via e-mail, or be addressed to all. If the communication is part of a business process, the recipient is at the same time the next

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4   http://www.basecamphq.com (accessed: 10.01.2014).
5   http://www.salesforce.com (accessed: 10.01.2014).
6   http://www.salesforce.com/chatter/whatischatter/ (accessed: 10.01.2014).

responsible person in the workflow. The message will also be accessible for other project members. Unlike on Facebook or Twitter, which only offer a single text box for the message, a ticket in Enterprise 2.0 software usually also requires the entry of a title for easier browsing and searching. Some systems also allow for the setting of a status (e.g. "new", "unsolved", "solved", "waiting for feedback") and priority. After formulating a message, and optionally adding links or files, the message gets published by the user.

Explicit recipients of the ticket will be notified via e-mail. All others will be notified on the real time information aggregation feed, which is most effective when placed on the front page of the application. This feed summarises all messages, which are considered relevant for the individual. While some Enterprise 2.0 applications simply show a chronologically ordered list of the last messages and comments, larger companies with a high frequency of new knowledge shared require a more intelligent software solution which filters and prioritises information for the user, e.g. by analyzing the interests and competences of the user, by evaluating his past contributions and rating the importance of the ticket, e.g. by the number of responses it received and time of publishing. The individual can then directly respond to the message in the aggregation feed or after on the ticket summary page. Responses to tickets, like on Facebook or Twitter, usually consist of a single text box and allow a very low-threshold response, since the user does not have to request a new page or fill up long forms or enter a title. When the ticket is embedded in some business process, the individual can also choose the next recipient of the ticket when commenting it.

Each ticket is also shown on an summary page, which contains the starting message, all responses and meta information, e.g. the person in charge in the workflow, status of the workflow, related information entities like Wiki articles or other tickets, files uploaded in the communication process and related code changes in software development. While some of this information has to be provided explicitly by the authors, the information system tries to automatically summarise suitable and valuable information to automatically provide as much context as possible to reduce costs of knowledge generation.

Besides accessing tickets via the news aggregator, tickets can also be listed by category, project, or other parameter, and found via a search function. These interfaces are usually used when searching the information system for specific knowledge, e.g. to check if a certain problem has happened before or when the last contact to a specific client was made.

Effect on SECI-Model

The sketch of communication-based Enterprise 2.0 software above should give us a rough idea how such systems work and how they can be used to share knowledge. While Wikis were identified as being effective in knowledge internalisation, communication-based Enterprise 2.0 software is effective in externalisation, combination and internalisation of knowledge. Like Web 2.0 software, Enterprise 2.0 software offers a low-threshold and fast communication channel and clearly arranged access to relevant knowledge by an information aggregator. By monitoring this aggregator, everybody stays informed about all information and events important to him or her and can directly react and respond, which maintains the flow of communication and collaboration. The success in establishing continuous communication leads to an effective and sweeping externalisation of knowledge in the SECI-Model.

A single message taken out of context would probably not be very informative and may not be considered as knowledge. The achievement of Enterprise 2.0 software is to combine messages to knowledge by categorizing, combining and enriching them with context. When a problem was solved in a ticket, its summary page contains a problem description, information about why this problem happened, names of the responsible employees, information about how time consuming the problem was and a solution. This example shows why such software is effective in combination of knowledge in the SECI-Model.

We can describe two different use cases, in which communication-based Enterprise 2.0 software contributes to the internalisation of knowledge: First, knowledge is shared in the workflow. Recipients get informed by mail, while other stakeholders get informed by the news aggregator. Second, knowledge can be accessed with the search function. This is what makes communication-based knowledge sharing systems so powerful: Just by using the system for communication and collaboration processes, which have to take place anyway, the information system evaluates this knowledge and makes it utilizable for other use cases. If e-mail and phone would have been used for communication, one might find single e-mails in his archive, but there would be no such thing like a clear summary he could easily access.

We can summarise that communication-based knowledge sharing systems in the firm have a sweeping effect on all three modes of knowledge sharing, which can be influenced by software. It provides a cheap way of externalizing knowledge, combines it to create suitable and informative summaries and offers various ways to clearly access to this knowledge. This leads to continuous

creation of new knowledge by the conversion from tacit to explicit knowledge and vice versa. While sharing in Wikis is usually not embedded in a workflow, communication-based systems are able to establish a constant flow of knowledge conversion, which leads to the generation of collective knowledge and at the same time stores objectified knowledge, which can be accessed independently from individuals.

Motivation to Share

Communication-based knowledge sharing systems stand out in creating very inexpensive externalisation of knowledge. The efforts for writing a message are not higher than using any other system for written communication, like e-mail. Since the application automatically adds context (e.g. project information, recipient, time of publishing), externalisation requires less deliberation and intellectual efforts than writing an abstract knowledge article in a Wiki. Knowledge sharing is also quite beneficial, because the software assures the recognition by both recipient and other coworkers and why the author will most likely receive feedback and therefore social recognition.

Not also sharing, but also receiving information is very beneficial with such systems. They provide a unique overview of all tasks and events in the firm relevant to the individual, which cannot be supplied by classical knowledge sharing instruments and software. Furthermore, communication-based Enterprise 2.0 software provides a database of all previous communication, events, tasks and problems in the firm, which can be adequate and helpful for individuals in future situations. The internalisation of the stored knowledge might require higher searching costs compared to a Wiki platform, because individuals often have to browse through several tickets until his or her question is fully answered. However, not only a few articles, but sometimes thousands of messages over a broad range of topics are stored in the knowledge database. From an organisational perspective, they provide the firm with a huge database of objectified, explicit knowledge, which can be used for various other knowledge management activities.

Improving Wiki Efficiency With Communication-Based Systems

Communication-based knowledge sharing can also contribute to the generation of more abstract and universally usable knowledge in Wiki articles. The ticket summary can be used as an inspiration or even copy-and-pasted into the Wiki article. The ticket can also be linked in the article and used as

a source. Furthermore, social recognition in Wikis can be improved by including all Wiki changes in the syndication provided by the aggregator. When an individual creates or edits a Wiki article, coworkers will be notified in their feed, and can recognise the information and re-edit the article. This does not only lead to benefits for the author, but also the higher rate of contributions to Wiki articles. Again, we will summarise our findings in three hypotheses we will try to test in our case study:

> Hypothesis 3: Communication-based software is effective in creating knowledge in Enterprise 2.0 software.

> Hypothesis 4: The social recognition for authors in communication-based knowledge sharing has a positive influence on knowledge sharing in Enterprise 2.0 software.

> Hypothesis 5: Integration into communication-based software can improve Wiki efficiency in Enterprise 2.0 software.

5.   SME Case Study

5.1 Background

Look4 Company GmbH[7] is an Internet firm, which was founded in 2002 and is located in Freiburg im Breisgau, Germany, currently employing 4 people. Clients of Look4 are suppliers of optic products, other software studios for the optic industry and optometrists. The company is specialised in the development of electronic data interchange (EDI) standard formats and its implementations. The company created and maintains systems for product data distribution, ordering and web shop solutions for Wöhlk, Johnson&Johnson Vision Care, Bausch&Lomb and CooperVision, among others. Most of its products are developed and maintained in cooperation with Microstep Information Technology AG,[8] which is specialised in the development of applications for investment and private banking, e-business and information extraction.

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7   http://www.look4.de (accessed: 10.01.2014).
8   http://www.microstep-it.de (accessed: 10.01.2014).

Besides using a web shop in the browser, these systems allow opticians to use their ERP software to directly import product data and place orders which are directly transferred and confirmed by the suppliers' ERP systems. Before that, product data was distributed as print catalogs and orders had to be placed via phone or fax. Suppliers need individual Business-to-Business (B2B) shop applications for ordering, because of the different ERP systems which have to be connected to the shop and the requirement to design the shop according to the corporate identity of the supplier. The case study describes the knowledge and information management in the development of such a shop application.

In shop development, tasks are split clearly between Look4 and Microstep. Look4 is responsible for client acquisition and communication, support, conception and design. Microstep performs the actual development and maintenance. Since five similar shop systems have been developed so far, the development has become a routine job compared to other projects, although the development process lasts 3-6 months and consists of about 20-40 man-days of work.

This case study describes the development of a B2B contact lens shop application for Johnson&Johnson Vision Care for German, Austrian and Swiss clients. The development was started in August 2010, and the shop was first released in January 2010. Since then, the shop has already been extended several times by follow-up projects to allow a broader group of clients to order. This was the first shop application and the second project developed with the support of the project management software Redmine. The author participated in that project as a developer and describes the development based on the survey, the knowledge stored in the Redmine and his experiences.

5.2 Knowledge in the Development Process

A lot of knowledge creation and conversion occurs during such a project. Smooth workflow heavily depends on the knowledge and skills of the team members and routine in cooperation with other team members. This tacit knowledge is barely codified in the firm at the moment. At the beginning of a project, the client shares his expectation with the project manager via phone and e-mail. The project manager, the CEO of Look4, has to restate this requirement as a development concept. These requirements have to be discussed with the developers who make suggestions on how to implement the requirements of the client. The project manager will continuously communicate with the client and share the knowledge he learned with the team members. In the development process,

there are a lot of workflows and dependencies which have to be followed, e.g. when integrating the design: In the described case, the design of the brand website was used as a starting point. The project manager at Look4 shares his knowledge about how the client expects to adapt that design for shop use with the developer. The developer creates an HTML version of the design and sends it to the developer at Microstep who is responsible for the development of the shop application. The developer implements the design and sends a link with the test application back to Look4 to make change requests.

Another communication intensive step is the testing of the different interfaces of the shop, namely the web-interface, the order interface to optometrists' ERP systems and the interfaces to the ERP system of J&J for order and client data exchange. The shop is first tested by a Look4 employee and later by clients of J&J. Problems have to be analysed and described in a way that allows the developer at Microstep to repeat and solve it.

In the conception phase, a relatively high amount of knowledge and information exchange is performed in meetings or telephone calls. Within the actual development, the project management tool Redmine is consistently used for nearly all communication and coordination processes. Only in hold-up situations like unplanned client feature requests or difficult problems and errors is oral communication used.

5.3 Redmine as an Enterprise 2.0 Application

Redmine is an open source project management tool, which is distributed under GNU License; thus, it is possible to copy, distribute and modify it without any limitation. The application runs on a web server and is accessed via web browser. Redmine integrates both collaboration- and communication-based knowledge sharing. Namely, it offers a communication-based ticket system, a Wiki, source code management, forums and management of news, documents and files. A news aggregator also exists which shows all recent actions in the user's projects. Unfortunately, this feature is hidden deeply in the application and not placed on the front page as suggested in this paper. Therefore, we must assume that this feature is not even known to all users. The data model of Redmine is relatively lightweight; however, the form to create a new ticket consists of 12 fields, while only the title is required.

Redmine can be considered a Web 2.0 application, but could be more effective in meeting the requirements formulated in section 2. Knowledge sharing is relatively easy, since the user is

required to fill only one field. Since a ticket always has a recipient who is notified via e-mail, the author will most likely receive a response and therefore the benefit of social recognition. However, the idea of the news aggregator is not solved perfectly, because the aggregator is not even linked on any page and shows Wiki contributions only as an option. Because of that, Redmine fails to share knowledge with team members who are not directly involved in a ticket and also fails to provide social recognition for Wiki contributions.

In the described project, the communication-based ticket system, the Wiki and the source code management functionality of Redmine were used. Within the project knowledge, 41 tickets and 5 Wiki articles were created. The tickets can be grouped into 19 bug reports, 19 feature requests, 2 support requests and 1 idea. Bug reports are created when an error occurs; solved tickets contain solutions or discussions involving several team members on how a problem can be solved. Feature requests tell developers to integrate or modify a specific feature and are used for communication until the final implementation is approved by the project manager.

5.4 Evaluation

The inquiry was performed as an online survey.

> Hypothesis 1: Wikis are effective in creating relevant knowledge in Enterprise 2.0 software.

Although there was no explicit advice by management to compose Wiki articles, 5 articles were created during the project. They contain descriptions of the developed interfaces and summarise different installation environments and test accounts, which are needed anytime a team member wants to log into the system to reproduce a reported bug. The number of articles can be considered an adequate number to the size of the project.

In the survey the majority of team members state that they consider the knowledge shared in the Wiki important to the project[9] and use the Wiki to share knowledge, which would not be documented elsewhere.[10] Team members use Wikis multiple times per month

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9   Question 18: "The Redmine-Wiki documents important knowledge about the shop development": agree (4), Partially agree (1).

10   Question 15: "I share knowledge in Wiki articles, which would not be documented elsewhere" strongly agree (3), agree (1), strongly disagree (1).

to share[11] and find useful knowledge in Wiki articles even more often.[12] Therefore, we can corroborate the hypothesis in this case study.

> Hypothesis 2: The lack of social recognition for Wiki contributors has negative influence on knowledge sharing in Enterprise 2.0 software.

Authors of a Wiki article can only be identified in the article history in Redmine. While Redmine actually contains a news aggregator feature, it is only used by one team member.[13] Therefore, Redmine does not contribute to the social recognition of Wiki authors. However, we can assume in such a small team, members often know about the author of the article, since most knowledge shared corresponds to a certain role in the project which can be identified with a certain team member.

Most team members think that their articles are read by other team members.[14] Therefore, there does not seem to be a lack of social recognition; even Redmine does not contribute to that. A reason for this can be the small team size, which makes it possible to identify the author simply by the fact that he or she is the only one who could share that knowledge. Since we cannot identify a lack of social recognition and Wiki usage is considered effective, we cannot corroborate this hypothesis in the case study. However, it still could be verified in larger teams.

> Hypothesis 3: Communication-based software is effective in creating knowledge in Enterprise 2.0 software.

During the project, 41 tickets with numerous responses were created, most of them to request new features or to report a bug. Knowledge is shared in tickets by team members several times a week.[15] All members agree that tickets improve knowledge sharing in the development process[16] and that tickets are used to share more information than would be shared with other media like phone or e-mail.[17]

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11   Question 3: "I create or update a Wiki article…": multiple times a month (4), multiple times a week (1).

12   Question 21: "I find answers to my questions or help for a problem in Wiki articles …": multiple times a week (2), multiple times a month (2), never (1).

13   Question 4: "I learn about new information on Redmine by watching the News Aggregator": 1 out of 5.

14   Question 17: "I think that my Wiki contribution to Wiki articles are read by colleagues": agree (3), partially agree (1), disagree (1).

15   Question 2: "I create or update a ticket …": multiple times a day (2), multiple times a week (2), multiple times a month (1).

16   Question 9: "Tickets simplify and improve knowledge sharing in shop development": strongly agree (3), agree (2).

17   Question 12: "Important information is shared in tickets, which would not be shared via phone or e-mail": strongly agree (2), agree (3).

Furthermore, all team members state that ticket creation and updating is simple and fast[18] and most say that tickets create a better overview of projects.[19] Most team members search multiple times a week for tickets to solve new problems[20] and all find useful information multiple times a month.[21] Based on these responses, the hypothesis can be fully corroborated in this case study.

> Hypothesis 4: The social recognition for authors in communication-based knowledge sharing has positive influence on knowledge sharing in Enterprise 2.0 software.

The number of tickets and amount of responses seems adequate for the size of the project. There were many more tickets created and responded than Wiki updates made in the project.

A majority of team members states that they get responses to their tickets[22] and think that the knowledge they shared is recognised by others[23]. However, discordant responses show that not all team members are satisfied with the recognition of the shared content. In contrast to Wiki article updates, ticket updates are also shared via mail. However, team members gave nearly identical responses for tickets and Wikis when asked if they think the knowledge shared by them was recognised by colleagues, which is surprising. A reason for that could be that team members might already expect feedback when sharing knowledge in a ticket, while they expect no feedback when composing a Wiki article. Although there was more knowledge shared in tickets then in Wikis, we cannot fully corroborate the thesis based on the data collected in the case study. However, the hypothesis was also not refuted and could still be verified.

> Hypothesis 5: Integration into communication-based software can improve Wiki efficiency in Enterprise 2.0 software.

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18   Question 8: "Creating and updating Tickets in Redmine is easy and quick.": strongly agree (3), agree (2).

19   Question 10: "I get a better overview in projects, I participate in": strongly agree (3), agree (1), strongly disagree (1).

20   Question 13: "How often are you looking for solved tickets when having a new problem?" once a day (1), multiple times a week (2), multiple times a month (2).

21   Question 14: "How often do solved tickets actually help you with your problem?" multiple times a week (1), multiple times a month (4).

22   Question 7: "I receive feedback on the questions asked in Tickets": strongly agree (2), agree (1), partially agree (2).

23   Question 6: "I think, that the knowledge shared by me, is actually recognised by colleagues.": strongly agree (1), agree (2), partially agree (1), disagree (1).

As we have already seen, Redmine integrates the Wiki updates into the news aggregator; however, this aggregator is hidden, only used by one team member[24] and does not show Wiki changes on default. Therefore, tickets can have only limited influence on Wiki article authoring. Most team members agree that the ticket summary pages can make Wiki article composition easier[25] and 4 out of 5 team members state that they have already composed or updated an article as a reaction to a ticket.[26] Although Redmine's news aggregator does not contribute to social recognition of Wiki articles, this hypothesis can be corroborated in the case study.

6. Conclusion

We can conclude that Enterprise 2.0 can effectively conduct knowledge sharing in the firm by making knowledge sharing for the individual easy and beneficial. Our case study shows that this can be archived by using both described "Enterprise 2.0" sharing technologies, Wikis and ticket-system. The basic strategy of knowledge management software is to find low-threshold and inexpensive ways to externalise tacit knowledge in the firm, enrich the knowledge automatically with helpful context information, and offer sufficient and easy access to knowledge internalisation. The more and faster knowledge gets shared in knowledge management software, the more new knowledge is created and distributed through the firm and contributes to the competitive advantage of the organisation, thus its economic success.

Collaborative Knowledge Creation with Wikis

Wiki software proves to be an adequate technology for the collaborative creation of complex explicit knowledge and is already employed in many companies. The unique feature of Wikis is that they are able to create high-quality knowledge, because they use collaborative intelligence by making it very easy to extend and edit existent knowledge articles. Wiki articles allow for very easy knowledge internalisation and also provide links to related knowledge.

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24 Question 4: "I learn about new information on Redmine by watching the News Aggregator": 1 out of 5.
25 Question 22: "The knowledge summarised on the ticket summary page can make Wiki article composition easier": strongly agree (1), agree (3), partially agree (1)
26 Question 23: "Have you already composed or updated a Wiki article as a reaction on an ticket": multiple times a week (1), multiple times a month (1), less frequent then monthly (1), never (1).

We hypothesized in our discussion that Wikis lack the adequate social recognition for authors, which might lead to a decrease in the motivation to share. However, it could not be confirmed in the SME case study that individuals feel a lack of recognition for their contribution. It is unclear, though, if this also holds true for larger companies.

Leveraging Communication for Knowledge Creation

Communication-based knowledge creation, which is, for example, used in Enterprise 2.0 ticket systems, represent a promising new way to create formalised knowledge in the firm, but only finds little application in firms today. It allows the generation of explicit knowledge by categorizing and summarizing knowledge created in communication and coordination processes. Such systems do not only provide the communication functionality of other media, such as e-mail, but can also increase the quantity and quality of the knowledge shared in communication by offering a clear overview and making knowledge sharing cheaper and more beneficial for individuals.

One lesson learned from the Web 2.0 is to provide low-threshold and inexpensive contribution possibilities. The possibility to directly comment every knowledge entity in "Enterprise 2.0" software constitutes an easy possibility for individuals to add knowledge to this knowledge entity. Users will more likely share knowledge if they do not have to start a specific application or request a new web page containing the form to do so.

Another lesson learned is the conduction of social recognition by using news aggregators, which results in immediate responses and provides a continuous flow of communication. These aggregators provide every individual with a personalised feed of all knowledge, which is considered relevant to the user. Unlike an e-mail inbox, such feeds do not only contain messages, which are addressed to the individual, but all relevant messages of projects the individual participates in and clients he or she is also in contact with.

Such news aggregators can not only improve the efficiency of communication-based systems, but could also include all new knowledge contributions which are made in other information systems used in a firm, e.g. Wikis. This would provide every individual with an easy tool to stay updated about all new knowledge created, give feedback and share his or her knowledge if possible.

Establishment of Culture of Sharing

It should be noted that the provision of Enterprise 2.0 software cannot conduct knowledge sharing alone, but this instrument must be integrated into a corporate culture, which actively encourages knowledge sharing. The important role of knowledge as a source of competitive advantage has to be constantly recalled among employees. Management has to set a good example by sharing relevant knowledge with employees, showing interest in their knowledge and effectively using the provided knowledge sharing tools. The strengths of knowledge sharing and the offered tools have to be actively taught and demonstrated to the individuals to convince them to adopt this culture.

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THE
CORPORATE NETWORK

Cooperative Mobile
Telecommunication
Consumer

The Cooperative Mobile Telecommunication Consumer

Challanges of Economy and Identity in Wireless Mobile Grids

Christoph Buck and Anselm Dannecker

The advancing convergence of tethered and untethered communication and information application confronts the mobile telecommunication branch with massive problems. The cellular network structure will not be able to cope with the expected increase in energy and frequency consumption. This paper presents wireless mobile grids as a feasible solution which extends the cellular network with short-range links with the aim of preventing network overload and short battery duration of handsets. A model with the reference system of Manhattan is provided. Individual behaviour within a wireless mobile grid is the focus of the analysis. Identity concepts with a reference to normative behaviour under anonymity are discussed. A framework which proposes to implement a wireless mobile grid as a Web 2.0 application will be concluded upon as a basis for further research.

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1. *The Importance of Mobile Telecommunication for Modern Societies*

The telecommunication industry is in a state of radical transition. Within the last decade, mobile devices have become the most ubiquitous consumer electronic gadget ever invented (cf. Jaokar/ Sharma 2010: 6). Up from five billion mobile users in 2010, it is expected that in 2020, most of the world's population will be connected by up to 20 billion mobile devices (cf. Deloitte 2011: 2-8; Bitkom 2010). However, too little is being done in order to stay abreast of technological changes. The evolution of cellular wireless standards from the first (1G) to third generation (3G) did not offer any significant new service for consumers. Now, a radical shift is taking place with the fourth generation (4G), drastically changing the telecommunication business model and allowing for a broader variety of services (cf. Frattasi/Fitsek/Prasad 2005: 281-290). Live streaming, mobile voice over IP (VoIP), video conferencing, simultaneous voice and data transmission: Mobile users expect plenty of new interactive and on-demand services which exploit high-speed data transfer and location-based capabilities (cf. Katz/Fitsek 2006: 467).

Communication systems are the general basis for the development of modern societies and the emerging world. A new communication era has begun with the change from information to mobile information societies (cf. Schwenker 2010; Günther 2005: 89). Herein the aspiration towards perfect communication mobility of mobile communication consumers can be satisfied to the greatest extent (cf. Clausen 2008: 116). Whereas free internet access enabled worldwide users to reach, create, consume and connect global information from a geographically fixed entry point, the usage of internet applications, with the help of mobile devices, has opened a new age of communication capabilities.

Efficient division of work, new business models and for example customer-specific products and services can be realised and are creating and saving economic and social prosperity. In lockstep with the evolution of modern smartphones, new ground-breaking functions and applications are popping up which are the hotbed for new innovations and business models. This creates a huge potential of economic and social problems concerning modern societies. At the end of the day, the increasing utilisation of mobile internet applications shows two sides of the same coin. On the one side, there are new capabilities and a higher level of wealth, and on the other side, there is a large number of problems which have to be solved in the future. From an economic point of view, there are two huge bottlenecks which impede increasing mobile internet usage: energy and band-width. The resource-driven view reveals another social problem of splitting the mobile telecommunication

into class-divided networks. As a consequence of scarce band-width resources, only privileged classes will get access to the mobile internet, entailing huge costs. Hence, the network neutrality will fall into ruins and e.g. innovative, financially weaker start-ups will not be able to use this new hotbed for business models etc. The original idea of the internet as an open distributed network will get lost in this mobile scenario.[1]

With an increase of capability up to 100 times than UMTS, the mobile industry has implemented a mobile technology Long Term Evolution (LTE) as the 4th mobile generation (4G). At this rate of data-transmission, new applications are available in real time. This positive development will become a huge problem in the future as internet users' transmitted data will increase up to 767 exabyte per year in 2014. Based on the changing consumer behaviour e.g. live stream applications, the transmitted annual data will take up as much storage as 16 billion DVDs. Regarding the increasing convergence between tethered and mobile applications, this means that data transmission in mobile telecommunication networks will explode: Smartphones, netbooks and tablets will waste a huge amount of mobile resources and realise the divided-class network scenario.

This paper suggests Wireless Mobile Grids (WMG) as a feasible means of addressing upcoming problems of cellular technology (section 2). To achieve this aim, the shortcomings of cellular networks in dealing with this upcoming problem in mobile telecommunication are explained in more detail (section 2.1). Afterwards, we will outline the manner in which a WMG functions (section 2.2.1) and develop a scenario of a WMG as an extension to cellular networks via short-range links (section 2.2.2 and section 2.2.3). After analysing the economic benefits of such an implementation (section 2.2.4), the model will be questioned concerning assumptions about individual behaviour (section 2.3). The second part of the paper is dedicated to address how the environment of WMG can incentivise uninhibited behaviour (section 3). To understand this process of external influences on behaviour, we will outline the process of identity formation and the importance of contextual influence on it (section 3.1). This process is also placed in the context of the age of online communication where diminishing contextual cues complicate the establishment of a coherent self-concept (section 3.2). The anonymity inherent in WMG is presented as a cause of a process which hinders moral agency to an extent that it might endanger the functioning of WMG (section 3.3). To counter this process, the last part develops measures dependent on successfully existing

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1 Mobile devices are responsible for more than 5% of the current www-data traffic (8.2% in the US). Besides modern smartphones upcoming tablets are claiming a lot of data. First-mover Apple with its iPad is responsible for over 1% of data traffic in the www after only one year of market entrance (2.1% in the US)(cf. Handelsblatt Online 2011).

Web 2.0 applications which should be respected when establishing WMG so that it can function as a well-ordered community (section 4). We will end with a forecast on future developments and research questions that need to be addressed in the future (section 5).

2.   Wireless Mobile Grids as a Future Network Approach

2.1 Upcoming Future Problems in Mobile Telecommunication

In the future, the 4G system will not only resolve the still-remaining problems of previous cellular wireless generations but will also provide a convergence platform that will offer apparent advantages concerning services as well as coverage, band-width, spectrum usage, and devices. However, there are still certain technological challenges that have to be solved before 4G networks can be established. One of the greatest challenges is the expected power consumption. The rapidly increasing energy demand of cell phones in the past years was not balanced by an equally fast increase in battery capacity.

The power consumption of today's cell phones is huge in comparison. It doubled from the first/second to the third cellular wireless generation. Of course, this is also a consequence of new built-in features such as GPS receivers, high resolution cameras or large touch screen displays (cf. Perrucci 2009: 2). However, up to 50% of the power consumption today still comes from the device's basic communications and signal processing capabilities (cf. Katz/Fitsek 2006: 480-481). This massive increase in energy consumption is not going to change in the 4G system unless new network designs are applied. In addition, it is not possible to sufficiently increase the amount of stored energy within batteries. Currently the battery capacity is doubling roughly every ten years, which is far too slowly for the application and service requirements. An enlargement of the battery is not an option due to the cell phones' form factor (cf. Perrucci 2009: i). New battery technology that could eventually provide enough energy is still experimental (cf. Haavind 2009: 10-12).

An aggravating factor is the fact that the market demands long operational times. Consumers expect especially long battery life from future all-in-one phone devices and network operators also want their customers to have operational mobile phones constantly available since they typically generate revenues only when their customers use their devices (cf. Perrucci 2009: D4). The integration and application of mobile networking into daily life cause another apparent problem of resource

scarcity. Radio frequency is becoming scarce due to the growing numbers of handsets and multiple mobile devices of individuals. Especially in congested areas, such as London or New York, the increasing usage of smartphones and mobile internet repeatedly lead to cellular network collapses (Bingham 2010). Current and future cellular networks will not be able to master the expected convergence of web usage and mobile communication. Mobile communication, as a substantial element of economic and societal development, necessitates concepts and innovations to overcome the apparent bottlenecks. Within the last years, the evolution of wireless technology (as well as computer networks) has lead to a shift in perspective in the telecommunication industry. Many new ideas addressing future mobile issues have started to take the user-centric view.

2.2 Wireless Mobile Grids

2.2.1 Functional Principles

Associated with the user-centric view, networks are evolving from centralised hierarchical systems with a centralised single management to decentralised distributed systems under the management of many (cf. McKnight/Lehr/Howison 2007: 679-697). Fitsek and Katz proposed in this context the establishment of Wireless Mobile Grids as shown in figure 1 (cf. Fitsek/Katz 2007: 31-59).
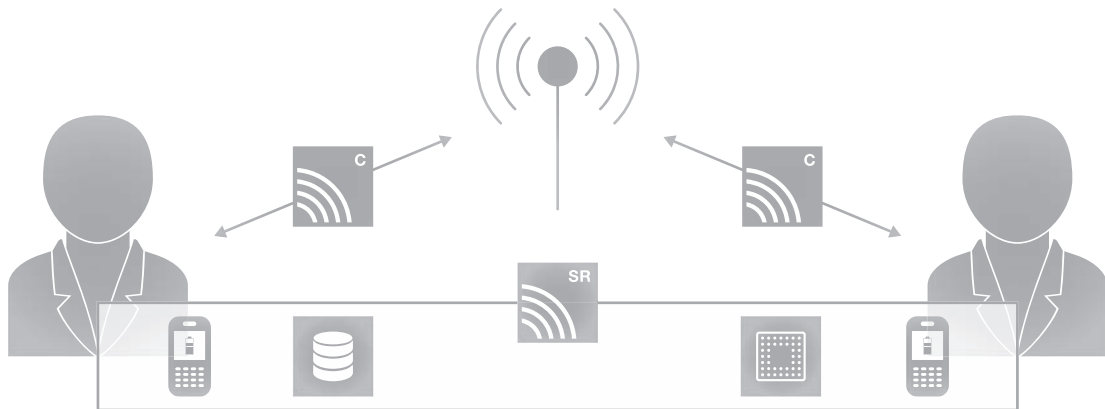
FIGURE 1: WMG COMMUNICATION ARCHITECTURE
(SOURCE: BALKE / DE VOS /PADGET 2011: 1093)

Due to so-called short-range communication links (SR) such as WLAN or Bluetooth, ubiquitous mobile devices are expected to build ad-hoc connections to share their cellular link in a versatile manner. Advantages in using SR to extend cellular networks are the ability to share resources such as energy, CPU, bandwidth, storage or content (cf. Fitsek/Katz/Zhang 2009).

For a better understanding of WMG technology, we focus in a first step on the personal-sphere of a single mobile consumer. The general assumption is that the single mobile consumer uses three web-enabled mobile devices – e.g. Apple's iPhone, iPad and MacBook. To get his job done, he mandatorily needs web access for the three devices in parallel. Using WMG technology, the mobile consumer links all three devices via short-range link and subsequently needs only one paid-for web-access via cellular link; for example, the iPad and the MacBook are able to get web access via the iPhone.

In the public-sphere (shown in figure 1), we have multiple mobile consumers using their mobile devices, such as smartphones, tablets or netbooks, side by side. Following the private-sphere scenario, many users can get web access from one of their neighbours. Further examples could be e.g. parallel downloads and the sharing of desired data packages like video-streaming. The hybrid technology, merging cellular and short-range links, enables users with different capabilities to cooperate and share their limited resources for the benefit of the ad-hoc community. The advantages of this combination are the much higher bandwidth at the much less cost of power (cf. Balke/De Vos/Padget 2011: 1093). The idea of WMG follows the grid characteristics which evolved in the energy industry (cf. Schürmann 2010). In decentralised networks, every single user receives (and possibly injects) the resource which is in demand without knowing the point from which it was obtained. Users consume resources without noticing the grid technology (cf. Geiger 2006: 17).

2.2.2 The Wireless Mobile Grid Scenario

For a better understanding of the whole WMG proposal, we briefly present a scenario for use in the rest of the paper. The scenario is New York's district of Manhattan, which is highly interesting from an infrastructure provider's point of view, because of the high number of potential customers as well as the problems arising from the high density of mobile phone users. As a consequence, the network may easily become overloaded and the quality of service may deteriorate. The reason for this is straightforward: we may assume that some network users want to download video-streams in social networks or Wall Street's financial news from a single base station, which uses

the conventional multicast technique. Thereby the bandwidth of the base station is divided into several sub-slots ("channels") which are sent out sequentially within one time frame. Thus – up to a technology-defined maximum – each mobile phone is assigned one slot. As the total bandwidth of a base station is fixed, the more mobile phone users are assigned a slot, the smaller the bandwidth gets that can be allotted to a single channel (cf. Mansmann 2011: 119). Noticeable implications for customers can be seen on New Year's Eve: annually, many users consume mobile services at the same time, but the enormous demand results in a network collapse.[2] As a result, in 4G networks with data transmission, download times increase, leading both to higher battery consumption as well as lower quality of the streaming service.

In contrast to the non-cooperative scenario, where a single mobile phone user would need to receive all sub-streams over the cellular link, resulting in the problems identified above, cooperation in the form of a WMG enables users to share the task by receiving a subset of the multicast channels over the cellular link from and acquiring the remaining parts over the short range link. Some areas can be identified where WMG is already used. First of all, possible operational areas have been identified in regions without infrastructure like developing countries or disaster zones. WMG can be implemented easily without large upfront investments. In disaster areas and war zones, the military uses related technologies such as ad-hoc networks for communication between the troops. One of the first projects using WMG in developing countries is called "one laptop per child" (OLPC).[3] Hereby the non-profit organisation provides one laptop per child which is equipped with two short-range WLAN antennas. The children are able to build up a WMG to communicate and to create a social network (OLPC 2010). If there is no cellular link to get web access, the children are able to connect each other and a communication network arises. If there is one child with "external" web access, it supplies all other connected children. Additionally, first steps have been taken in the industrialised world. The technical basis is given by the modern devices which are equipped with WMG technology such as WLAN across the board. Regarding future problems in mobile communication, global enterprises as well as start-ups recognised the huge potential of WMG in modern societies as an expanding technology complementing cellular networks.

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2   The characteristics of so-called breathing cells become obvious in terms of receiving high-speed bandwidth in between 4G LTE networks (Schiller 2003: 91). In a realistic scenario, 25 customers can be delivered with about 3 Mbit/s by a single base station. If there are more active users, bandwidth will be reduced for every single consumer (Mansmann 2011: 119). Grid collapses, which can be seen mainly in overcrowded areas, become reality as the extreme effect (Berke 2010; VDI 2010; Bingham 2010).

3   OLPC's mission is to empower the world's poorest children through education.

Toward the end of the past decade, big manufacturers of mobile devices already opened the devices' short-range link to get web access for neighboring units. An indicatory step has been taken by the market leader for modern smartphones in 2011. Apple Inc. permitted all Apple users while downloading the current software system iOS 4.3 on their iPhone 4 to share web access with neighbored units via WLAN. This dissemination can be seen as a milestone for the evolution of WMG technologies. When Apple Inc., as a provider of an almost completely closed software system, opens the iPhone for routing web access, there must be a huge potential for short-range links and possible related business models. Furthermore, there are first steps from start-up enterprises in the field of using short-range links, such as applications which enable single smartphones to be used as mobile WLAN router and can be bought by users; therewith WMG can be implemented (cf. Aamoth 2011).

However, despite the advantages, looking at the realisation of the WMG idea from an economic point of view, a problem appears that is very common to all open distributed systems in general: the network depends on the cooperation of its users. To fully analyse the complex field of WMG, a theoretical model and a reference system have to be implemented.

2.2.3 Model and Assumptions

To capture possible problems or future research questions, a model is introduced in the following sections. The model is called the WMG model and follows the basic assumptions of the so-called flat earth model (cf. Kotz et. al. 2004: 78-80). The flat earth model assumes that the earth is a flat slice and implies the important parameters "freedom from barriers" and "a closed area" which are both inevitable for the following contemplation to make the WMG work from a fundamentally technical perspective.

Further assumptions have to be made to ensure service quality at the level of a modern cellular network. To achieve service quality at a maximum level, enough users have to be in the closed area due to the limited coverage of short-range links. To make the WMG work, the following advanced assumptions have to be made:

- Net stability through adequate connectivity.
- Automatic participation inside the closed area.
- Uniform distribution of all users.

- Impossibility of withdrawal from the WMG.
- Web access via cellular link by every user.
- Data injection only via wireless access supplied by network providers.
- Homogeneous calculus of all consumers.

As a suitable reference system, the island of Manhattan, the oldest and the most densely populated of the five boroughs of New York City, has been chosen. This reference system contains most assumptions made in the model. Manhattan is nearly flat (highest natural point is Long Hill with about 77 meters) and demonstrates, as an island, the characteristics of the assumed slice. So both assumptions, freedom from barriers and closed area, can be seen as given. In figure 2, the Manhattan WMG is shown in a simplified illustration.
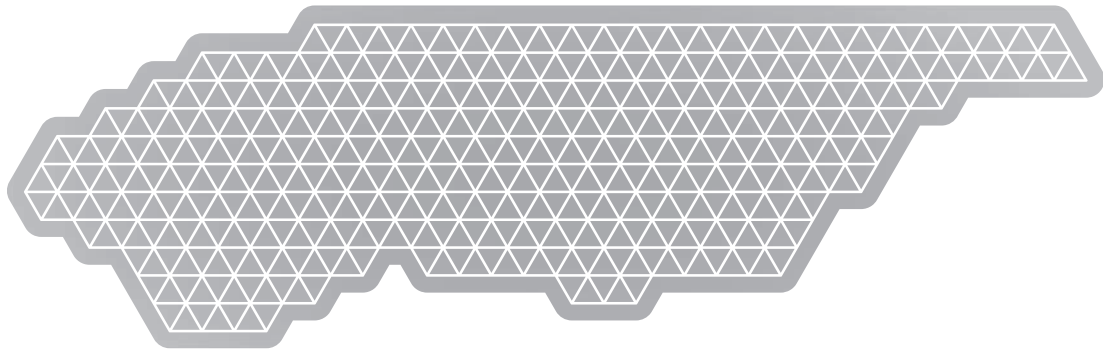
FIGURE 2: THE MANHATTAN WIRELESS MOBILE GRID (OWN SOURCE)

To establish the WMG the main goal is to implement a stable net which is unsusceptible to grid collapses. To reach this goal, high connectivity has to be given. In this context, high connectivity means that a single user can connect multiple users via short-range link. With about 1.6 million inhabitants and nearly 60 square kilometres, Manhattan features perfect conditions to implement a WMG. The implementation of a WMG requires at least 2,600 users per square kilometre to ensure its functioning.[4] With more than 27,000 inhabitants per square kilometre, Manhattan is able to

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4   Short-range link coverage of 30 meters assumed.

implement a high-grade fine-meshed WMG under the assumption of the uniform distribution of all inhabitants which are automatically users.[5] With the slice characteristics of the island of Manhattan, the automatic participation and the impossibility of withdrawal can be underpinned,[6] so the short-range link cannot be deactivated. Additionally, it is not possible in the contemplated model to shut down the used device. Every user is in the possession of several storage batteries and will change them immediately if needed. Furthermore, assumptions concerning individual web access are very important for the feasibility of the Manhattan WMG. So every inhabitant has to be a customer of a net provider, such as AT&T. With this assumption, it is ensured that every user is able to download data from outside the WMG. To observe the WMG as an expanded communication system, an advanced assumption is the restriction of downloading data only via wireless connections (cf. Fitsek/Katz/Zhang 2009: 142).[7]

The most critical assumption is made concerning the calculus of user data and mobile consumption. To converge to the potentials and possible problems of the WMG, the starting point has to be a homogenous calculus of the participating users. So in the first step, it is assumed that all Manhattan inhabitants wish to access the same data packets, such as online videos in social networks or live-streaming applications for e.g. the president's speech on Independence Day on the Fourth of July. In the space of the given reference system Manhattan, we focus on a simplified example of using the WMG. Every inhabitant of Manhattan wants to obtain the president's speech via mobile device which is broadcasted on the president's social network account. In this simplified example, only one user will download the live-stream and send it to his neighbours. In turn, his neighbours will broadcast the streaming until every user is satisfied in real time.

A further example is given through the purchase of downloading packets not available as live streaming. In case of the president's speech, every user will download the file an hour later from the homepage of the White House via mobile device. In the given example, the video data can be divided in 1.6 million slots. Each single user will download its single slot and share it with all the rest. Hence, every user has to download only one slot via cellular link and gets the rest of the president's speech from the Manhattan WMG.

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5   Following these assumptions, Manhattan is able to introduce a WMG with short-range link coverage under 10 meters. To establish a 10m-WMG, approximately 23,000 users are needed. The data have been generated from a static perspective. Regarding the very high population density in Manhattan, dynamics through user movement are negligible. The model follows this assumption which is also given at public events such as public viewing, cinema, theatre, opera as well as in stadium facilities, lectures or conferences.

6   The closed area characteristic implies no way out of Manhattan.

7   Data purchase via tethered link is not considered.

2.2.4 Possible Economic Implications

The strict assumptions regarding the cooperative usage in WMG propose significant implications for all players in the world of mobile telecommunication. The shift from purely passive, consuming users towards active, cooperative users necessitates that noticeable benefits for all consumers have to be guaranteed. Assuming the WMG is implemented, obvious advantages from the perspective of the user can be found.

Regarding the addressed energy problem, the usage of short-range links decreases the energy consumption of mobile devices. For example, the battery power and CPU capacity needed on the short link are significantly lower compared to a cellular network structure, making the concept advantageous from a resource point of view (cf. Perrucci 2009). Lower energy consumption means lower mobile energy costs, which enables the consumer to use the handset for a longer time. The significantly longer usage time is directly connected with the network providers' concerns. A longer period of usage implies a longer period of potential consumption of offered services, which means increasing revenues and increasing net profits. Furthermore, a prevention of collapses in the cellular network stops additional losses in sales.

At the same time, the implementation could solve the resource problems of network providers, and grid collapses can be prevented based on an overall lower demand of frequencies. Huge savings can be realised concerning the up- and downlink frequency in modern cellular networks. Through the WMG solution, the same number of mobile services could be sold in association with a lower consumption of frequency due to the cooperation of users for the joint benefit. However, the presented solution for future problems of the mobile telecommunication branch is based on a theoretical model. But several very strict assumptions have been made to ensure consistent contemplation.

2.3 Softening Selected Assumptions

To implement the WMG within the real world, interdisciplinary research has to be done in the future. Several assumptions of the theoretical model and the chosen reference system are not to be found in reality. If we limit the application of a WMG to certain urban agglomerations, then the assumptions of local restriction and the sufficient distribution of users and mobiles are met in reality. These assumptions concerning the technological perspective and feasibility of a WMG will remain in the following analysis.

However, there is another dimension to the functioning of a WMG: a social challenge. The problematic assumption is the homogenous calculus of the users. This assumption includes two dimensions: Firstly, a homogenous calculus ensures the cooperation of users in terms of their participation in the WMG. This implies that people cannot withdraw from the grid and they have to participate automatically once in reach of other members. Only if a sufficient number of users participate can the constant connectivity be secured. This is far from being realistic as it will always be individually rational to defect in such a situation. Receiving data through the WMG is advantageous for the individual as it ensures fast download rates. However, participation comes at the cost of giving out bandwidth, which in turn decreases the battery life of the handset. A perfectly rational individual will therefore engage in strategic behaviour and only turn on the handset to receive data and refuse to give. If enough members follow this rationale, the grid is bound to collapse (cf. Balke/Eymann 2010). Although this is a very severe limitation, we will not attempt to solve it because much research has been dedicated to implementing normative mechanisms to ensure cooperation in terms of ensuring participation (cf. Balke et al. 2011a&b, Balke/Eymann 2010).

A problem which has been widely neglected by research so far is the second dimension of the assumption of a homogenous calculus. A homogenous calculus ensures every member will strive after the same data-packages. In other terms: members' online communication behaviour in the WMG will be the same or at least very similar. If we acknowledge the amount of research that tries to grasp internet behaviour in the face of a significant number of online offences, it becomes apparent that this assumption is highly problematic. An implementation of WMG entails similar risks as the internet. The problem even escalates in the fact that in a perfect WMG, without external links, users are completely anonymous in comparison to the internet. If established the wrong way, then the anonymity of participants may invite anti-normative behaviour as people take up characteristics depending on the context of action. The online environment takes a special position, precisely because it allows for the obscuring of basically all aspects which define the real-life self. The main question this proposes is how the context of WMG must be designed to counter a process of adapting anti-normative standards. Before being able to answer such a question, it must be understood how the anonymous environment one is confronted with when acting within WMG influences behaviour.

This sort of challenges must be answered with respect to identity formation and its connection to moral agency to explain how people react to contextual cues. It should be made clear that we are not attempting to clarify what normative behaviour entails but rather if the situation of acting

in a WMG destroys the capacity of being governed by internalised norms. This requires entering very different fields of research: philosophy, sociology and psychology.

3.   Identity and Moral Agency in Online Communication – A Social Challenge of Wireless Mobile Grids?

3.1 Establishing Identity – Orientation in Complex Role-Systems

3.1.1   Sociological Theories

Identity refers to a person being a unique individual with a coherent concept of self. Two components play a major role for identity. The self-concept refers to personal beliefs about oneself. But being a unique individual also depends on one's perception by third persons (cf. Günther 2004: 23f.). Being recognised as a unique and distinctive person is of equal importance to determine a coherent identity; this concept will be addressed again later in the paper.

In its original sense, identity means sameness, yet people do not always act in a strictly consistent manner. This is because people are influenced by social context in their actions. This contextualised interaction will be referred to as role-playing in the following. It means adapting to certain situations and altering behaviour according to them. A central question of research in identity theory is how different behaviour across situations can be merged into one coherent pattern. Two prominent sociological accounts of identity theory have been brought forward by Ralf Dahrendorf and Erving Goffman who understand identity as the orientation within a complex role-system. Their analysis is based "in the area where the individual and society intersect" (Dahrendorf 1973: 5).

Dahrendorf believes roles to be the sum of expectations of society. Any social relation (like having a child or having someone who pays me for work) defines a social position (like being a father or an employee). For every social position, society holds certain attributes and expectations of how to behave. In this theory, a role is therefore the sum of expectations that society prescribes to certain social positions (cf. Dahrendorf 1973: 14-20). Society might expect a father to be caring towards children or to take responsibility for their actions. Fulfilling the expectations of society is a trade-off with personal freedom. The homo sociologicus is that fictional person that is dedicated

to all expectations that define his range of appropriate actions. His identity is fully stated through the fulfillment of all expectations that society imposes on him.[8]

Let us take Dahrendorf's famous example of Dr. Hans Schmidt to explain this. If we talk to Dr. Schmidt, we will find out that he is a father of two children and is a grammar school teacher, etc. For all these positions, we hold certain demands about attitudes and behaviour, and Dr. Schmidt might fulfill them. When talking with his children, he is loving and affectionate whereas these same characteristics he might not adopt when standing in front of a class trying to appear strict.

Erving Goffman even draws a more radical picture in his book "The presentation of self in everyday life", published in 1959. The main conclusion of his analysis is that we are all playing theatre. He would claim that Dr. Schmidt is performing to control the conduct of others. We will focus on the aspects of performance which he takes as the "activity of a given participant on a given occasion which serves to influence in any way any of the other participants" (Goffman 1959: 15). Performance is a medium to form certain desired impressions. In certain situations, individuals want to take on certain qualities and perform according to them, just like Dr. Schmidt wants to appear strict as a teacher. By this, people explicate certain facets of their identity. In other terms, they are playing a role. But, according to Goffman, people do not invent new roles for every situation but have a standardised repertoire. This repertoire he calls front (cf. Goffman 1959: 22).[9] Identity is therefore stated through a front, a repertoire of roles that is influenced by expectations and how people want to be perceived. The way in which identity is stated evolves through external influences and internal influences. The individual wants to create a certain impression by resembling a front. The society influences this process as it forms certain expectations on how to achieve this impression.

Dahrendorf objects to this view as it would mean that every action is determined through the society's demands on how to resemble certain characteristics. In reality, men are not entirely socially defined but they exist in a "paradoxical relationship between the human being of our experience and role-playing homo sociologicus" (Dahrendorf 1972: 35). The individual is faced with the task of mediating the psychological man and the homo sociologicus. Connecting these two spheres is part of the process of establishing identity. Before turning towards the process of establishing

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8   The homo sociologicus is only a radical model for methods of research, just like the homo oeconomicus (Dahrendorf 1972: 7). Nevertheless, it emphasises the strong influence that society can have on behaviour.

9   The front includes the stage on which people act, like a classroom. Secondly, there is the personal front of things such as status, clothes and thirdly, there is the social front that is similar to the expected patterns of society.

identity, let us shortly look at a more contemporary theory of psychological determinants which is also influential on identity formation.

3.1.2 Psychological Determinants

In psychology theory, the influences described above will be influences on what psychologists call characteristic adaptations. Characteristic adaptations are certain motivational, social-cognitive, and developmental constructs which are contextualised in time, place, and social role (McAdams 2009: 16). They include all those qualities that individuals alter according to sociological theories. It must be emphasised that there are not the same as certain roles. The list of characteristic adaptations includes motives, goals, projects etc. These characteristics are influenced and shaped by certain contexts and not the actual role that is being played. But there are also dispositional traits which are not dependent on social roles and still can have a highly normative character. Dispositional traits are those characteristics that cut across situations and contexts. They allow for psychological individuality and draw a sharp distinction between individuals even though they are confronted with similar situations throughout their lives (cf. McAdams 2009: 13).

It is important to note that both characteristic adaptations and dispositional traits carry strong normative weight. Especially on characteristic adaptations, the contextualised influence has an educating function for socially desirable behaviour. Lawrence Kohlberg (1981) proposes six stages of moral development that take place on the level of characteristic adaptations. He develops a model in which the first four stages of moral development, which usually take place during childhood up to young adulthood, are derived from the influence of reference groups, as during this phase, people adapt behaviour through rewards or sanctions imposed by external groups. During childhood, the family will be most influential and the context will widen during maturity to being influenced by groups of friends and later on even through legal standards. The last two stages of moral development are not a direct result of normative influence but of reflection on these influences. The motivation in these stages is not reward or sanction but an understanding and internalisation of the moral quality of norms. The last part includes a process of reflection which is one of the main determinants when establishing identity (cf. Kohlberg 1981: 17-28).

3.1.3 Creating a Fit

The great task everyone is faced with is creating a fit between dispositional traits and contextualised actions. In this phase, one will try to arrange all the different selves and merge them into a pattern. According to Erikson (1968: 128-135), this will take place during late adolescence and young adulthood.[10] It is this time during which people start reflecting on their past, present and future in terms of questions like "what is life about?" or "where do I want to end up being?" etc. These are questions that arise from taking life as an object for reflection and shape characteristic adaptations so that they are consistent – thus establishing identity. Dealing with these fundamental questions is done in highly moral terms as one has to reflect on which virtues to accept, which roles to abandon and to what extent to fulfil expectations of society. To put it in Goffman's terms: one has to reflect on how big the repertoire of roles can be to be consistent with a certain self-image.

In the optimal case, the result of this inner negotiation process is an individual with the ability to adapt to certain situations as well as including core qualities to govern all of his roles. The concept described above must be understood as an interdependent process that constantly continues to develop. Individuals reflect upon changing social relations and connecting experiences of who they were, what they wanted and the imagination of the future (cf. Erikson 1959: 51-100).[11] The big task is to realise a consistent image of oneself through keeping roles and traits within a realm that provides a satisfying self-image: identity.

3.2 Identity Crisis in the Age of Online Communication

Drawing a consistent pattern of one's life has never been harder than in the age of new communication forms which allow users to completely obscure almost every aspect about themselves, even their core qualities. Sherry Turkle (1995) dedicates her work "Life on the screen – Identity in the age of the internet" to the challenges and chances of taking up different roles and creating new worlds and stories around them.

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10 In the following, we will concentrate on implications for the identity of individuals at any age. At this point, it becomes evident that especially during and before the time of shaping an image of self, effects distorting a consistent pattern of disposition traits and characteristic adaptations may be very harmful towards establishing a 'healthy identity'.

11 Erikson actually deals with a 'healthy personality', yet he stresses the importance of a unity of personality and the crisis that one has to overcome when trying to unify one's experiences.

"In the story of constructing identity in the culture of simulation, experiences on the Internet figure prominently, but these experiences can only be understood as a part of a larger cultural context. That context is the story of the eroding boundaries between the real and the virtual, the animate and the inanimate, the unitary and the multiple self, which is occurring both in advanced scientific fields of research and in the patterns of everyday life" (Turkle 1995: 10).

The context of new communication forms differs strongly from traditional contexts, as the expectations that are supposed to guide behaviour become unclear. The online environment is an identity laboratory (Wallace 1999: 47). In this laboratory, people can put on masks and play masquerades much more easily than in real life. They can form new identities through taking up different personae[12] and abandon characteristics that define the real-life self, be it a multi-user-domain (MUD) like the online platform Second Life, in which one can create characters that meet other characters in online cafés and communicate with them, or just a simple chatroom where a user can decide to take up different gender, age and behavioural patterns. In Second Life, avatars can earn money by providing services as DJs or even sexual services. In the following, the sum of these roles will be referred to as the virtual-self, which is opposed to the real-life self – the sum of the roles people play in reality.

New possibilities of exploring every possible aspect of self propose a completely decentered, fluid self-concept in which constancy throughout roles seem to diminish. But even if adapting is certainly important, it is crucial to notice that embracing the idea of a fragmented, fluid concept may result in a lack of moral content (cf. Lifton 1993: 229-232).[13] Alaisdair MacIntyre (1993: 324-325) even holds that a divided self lacks the capacity for moral agency. Virtues such as integrity and constancy are lost, which results in an individual that loses any standpoint from which to evaluate standards to govern its various roles.

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12 The term personae usually refers to characters in a novel or a play. In psychology, it refers to the facades and masks people use to adapt to certain situations. It must be distinguished from the inner personality.

13 There is a prevailing opinion which we share, brought forward most famously by Christine Korsgaard, following a Kantian argument dealing with matters of identity as necessary prerequisite for moral agency. It holds that moral obligations are self-imposed, giving us authority over ourselves. Through this, normativity is based in the human will. In a second step, Korsgaard claims that a consistent practical identity is necessary to be able to act as a self-legislative individual (Korsgaard 2003a&b).

In the case of a WMG and of the internet, the core source that proposes a lack of moral agency is anonymity. It is anonymity that allows for playing roles that are drastically altered in fundamental characteristics and it is anonymity that takes away incentives for moral behaviour.[14] Through the ability to alter everything characteristic about themselves, people are enabled to play roles which are far away from the very core source of identity. This may include giving up moral convictions that guide the real-life identity. The problem in the WMG is simply that a user is anonymous or, more precisely, he may choose to be completely anonymous. Even on the internet, where we are not exactly anonymous, the eroding boundaries between physical, social and virtual realities "make us feel less inhibited, less likely to be detected, and a little less under the superego's thumb" (Wallace 1999: 39).

Probably the first one to deal with incentives through anonymity was Plato with his legend "The Ring of Gyges" in 380 BC (Book II. 359a-II 360d). Gyges finds a ring that gives him the power to become invisible when adjusting it. This power he uses when reporting to the king to murder him and to seduce the queen. Glaukon, discussing with Socrates, claims that not acting according to one's wishes if there are no consequences would be individually irrational. As soon as the sanction is removed, the character evaporates and the social construction of justice collapses. Socrates meets this challenge with the words:

> "One who is just does not allow any part of himself to do the work of another part or allow the various classes within him to meddle with each other. He regulates well what is really his own and rules himself. He puts himself in order, is his own friend, and harmonises the three parts of himself like three limiting notes in a musical scale – high, low, and middle. He binds together those parts and any others there may be in between, and from having been many things he becomes entirely one, moderate and harmonious. Only then does he act" (R 443d-444).

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14 Uninhibited behaviour is usually referred to as flaming. Flaming was originally understood as incessant talking but came to be known as antisocial behaviour on computer networks. There is no universal definition of flaming and there are several critiques of all different attempts as flaming differs from face-to-face communication by definition. Nevertheless, flaming as a keyword for antisocial behaviour in networks shall be sufficient for our purpose (Wallace 1999: 110-130).

This answer transports the main connection of anonymity and identity formation. Socrates explains that unity is essential if one is to act justly as a person, as a single unified agent. There are more examples that dealt with this exact problem. In the Hollywood-movie Hollowman, a scientist injects himself a serum that causes him to be invisible. In a famous scene, he is wearing a visible mask – so that he can be identified by others – and watches a woman undress herself. Clearly excited by this, he tries to stop himself from acting against his conviction with the words: "Don't even think about it." A few seconds later he stands in front of mirror, takes off the mask, realises that due to his invisibility he cannot be sanctioned and adds, "Who's gonna know?", takes off the mask and leaves to seduce the undressing woman. Both these stories transport the fundamental problem of anonymity. As behaviour is largely influenced by contextual action, people are more likely to behave in ways which might even work against their convictions.

To describe the influences of anonymity on behaviour of the virtual-self in the WMG, one must distinguish between social communication and data-communication. We use an unusual definition of both terms, as from a technical viewpoint, every form of communication online or through a WMG is data-communication. We define the latter as file transport in which no actual communication with another person in written or verbal form is included, meaning that there is no social influence on actions. To keep it simple: the down- and upload of files. Social communication is the interaction between individuals through the medium of a computer, cell-phone or other objects that allow social interaction via transmission of data. In social communication there is still a responding corrective through other persons. This separation is necessary because as we have seen, there are two main channels through which morality can be induced: personal conviction of norms and external influences, such as sanctions which usually work through reputation mechanisms. The latter can be easily influenced; personal governance of norms, however, is a question of identity formation.

3.3 Deindividuation in the Online Environment

3.3.1 Social-Communication

Computer-mediated-communication (CMC) under various stages of anonymity has been the focus of a considerable amount of research. There are different models which explain why the virtual self adopts different norms than the real-life self. The model that has widely been agreed upon is

the deindividuation model to explain the process of people altering not only characteristics about themselves but also norms guiding their behaviour.[15]

Deindividuation is a state of decreased self-evaluation which results in people embracing anti-normative behaviour. In this state, the perception of self and others is distorted which results in the "violation of established norms of appropriateness" (Zimbardo 1969: 251). There is agreement on this psychological state (cf. Postmes/Spears 1998). However, the conditions to release it are subject to disagreement. Whereas Zimbardo (1969) focuses on anonymity as the salient factor, Diener (1980) focuses on the aspect of losing self-awareness. Both theories do not find sufficient support that a loss of identity leads the individual to anti-normative behaviour (cf. Postmes/Spears 1998).

In the 90s, however, a reconceptualisation of deindividuation took place, which held that anonymity and a lack of self-awareness marked a transition from individual identity to social identity, shared by members of the crowd. This Social Identity model of DEindividuation (SIDE), developed by Stephen Reicher (1984), received remarkably little criticism. It finds that within groups, anonymity can increase responsiveness to group norms. The reasoning is that since deindividuation hinders reflection and acknowledgement of internalised standards, it opens the individual to external influences. Consequently, the abandonment of established personal norms can also promote the acceptance of group norms. The model is based on a distinction of the self-concept between social identity and personal identity: social identity encompasses group classifications of individuals. Tajfel defines it as "that part of an individual's self-concept which derives from (…) knowledge of (…) membership of a social group together with the value and emotional significance attached to that membership" (Tajfel 1978: 63). Social identity is stressed if a person's action is strongly motivated through membership of a certain group. A fan of a football match who is cheering for his team will be in a situation where his social identity, as a member of the fan community, is salient. His actions are guided by the characteristics of being a member of the group. Usually he may not be the kind of person that openly yells at the referee for a bad decision. But as a member of a community, he characterises himself as a fan for which this is an appropriate action. Personal identity relates to all idiosyncratic characteristics and contingencies of an individual (cf. Turner 1982: 18). If a person is at the same football match but is not a member of the fan community or does not feel drawn towards the group, his actions will be dominated by personal characteristics, such as being

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15   For an overview of the research and the agreement on the deindividuation model cf. Joinson 2003: 25-51.

a calm person or an aggressive person. Usually people are characterised by both forms, although different situations can promote the salience of personal or social identity.

The SIDE model holds that anonymity in CMC favours the salience of social identity, as under anonymity, interpersonal differences diminish and personal features are obscured. There is less awareness of personal characteristics but more awareness of those characteristics that are common to those communicating with each other. Therefore they are more likely to accept existing group norms. This only holds if the social identity is salient. This can create different effects as behaviour in group communication is largely dependent on the norm that is dominant within the group. Obviously, the moral quality of norms differs widely, depending on members, context and the explicitness of the norms that are dominant within the certain group. In a forum of a scientific journal, the norms will be rather civilised, whereas in the bigger part of online communities like chatrooms and MUDs, flaming occurs more often, as communication norms are placed on a lower moral threshold.

There is a particular weakness of the SIDE model. It does not sufficiently explain why people abandon norms which usually guide their behaviour when personal identity is salient. This problem stems from the fact that the SIDE model is only concerned with group communication. It asks the question: What happens when personal identity is salient within group communication? It does not explain why there is less self-awareness without responding groups, as is the case in data-communication.

3.3.2 Data-Communication

There has been surprisingly little research on the sociology of online data-communication. Although legislative systems are trying to gain control over illegal data traffic, such as child pornography and violence-glorifying videos, the effectiveness of these policies remains doubtful. If we analyse the case of the internet, we find that there is nothing like a social corrective that could induce conformity on the virtual self, as online communities might be. If someone enters an illegal website and downloads illegal content, then the context in which it takes place is the internet itself. This might sound rather abstract as one is obviously still an existing person undertaking this action.

To understand this, let us assume for the moment that this connection does not exist anymore. How could the circumstance of downloading files induce expectations towards the virtual self? It becomes clear that the only channel through which the internet as social context can produce

expectations is the threat of being sanctioned for illegal activities. People must accept that they can be held liable for their actions if they are identified by their IP address. There is an expectation of society brought forward through the threat of being sanctioned. This "last" source of external influence on actions is lost in the WMG. The possibility of being sanctioned cannot be induced effectively. The reason for this is the fact that mobiles are not linked to a certain person, like an IP address. The virtual self is, differently than in the internet, completely anonymous like Hollowman or Gyges. Consequently, the online environment of data-communication in a WMG cannot induce morality. One must remember that the assumption claiming that there is no connection between real-life and virtual self is far from realistic. If this is the case, then there is another source for regulating behaviour, namely personal internalised norms. That the situation cannot induce external guidelines does not mean that everyone necessarily starts acting immorally, but rather that the internal norms are decisive for this process. The likeliness of immoral actions is then very much dependent on two parts: the personal convictions of a user and the strength of the tie between real-life and virtual roles, meaning the probability that one is actually guided by personal norms in such a situation.

To sufficiently address the first part, one would have to explore humankind in all its facets to grasp how strongly people are dedicated to moral convictions. Obviously, this is not possible. Yet, it is possible to describe a tendency without slipping into mere assertions. As said before, Kohlberg describes six stages of moral development. However, he claims that only in the last two stages are people actually driven by internalised standards.[16] Also, the process of adapting normative convictions is driven by external influences and it has been explained in detail that within new concepts of identity formation, this process is becoming continuously harder. Hence, every individual who has not reached level five or six is without incentive to act morally, and thus a WMG is a space free from moral learning concerning data-communication.

Still, a problem exists concerning the tie between the real-life and virtual roles. Even if people usually adapt high normative standards, they are in a state of deindividuation. This means that the decreased self-awareness favors anti-normative behaviour even though people usually follow certain norms for their own sake. The dilemma that the establishment of a WMG brings along is that the inherent advantage of it is connected to a structure of a peer-to-peer network. People share

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16   This approach seems especially important if we think of potential users of a WMG. The six stages are achieved in an order determined by time, meaning that only (young) adults can actually achieve the highest levels. It seems accurate to assume that a WMG would mainly attract youth and young adults, which makes the problem more severe.

data directly amongst each other through downloading chunks of other participants. But the two main problems of data-communication remain: Firstly, how can we externally impose a context in the context-free environment of data-communication, and secondly, how can one support being governed by internal norms instead of abandoning them?

We hold that both are possible to a certain degree, firstly by embedding data-communication into a social context through establishing a WMG as a community. To keep the advantages of a WMG (efficient data communication) without running into the same problems of peer-to-peer networks, it must be structured in a way that users perceive themselves as a member of a community. Secondly, to support the governance of internal norms, a user's identity within that community must be closely linked with his real-life identity to hinder the process of losing self-awareness. Imagine a person walking through Manhattan who wants to upload child pornography. He cannot be identified by a legislative institution as he only connects to other mobiles directly without the intermediate of an antenna. Yet other members of the crowd can sanction him if he has an identity which they see once he confronts them with the videos. This must be the starting point of implementing a WMG: make people willing to show who they are in the grid instead of staying anonymous and make them act as this one person and not with several identities!

4. A Framework for Establishing Wireless Mobile Grids

The establishment of a new form of communication imposes a whole variety of tasks for it to be successful. There are many ways in which this technology can be used. Up to now, research only suggested WMG to be an alternative way of transmitting data. This approach results in services similar to the internet but using fewer resources than the momentary network structure. The situation for the demand side has not drastically changed in this scenario. We follow a different approach which is based on the growing segment of Web 2.0 services. The overriding idea is to use the technical structure of a WMG – transmitting data-packages via mobiles around you – to implement a social network with the feature to communicate with those around you by means of those around you. Integrating a WMG as a Web 2.0-based service instead of simply changing the transmission structure seems to be an appropriate approach to include the consumer's perspective and to address the risks of an implementation.

The following approach must not be understood as a complete design of a WMG but rather as a framework within which an actual business case can develop. This framework represents the conditions that should be in place within the given restrictions so that a WMG can develop as a well-ordered community. To see how such a framework can be realised, some restrictions of this approach must be acknowledged. It follows directly from the assumptions of the scenario that an implementation of a WMG is limited to urban agglomerations. Also, a secure connection necessitates a hybrid structure including WLAN hotspots or a cellular network. The characteristic of a hybrid structure can in turn be used to reinforce liability of users. From the legal perspective, the optimal case would be if an actual sanction would be possible in the sense that mobile numbers should be connected to a passport number and therefore individually identifiable. However, this would certainly not work out due to data-security and due to the fact that mobiles within the WMG connect directly to each other and this connection cannot be entered easily from an outsider.

A step which is certainly possible and makes some form of control easier is registration and verification through an e-mail address. The usual procedure when registering for any online community can also be used as a channel to enter the WMG. With this measure, a situation similar to the internet could be reached. Admittedly, this is probably a very weak form of incentivising certain behaviour, as people can always use fake addresses for certain behaviour and the situation has not really improved concerning the problems that have been dealt with. The only real advantage of people entering a WMG would then be free connection with others through the grid, which does not seem as attractive in times of flatrates becoming cheaper. Still, it is a first step that allows further affirmative action.

Creating an Interface

As a second step, it is necessary to design the WMG so that one acts within the grid in one role only. This can be achieved through creating a profile as a channel to enter the grid. This aims at creating the impression of being one certain personae when acting within the grid. The purpose is to unify all of the different roles that can be played in the grid. The important feature, however, is that every action within the grid is undertaken under this one role. In the internet, it is possible to be a different person in different communities. This should be prevented. Every function of the WMG – no matter if it is posting in a forum or just downloading slots – must be accessible only through this one channel. A demand for such an inclusive approach of functions seems to

exist. Facebook recently started cooperating with Skype to allow video calling within the platform (Facebook, Inc. 2011). Members can also share blogs, news or videos which they find interesting for their friends. Videos can even be launched within the Facebook page. This can be realised similarly in a WMG as a social platform; a discussion of this will follow.. From a theoretical perspective, this channel, as a means of entering the grid, is created as a basis that allows measures to increase self-awareness. However, increasing self-awareness also necessitates the profile to resemble the real person. In other terms: this one role must be characterised by the most basic traits of the individual to strengthen the core part of identity.

See the Real Me

Only if users are willing to show their face can data-sharing be embedded in the context of social sharing. In other words, the task is to reconnect the virtual worlds with real life. The impact on identity formation is simple: it re-individuates people. Giving them a face is a measure to increase their self-awareness and their perceived anonymity.[17] Also, it reinforces expectations towards other members as they know that they are dealing with an actual person. Recalling the example of Hollowman, this approach refers to putting the mask back on his face with the additional feature that the mask resembles his actual face. Users still play a masquerade but they dress up as themselves.

Google took up on this idea by launching their social network Google+ with the slogan: "real-life sharing rethought for the web". In the official google blog they claim: "the subtlety and substance of real-world interactions are lost in the rigidness of our online tools" (Google Inc. – The Official Google Blog 2011). This message is obviously directed at attracting consumers. However, there is truth to this sentence concerning the differences in behaviour in real-life and online interaction. Linking the online-identity to the real-life identity is an effective measure to incentivise normative behaviour. But Google+'s slogan uses the phrase real-life sharing, implying the idea of a community which is nonetheless important for establishing a WMG when remembering the lessons from the SIDE-model.

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17   Diener and Wallbom (1976) conducted an experiment in which college students were placed in front of a mirror and listened to their own voice, whereas the control group was placed next to a mirror, listening to another person's voice. This setup should reflect self-aware and self-unaware persons. They were given the chance to cheat on an anagrams test and already the simple measure of placing a mirror in front of them resulted in lower cheating rates compared to the control group.

A Local Community

Making the WMG a community is by far the most important step to induce well-ordered behaviour and also to make it attractive. While peer-to-peer networking is continuously diminishing, social sharing platforms still experience growing user numbers (cf. Mochalski/Schulse 2009). By now, 40 million people in Germany are already members of social networks. This amounts to 76% of internet users with increasing numbers (cf. Bitkom 2011). Facebook alone gained 7.9 members per second in 2010 (Social Bakers 2011). Google recently launched a new social networking platform, and also social sharing platforms such as Tauschring.de or Snapgoods.com are gaining members rapidly (cf. Google Inc. – The Official Google Blog 2011, Grimm/Kunse 2011: 22). The demand to connect does not seem to know an end. However, to enforce the salience of social identity, a common identification is needed. Such a shared social identity is necessary to establish credible expectations towards behaviour. In the process of creating a community, there are two pathways to form a sense of shared identity: a deductive and an inductive approach.

The deductive approach explains how a shared identity can be derived by members from knowledge of their group within the social context (cf. Postmes/Swaab/Spears 2008: 167-169). A political party can be the source of a shared identity if categorised by its members as being left or right in opposition to the respective outgroups. The local restriction of a WMG provides a good starting point to deduce such shared properties. The WMG being locally restricted, like the WMG Manhattan, provides a sense of identification with a large social group. This perception of being a member of a community is most importantly changing the perception of mutual anonymity within a WMG. Even though a user does not actually know from whom he is attaining the data, he must perceive it as asking the community if they share his interest. Not knowing who transmits the data package does not mean that users cannot know if other members already have a required package. On the contrary, such a feature could be a very attractive feature to strengthen the common interest. This could be established similar to Facebook's status page where users can show a chosen subcircle of members, videos or articles which they find interesting. It is nevertheless very important that this social group of Manhattanites must be stressed as a group of real-life individuals who interact online. This ensures that the norms which members deduce from the social group correspond to existing norms. The platforms aiming for real-life interaction are the ones where the members actually need to show a profile to benefit of the services from the community. For example, Couchsurfing is a platform where people offer others the opportunity to stay on their

couches for free when traveling. Frankie, a user from Tel Aviv states in his profile: "If you aren't willing to completely fill out your profile, then don't even contact me" (Grimm/Kunse 2011: 23; translated by the authors). Users are also rated by people they met. The community is able to react if someone takes advantage of the collaboration.

Such a shared identity, which is deduced from a real-life contingency – being from Manhattan – does not only have an effect on an individual's behaviour but it ensures the functioning of a WMG. Not only does it exclude certain data from being shared but it also reinforces a common interest in certain data-packages. It is a crucial step to ensure the functioning of a WMG when remembering the assumption of a homogenous calculus of the participating users. If users are interested in completely different data-packages, then the advantages of a WMG are not realised as everyone still has to download his preferred data via an external link. Only the common interest allows the data to be distributed amongst each other and hence the realisation of economic advantages.

5.   *Forecast and Future Questions*

Within the assumptions and these three steps in place, a WMG could be established with an unlimited variety of features. It could include creating subcircles of friends in order to follow their recent activities and see their interests comparable to a local Facebook. But also it allows for local phone calls, including videos, marketing of events in Manhattan, location-based services etc. Even sharing platforms which offer to share taxis, cars, housing or simple hardware with people close to you could be established. All of these services can be realised within in the context of the close local surroundings instead of having to filter the internet for information on services close to one's location.

Business models can be realised without wasting resources. Imagine a band launches a new album and the data package for the recording is sold for a fixed price, say $1.6 million. This price is shared by every grid-user who attains one slot. If all 1.6 million users in Manhattan want to attain one slot, then everyone pays one dollar to get the whole album as it is distributed throughout the WMG afterwards. Suppose the CD has 650 MB, then only these 650 MB are fed via an external link into the WMG, compared to 1,040,000,000 MB in a traditional cellular network structure to provide the music to the users. Such creative ways of using WMG as business cases also touch

upon the very relevant fields of copyright issues. This seems a real challenge when implementing WMG for the purpose of faster data-traffic only. The proposed design offers a structure on which intellectual property can be secured through intelligent adaptions such as the given example. Similarly, the music could be downloaded by one member only and for every other user who downloads the data from him, he gets a small amount of money. Such an approach was already realised by the rock band Kaiser Chiefs. They launched their recent album online before selling hardcopies. Fans could choose 12 out of 20 songs for their personal album and could earn one British pound for each one of their personal album sold. Business of this sort can be revolutionised within a WMG using fewer resources and connecting it with a social network approach (Universal Music Operations Limited 2011).

However, there were several issues concerning an implementation which we did not consider. All we showed is that a WMG is a possible and intuitive approach to react on apparent bottlenecks. We highlighted very specific problems a decentralised network structure might have on individual behaviour and provided a framework as a basis to tackle such risks. At the end of the day, it must be acknowledged that even though technologically quite advanced, the WMG research is still in an early phase concerning the socioeconomic problems. Future research must specify how participation within a normative framework can be fostered. This includes further interdisciplinary analysis. Copyright infringements and data-security are probably the most salient factors concerning legal requirements. From a philosophical perspective, it might be necessary to inquire what normative and responsible net-based communication actually entails. Only if the WMG-technology gains more attention in other relevant fields of scientific research can an implementation on the large-scale be successfully administered.

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THE
CORPORATE NETWORK

Open Innovation
Responsibility

Open Innovation Responsibility

Why Integrating Stakeholders is Crucial to Innovation

Christine Alfken, Jan Stöckmann, and Benjamin Usinger

This paper suggests that modern organisations should open their innovation process and shift their focus to socially beneficial innovations. Global stakeholders bristle with ideas to improve products and services. At the same time, they have legitimate claims that can only be met if responsible organisations apply their core competency. In this context, global development issues become relevant: Opening up large markets in developing and newly industrialising countries bears enormous potential. Meanwhile, corporations are capable of solving social problems in these markets, promoting their role as responsible entrepreneurs who care for their stakeholders beyond economic interests. Simultaneously, Open Innovation processes enable organisations to benefit from an ever increasing developer community. Thus, combining the concepts of Responsible Entrepreneurship and Open Innovation, this paper argues that corporations will benefit from opening their innovation processes to a broader stakeholder community.

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1. Introduction

"We do not necessarily need more innovation. We need better innovation that is fast, open and global" (Lindegaard 2010). For a long time, it has been underestimated what Stefan Lindegaard, author of The Open Innovation Revolution, expresses with these words. Nowadays, we live in a world where hundreds of mobile phone applications are programmed each day; where open software projects enjoy increasing participation and popularity. However, it is also a world where more than half of the global population can only dream of these latest innovations. Their needs must be met as a matter of responsibility and their demands must be satisfied as a matter of business strategy. Consequently, the environment of organisations turns into a complex network of ideas, interests, and claims. How can organisations respond to these developments?

What we claim is that global stakeholders are in a better position to tackle this question than a specific Research & Development (R&D) department or any specific company. What we call Open Innovation Responsibility (OIR) is a promising strategy that integrates stakeholders into the innovation process and thereby pursues business goals while at the same time taking on social responsibility. If organisations want to generate progress, they have to listen to stakeholders and to collaborate with them.

In this paper, we will show why integrating stakeholders (in such a way) has become crucial to innovation. As a first step, we will examine responsibility and its relevance in organisational as well as innovation contexts. We will argue that organisations must face their social obligations and act responsibly (section 2). From this, we will move on to demarcate some terms and concepts regarding innovation. We will explain why creativity and innovation play a crucial role in an organisation's existence (section 3). Subsequently, we describe what we mean by Open Innovation Responsibility. Employing a precise idea of this concept, we examine the market at the bottom of the pyramid and explain how both the organisation and society will benefit from the systematic integration of stakeholders into the innovation process (section 4). The following section includes managing advice and best practice examples (section 5), which are then transformed into a specific tool and applied as the Open Innovation Responsibility Platform. Comments will focus on implementation at the Nokia Corporation (section 6). Thereafter, we will give an overview of the implications and advantages of such a tool (section 7). The paper is rounded off with some concluding remarks and prospects (section 8).

2. Responsibility

2.1 Concepts of Responsibility

The term responsibility is derived from Latin respondere which means to give an answer. This already implies the involvement of two people: If there is one subject who has to answer, this must be a reaction to another person who requires him to answer. Responsibility is about communication. It involves a discussion between at least two individuals in which one of them is requested to answer for his actions and now has the possibility to justify his behaviour (cf. Bayertz 1995: 16). Imagine a mayor woman tumbling while crossing a street, whose attempts to get up remain unsuccessful. A nearby passenger observes the accident but does not help her. The mayor woman or another passenger could then request an answer from him; they want to know why he kept on walking and did not help. They attribute responsibility to him, which involves reference to a system of norms or values. Without this reference, responsibility would be a merely descriptive concept. So, in our example, the reference would be to the convention that mayor people should be offered help in situations they are incapable of coping with. Hence, we already have four elements of responsibility: (at least) two people, one action, and one criterion. Here, it should be noted that organisations are in a situation in which a response is expected by their stakeholders – and it is precisely this responsive notion of responsibility that is the underlying idea of our Open Innovation Responsibility concept to be presented later on in this paper.

Today, responsibility is commonly seen as a multi-relational concept (cf. Höffe 1993: 23, cf. Lenk/Maring 1995: 247). Concepts of responsibility differ in terms of how many dimensions are employed to differentiate the term responsibility. One widely accepted concept was presented by Hans Lenk and Matthias Maring. They characterise responsibility as follows:

> "Someone: The subject or bearer of responsibility […] is responsible for: something […] in view of: an addressee […] under the supervision or judgment of: a judging or sanctioning agent in relation to: a criterion of attribution of accountability within: a specific realm of responsibility and action" (Lenk/Maring 2001: 95).

So we recover the subject of responsibility who has to answer, the something which can either be an action or a condition to be achieved, an addressee who demands an answer, and the criterion of

responsibility attribution. Moreover, they introduce the elements of an instance of judgment, which could be a court, god or the conscience, and a specific realm which would be traffic in our example.

The addressee (Anton) blames or praises the subject (Susan) for an action, depending on whether Anton experiences good or bad consequences. Anton asks Susan for the motives behind her action. Susan is required to answer. If her motives are not judged to be valid by Anton, he attributes moral responsibility to her. Thus, in this classical understanding, the concept of responsibility helps us to attribute consequences to someone's action. In case of negative consequences, for instance, we interpret a situation or a person's action, and, if there are no releasing factors as a conclusion, we attribute responsibility to him, and demand a punishment or compensation. Such understanding of responsibility is retrospective: It is ex post, as responsibility is directed to an outcome or an action that has already taken place (cf. Bayertz 1995: 6ff.).

Over the last centuries, another concept of responsibility has evolved. In the course of technical progress and increasing division of labour, the interpretation of situations and the determination of causes became increasingly difficult. External effects influence the outcome of the individual's action so that the consequences have become difficult to attribute. The search for the responsible individual can be so difficult that we pass to holding people responsible for conditions. We attribute responsibility to them to ensure that a certain condition will be achieved or be upheld. This type of responsibility is often attributed to certain roles. An engineer may be held responsible for his work to be safe so that people's lives are not endangered. This is a responsibility attached (specifically) to the role of an engineer. Here, we find thus a new understanding of responsibility, one that is directed towards the future. It is a prospective or ex ante responsibility to achieve a condition or an end (cf. Bayertz 1995: 24ff.), one that is akin to the concept of duty. Both the prospective and retrospective responsibility can be related to innovation.

With regard to innovation in particular, Kurt Röttgers discusses two kinds of responsibility (cf. Röttgers 2009: 442). The first is the responsibility to innovate, i.e. a responsibility to ensure the condition that innovation takes place. We believe that organisations are responsible in a sense that goes beyond plain economic interest. We will discuss the reasons for a broader responsibility concept later in the paper.

The second responsibility is the responsibility for innovations. This is the responsibility for good or bad consequences of actions that have already taken place. Regarding organisations, the responsibility refers to outcomes such as products and services. In the case of good consequences, customers attribute praise to the organisation. However, in the case of failure, the customer will

attribute the bad consequences to the organisation, blame it, and probably will assign responsibility to it. Several product recalls, for example Toyota (cf. BBC News 2010) but also Nokia (cf. Paul 2009), show that organisations do accept this responsibility. This is also reflected in legal regulations such as warranty contracts.

2.2 Responsibility in an Organisational Context

For our purpose, it is necessary to show that organisations can be subjects of responsibility, because otherwise stakeholder discussions and Open Innovation processes would become mere voluntary acts of benevolent organisations. However, we do believe that these responsibilities can be assigned to organisations and we will demonstrate this in the following argument.

Peter French sees corporations as moral persons and attributes responsibility to them because they seem to form and realise intentions (cf. French 1984: 38f.). We do not think that the formation of intentions is enough to qualify as a moral person. In fact, we will not speak about moral persons but about moral agents as the multitude of existing definitions about what constitutes a moral person might cause unnecessary discussion. The term moral agent is much less disputed: A definition that captures the most frequently discussed issues has been introduced by Braham / van Hees, who suggest that a moral agent is an autonomous, intentional, and planning agent who is capable of distinguishing right and wrong as well as good and bad (cf. Braham/van Hees 2010: 7).

Another scholar, Philip Pettit, argues that collectives are agents in a functional sense. He holds the view that

> "[a] system will constitute an agent if it forms and reforms action-suited desires
> for how its environment should be and action-suited beliefs as to how its
> environment is and if it then acts in such a way that those desires are satisfied
> according to those beliefs" (Pettit 2007: 178).

This definition of agency allows us to regard organisations as agents. If members act in the pattern of coordination, they will act as a single unified agent, and they will adopt decision-making mechanisms that ensure this agency. As this conceptualisation of agency involves the desire-belief model that is mostly used to explain the notion of intention, we will discuss this issue now, before examining the issue of autonomy. The desire-belief model states that actions can be explained by

a desire and the belief that a certain action is a way of fulfilling this desire. Given the desire and the belief, there are reasons for the actor to engage in an action (cf. Bratman 1995: 375). According to this model, organisations can form desires and beliefs since they can form judgements of the issues presented to them for consideration. They give their assent according to the accepted decision-making mechanisms – for instance, in the form of a vote. Thus, they can adopt desires and according beliefs of how to achieve them, i.e. they can have intentions and can make plans.

Some philosophers argue that it is not the collective which has the desires and beliefs but its members. According to this view, the desires and beliefs embraced by collectives do not dispose of any novelty. This objection leads us to the next issue, namely the condition of autonomy. It can be shown by impossibility theorems that the desires and beliefs held by a collective cannot be derived from the desires and beliefs of its members. The collective's beliefs and desires are no function or combination of functions of them. An organisation is required to behave in a consistent way, as otherwise people would not form binding contracts with it. An organisation is expected to have a complete and consistent set of views. Thus, if it for example, always followed the majority of its members' opinions, the organisation would soon have to face serious problems because it would be said to act in an irrational way. As a consequence, the members have to embrace a practice that allows them to ensure that the set of attitudes they accept and enact in the group's name is internally consistent (cf. Pettit 2007: 181f.). Thus, the beliefs and desires of the organisation are independent of those of its members and the organisation can be regarded as an autonomous agent.

With regard to the capacity to distinguish right and wrong as well as good and bad, one needs to consider that a collective can form judgements over potentially any proposition that may be presented for consideration. In such cases, the collective takes the steps required by its decision-making mechanisms to decide on it. These may be, for instance, taking a vote or making a decision by an authorised member. Hence, the collective will be able to judge any proposition that is presented and that can be adjudicated. The members will be able to present evaluative options to the collective for consideration and will be able to decide on them. Consequently, the group agent is able to form value judgements about the options it faces in virtually any choice.

Since all requirements for moral agency are fulfilled, it follows that all collectives possessing decision-making mechanisms, such as business organisations, qualify as moral agents. This makes them candidates for being morally responsible.[1] The fact that organisational behaviour can be

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1   For further reading on moral agency regarding companies, see Pettit (2007), Copp (2006), French (1984), Lenk/ Maring (1995).

subject to moral considerations is an important premise for our application of Open Innovation Responsibility (see section 4).

However, it has to be ensured that a replacement or disappearance of responsibility does not occur. This is an important issue for organisations, as the division of labour tends to entail and even encourage a diffusion of responsibility (cf. Lenk/Maring 1995: 276f.). In modern organisations, it is common practice to work in groups and only for a short time on a particular project. Social psychology scholars have found that with increasing group size, the perception of responsibility decreases and risk affinity increases (cf. Latané/Darley 1970: 52ff., cf. Leary/Forsyth 1987: 169ff.). Opposing this view, there are insights arguing for the possibility to counteract such diffusion of responsibility. It is known from social psychological studies that responsibility is more apportioned to group members occupying a central position in the group, having special expertise, and playing a more active role in the group's activities (Leary/Forsyth 1987: 167ff.). Moreover, it was also found that group members who felt that they had been given important tasks reported feeling more responsible for the group's overall performance. Those with special expertise or knowledge were more likely to take on responsibility for helping, and group leaders generally took more credit for their group's products than others, and in some cases members agreed with their leader's responsibility claims (cf. Forsyth/Zyzniewski/Giammanco 2002).

Hence, in order to tackle the diffusion of responsibility, it is necessary to motivate people and to underline the common task's importance. Furthermore, competencies and tasks must be distributed. Every single member needs to take over a leading role in the area of his competency, i.e. where he is an expert. As will be seen, this is precisely what Open Innovation Responsibility fulfils, as it assigns importance to every member's contribution. If members experience that their ideas and knowledge are respected, they will feel more responsible for the success of the project as a result.

2.3 The Responsibility of Organisations to Innovate

In general, all companies have an interest in innovation, because it assures their economic success. This interest can be more or less central to their core business. There can be minor innovations that only make daily business more effective, for instance, new software, or there can be innovations that refer to the organisation's core business, such as the light-emitting diode (LED) technology, which revolutionised the lightning industry. We believe that it is organisations whose core business

centres on innovation that bear a moral responsibility to innovation, and that stakeholders bear a responsibility to encourage these innovations.

Nowadays, all organisations are situated in a net of relations to other organisations, suppliers, customers, media, and so forth. They are connected through a multitude of relations to their stakeholders. Freeman, who significantly shaped stakeholder theory, argues that stakeholders are groups or individuals who are "affected by or can affect the achievement of an organisation's objective" (Freeman 1984: 46). The organisation's success depends on the cooperation with different stakeholder groups. Over the last years, it was especially customers who detected their power to influence organisations as the increasing number of customer boycotts show. However, the same holds true for the stakeholders' perspective (cf. Mahoney 1994: 212), so that a kind of reciprocity exists here. Such reciprocity is important for the allocation of responsibility as well: On the one hand, an organisation owes responsibility because it affects stakeholders' quality of life. Moreover, some stakeholders experience an imbalance of power. Customers, for instance, are usually not organised and, as individuals, their wishes and demands are often not heard. Only if they organise and, perhaps, involve the media does it become possible to perform as an agent of equal power. On the other hand, the stakeholders also owe responsibility to the organisation, because the organisation depends on them. In the example of the customers, it is their responsibility to reward business organisations that show good governance.

It is notable that there has been a massive increase in responsibility assigned to organisations. For instance, it is frequently claimed that they will reduce emissions, control the conditions under which their suppliers produce, publish elaborate reports, or provide child minders for working women. Organisations are challenged to fulfil these expectations on their own. In this paper, we claim that in organisations, responsibility should be assigned to all parts of the network, including the stakeholders. Hence, organisations are not overstrained and stakeholders support what they have an interest in. Regarding innovation, stakeholders have to enter a dialogue with the organisation about their needs and wishes. They must announce their critique and their ideas and thereby help the organisation to develop successful products and services.

As such, organisations are responsible towards their stakeholders. Organisations should help to improve their stakeholders' quality of life by responding to their claims and wishes. This can be done if they use their core competency to meet the stakeholders' necessities. An insurance company, for example, is specialised in risk calculation and data collection. It is the company's expertise that creates a benefit for the customer and provides a competitive advantage for the company. It can,

for instance, use its knowledge and facilities to prevent catastrophes resulting from insufficient safety measures in areas traditionally hit by earthquake. If organisations use their core competency in this way, they can help to solve social problems efficiently because they contribute what they are best at. Addressing this responsibility, in turn, will enhance their sense of embeddedness and acceptance in society. The predominant addressees are current and potential stakeholders who are located all over the world. Organisations can help to improve their stakeholders' quality of life. These improvements may be of particular moral worth regarding those potential stakeholders who lack the resources to live a self-determined life, but this presumes that organisations anticipate the dimensions of development on the basis of a partnership with stakeholders. Partnership and cooperation will help to identify stakeholders' actual needs, leading to an optimisation of the innovative cost-benefit relation. The democratic account is propitious to fulfil organisations' responsibility since it meets precisely the stakeholders' needs

3. Innovation

3.1 New

So far we have seen how responsibility links in with modern organisations and their innovative behaviour. But what exactly is innovation? In this section, we will first explain the philosophical basis of newness per se, and then go on to outline the role of inventions and innovations in an organisational context.

The ancient Platonic dialogue of Meno serves very well to grasp the meaning of the term new. When Meno asks whether it is possible to teach virtues, Socrates responds: How can I tell you about the nature of virtues when I do not even know what they are? Or analogously: How can anyone tell about Meno's look, richness and courage who does not even know him? The essential question of the dialogue is: How could anything possibly be defined? More importantly for us: How can we search for something which is not yet defined (cf. Plato 370 BC: 70 A 1)?

The principal point illustrated by Plato's Meno Paradox is that we experience difficulties in handling things that are – in some way – unbeknown to us. On the one hand, there are things that we already have a clear concept of and that are thus not new. On the other, there are things that we are not aware of, i.e. genuinely new things. Since we do not even know whether the latter

exist, we are quite unable to make truly informed statements about them. Consequently, one might argue that there is no such thing as newness at all. So how can we talk about new things?

Fortunately, the issue is a good deal more complex. There is not only an epistemological categorisation about the term new, as there might also be things that we simply have not discovered yet. Therefore, it will be necessary to apply a second distinction, an ontological one. Consider, as an overview, the following structure:

	UNBEKNOWN	KNOWN
EXISTENT	NOT DISCOVERED	OLD
NOT EXISTENT	NEW	EXPECTED

FIGURE 1: NEWNESS IN ONTOLOGICAL (EXISTENT/NOT EXISTENT) AND EPISTEMOLOGICAL (UNBEKNOWN/KNOWN) CATEGORIES (SOURCE: OWN SOURCE)

Let us start in the top right-hand corner. A mobile phone is both existent and well-known. It is old. An efficient solar-powered mobile phone is a well-known idea, but not yet existent (not successfully put into practice). It is expected. So, the bottom right-hand category shows that there must be something in between new and old, as does the top left-hand one. Some environmentally-friendly material for the next generation displays may well exist, but it has not yet been discovered by producers. The most radical concept of newness is represented by the bottom left-hand category. Naturally, there can be no concrete example for this type.

This proves that we do not have to commit ontological fallacies to find new things. Indeed, with the above table, we can develop a precise idea of how to search for the new. The modified structure with its four categories indicates that there is no need to look for old things, and we cannot look for something that we do not know. However, there are also two areas in between: First, we can search for technologies to produce, for instance, a solar-powered mobile phone, since we have a clear idea of the outcome. Second, we can search for material for our new mobile display, since we are convinced that it exists but we simply have not discovered it yet. It is by such means that mankind has continuously progressed.

Let us go on and consider an example of technological advance. "The horse doesn't eat cucumber salad" (Selger 1997) – When Johann Phillip Reis, in 1860, said these words into what may be called the first telephone, he had not found something new right away. In fact, Reis used

these rather odd words to prove that he and his colleagues had not agreed in advance on what they were going to say. The telephone did not simply pop up as something radically new. Reis had been frustrated with the inability to communicate over distance and, inspired by his frustration, he had conceived of an idea to solve the problem. His concept of the new challenge was precise enough to develop a technology to solve it. As a last step, Reis put this technology into practice.

People have often searched in such systematic ways for challenges and improvements. One of the earliest and most prominent examples is probably the wheel and wheeled vehicles. With advancing technologies, the complexity of new things grew. One might find that many of today's new things are created in a generic manner: First, we find ourselves a new challenge or a new focus (e.g. travelling to the moon). Second, we address this challenge with a new product or a service (e.g. a spaceship). This distinction between the challenge and the solution is of great importance, and we will later argue that in commercial innovation processes, both steps can benefit from external input and expertise, improving an organisation's interaction with stakeholders. Beforehand, however, let us take a more detailed look at how new things are actually generated.

3.2 Creativity

Creativity is defined as the process or activity of finding and inventing new things. The term may refer to a problem, a process, a person, or a product. In either case, a reference person or society must show a certain attention to the new. For if it did not, creativity would become a trivial process – one may dispute the worth of abstract art but it certainly is something creative, whereas a handshake to a stranger is merely an action that has never occurred before (cf. Schmidinger 2008: 12f.). Thus, creativity seems to be somewhat significant to our society, but in what way exactly?

As argued, creativity is the presupposition of non-trivial change. And change, in turn, is a presupposition of improvements. However, creativity can only produce advances if an audience appreciates the creation. This applies in particular to contexts involving competition: It is vital for political parties to appear distinctive and remain attractive for the electorate, and it is vital for companies to offer innovative devices and services to maintain a competitive advantage.

Unfortunately, as Gavin Peter Swann put it, "there are no rules for creativity, or if there are, nobody knows what they are" (Swann 2009: 25). Of course, there are scores of methods of creativity (e.g. brainstorming, mind maps). Additionally, there are, concepts to increase the creative potential of an organisation such as flat hierarchies, payment incentives, or further training. However, such

measures as such still do not guarantee successful creativity. Often enough, it is mere spontaneous, coincidental combinations of people, knowledge, and contexts that generate outstanding creativity, which would be impossible to rearrange purposely. One particular insight, however, is crucial for our argument: The outcome of a creative process will generally tend to be more successful the more people are involved in it, for the simple reason that, quantitatively, more input is given. Moreover, it will tend to be more relevant if the individuals participating in the process are the same ones that constitute the eventual target group of the innovative product or service, as their internal needs and wishes may be expressed at an early stage. In this way, organisations benefit from large creative networks (cf. Swann 2009: 147).

3.3 Innovation

Leonardo da Vinci's helicopter was a great invention. But it was no innovation as it was not put into practise. In the most simple terms, an innovation is the successful implementation of new ideas. An invention, on the contrary, refers to ideas, sketches, or theoretical models for products and processes. If such a new idea is then commercially applied, it is called an innovation. Inventions are mainly generated by research departments, whereas innovations are nearer to the market and thus evolve from development departments.

Innovation allows a company to offer revolutionary, unique products and services. The key role in a market economy is played by pioneer entrepreneurs who constantly search for new combinations of production factors. Since the pioneer company gains monopoly profits, other companies are encouraged to imitate the product and join the market. Jospeh Alois Schumpeter (1883 - 1950) observed that it is

> "[t]he process of industrial mutation that incessantly revolutionises the economic structure from within, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism" (Schumpeter 1942: 82).

Schumpeter's main implication for organisations is that innovation "must become in even greater measures the internal concern of one and the same economic body" (Schumpeter 1911: 67). This

is decisive for the company to rise or fall economically and socially. In the course of our argument, we will interpret this need for innovation in a more comprehensive sense.

3.4 Open Innovation

In an age of internet-based communication, growing flexibility, and geographically expanding knowledge, classical R&D departments must reshape. In contrast to traditional innovation processes, Open Innovation systematically involves people from outside the organisation in two principal senses: First, innovations developed inside the organisation can be used for sale, spin-offs, and start-ups (Inside-Out-Process). Second, innovations developed outside the organisation can be transferred inside for further application (Outside-In-Process). Besides these main categories, there are, of course, hybrid forms such as co-creation. James Chesbrough, who has significantly shaped the concept of Open Innovation, defines it as a "paradigm that assumes that companies can and should use external ideas as well as internal ideas, and internal and external paths to market […]" (Chesbrough 2006: xxiv). It is, in particular, the Outside-In-Process, which is relevant to our argument.

The Open Innovation paradigm contemplates the end of knowledge monopolies, as universities, start-up companies, and individual innovators become important cooperators for organisations that want to keep up with the speed of the market. They must integrate outside expertise, because it entails an enormous source of inspiration and accelerates the innovation process. The Open Innovation paradigm also reduces costs for internal trainings and lifelong employment, as the organisation can access external knowledge precisely where it is needed. However, and despite that, Chesbrough suggests that an internal R&D department remains significant for filling in the missing pieces that are not externally developed (cf. Chesbrough 2006: 49ff.), as well as being responsible for bundling and managing external knowledge.

It is interesting to look somewhat closer at the source of benefits that Open Innovation incorporates. Generally speaking, one may say that groups develop an incredible dynamic of intelligence, knowledge, and innovative capacity. An example: In 1906, Francis Galton made a surprising observation: He went to a local cattle market and watched people guessing a bullock's weight in a competition. The arithmetic average of roughly 800 guesses deviated by only 0.8 per cent from the actual value. Galton concluded that there must be something like an intelligence of

the group. As one might expect, this procedure easily works for simple tasks, but it also has certain relevance for more complex tasks.[2]

In 1994, as one of the pioneers to write on this topic, French scholar Pierre Lévy published his work Collective Intelligence: Mankind's Emerging World in Cyberspace. Here, he discovered remarkably early – considering that the origins of the World Wide Web were only in 1991 – that human intelligence can be stimulated through interconnection and collaboration on a computer-based system. Back then, it was only a small group of scholars and publicists such as Douglas Hofstadter, Peter Russel, Francis Heylighen and Howard Bloom who pointed at the significance of collective intelligence in computer science and other fields. Ten years later, however, in 2001, one of the most prominent projects of collective intelligence was established: Wikipedia. Ever since, global corporations have copied or adopted the concept into their business model – consider, for instance, Apple's AppStore.

Another expert in this field, James Surowiecki, the author (2004) of The Wisdom of the Crowds, is of the opinion that there are four important principles to collective intelligence: Diversity, Decentralisation, Independence, and Aggregation. Consider, again, Wikipedia as an example: Its contributors are diverse, they live in different places, and they work independently. Furthermore, the Wikipedia website supplies a suitable method to aggregate the input, whereby knowledge is accumulated. This is precisely what Open Innovation does: Organisations incorporate diverse, decentralised solutions from independent innovators and bundle the solutions. In fact, for many corporations, Open Innovation is an upcoming paradigm.

4. Open Innovation Responsibility

4.1 The Concept of Open Innovation Responsibility

In this section we present our paradigm of Open Innovation Responsibility. We would like to sensitise our readership to innovations that entail more than economic advantages. For an explanation, consider again the example of Wikipedia: The Wikipedia project involves more than the mere accumulation of knowledge. Instead, by enabling free and open access to knowledge, Wikipedia

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2   Physicist Norman L. Johnson found that individuals did worse at escaping a computer simulated labyrinth than they would have done with combined knowledge (cf. Surowiecki 2004: 27).

creates social welfare. For example, this is a big advantage for schools in rural areas. Furthermore, as everyone is free to write on Wikipedia, the website demonstrates freedom of speech – a fortune for inhibited members of political oppositions.

When Jimmy Wales founded Wikipedia there was one thing he had understood long before others: No organisation is fast and wise enough to respond to all its clients' demands. Thus, it can be potentially helpful to integrate these clients, in order to accelerate solution development processes and respond more accurately to their demands. In the case of Wikipedia, this is achieved by its open and user-optimised writing and editing facilities with the result that, today, no encyclopedia is faster or more precise.

However, this principle is not restricted to the information technology sector. Organisations in other industries are similarly impacted by clients' demands for individualisation and personal adaptation of products. Common demands have also changed towards ecologically and socially responsible solutions. At the same time, organisations' reciprocal influence on society and culture has increased, which has resulted in a new market environment with a stronger interplay between actors. Hence, innovation can nowadays no longer be an exclusively internal process of R&D departments. In this respect, Open Innovation Responsibility (OIR) goes even one step further, as its core idea is to provide a structure that encourages beneficial innovations, resulting in a greater number of social innovators.

> Open Innovation Responsibility is the paradigm to provide institutional structures which encourage beneficial and truly useful innovations.

"But why should we pay attention to societal utility?" Schumpeter might ask. Would we not thereby restrict our perspective to customers' demands as the primary objective of a successful organisation?

Society rewards companies that apply their knowledge and power to help the underprivileged and the environment (cf. Waddock/Graves 1998: 304). In order to gain customers' rewards with social focuses, authenticity is crucial. Consider this example: A bank is less authentic in donating food and medicine than in establishing a microcredit system. Credit is, after all, the core business of a bank, and the microcredit is an innovative and feasible modification of it, as the bank will receive economic value from a new client. Moreover, the already existing customers enhance their loyalty to the bank as they reward socially beneficent actions. At the same time, the client may both improve his economic status as well as upgrade his quality of life. Thus, the example shows

that Open Innovation Responsibility is no simply philanthropic behaviour. Rather, at the same time that it recommends that organisations concentrate their help on what they are best at, it is also a call on organisations to act responsibly as part of their innovative business strategy and to generate economic value together with social utility (cf. Prahalad 2005: 5).

This so-called doing good by doing well attracts both stakeholders and shareholders. Evidence of this may be found when considering investors' preferences for sustainability, employees' motivations, or customers' preferences for supporting an honourable company (cf. Mackey/Mackey/Barney 2007: 828).

In conclusion, the concept of Open Innovation Responsibility provides the organisation with a chance to innovatively develop responsible products in an open network of demanders and creators. Its advantages are an incredibly fast innovation chain, the establishment of new markets, financial profit for corporations, and a high common value for society. As long as poverty determines the lives of people all over the world, these people are not seen as potential customers. However, we believe that Open Innovation Responsibility bears the potential to change this by integrating their needs and ideas: It may open the door to a 5 billion person target group, and will additionally provide a feeling good by doing good personal motivation for investors, inventors, managers and employees.

4.2 The Market at the Bottom of the Pyramid

As an example of the utility of Open Innovation Responsibility, we mentioned the potential capture of a 5 billion person target group. This market will evolve as soon as organisations start focusing on "unexpected" targets such as "poor people". Since "poor people" is no decent term, Coimbatore Krishnarao Prahalad (2005) has introduced the term "people from the Bottom of the Pyramid (BOP)". The bottom of the pyramid refers to 80% of humanity (5.5 billion people) living on less than $10 a day (cf. World Bank 2008: 16). However, is it plausible at all to regard them as prospective customers? Can they afford high-quality products?[3] Will they reward innovativeness and buy the product? Will they grasp the need for innovation and engage in Open Innovation?

Today, 76% of the world's consumption is created by the 20% who are the richest people (cf. World Bank 2008: 3). Hence, these 1.3 billion are the prime target group of most corporations. Here, the margins are high, the turnover is good, and the distribution is easy due to a well-developed

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3   Calculated with Purchasing Power Parity.

business infrastructure. Furthermore, people in developed countries are wealthy enough to consume more than they need for their basic living conditions. Thus, it is unsurprisingly especially food, pharmacy, software, and consumer-electronic industries concentrate on such wealthy customers, also due to high innovation costs for their products.

Why are people from the BOP not seen as a target group? Let us discuss two stereotypes: Firstly, managers underestimate the BOP's purchasing power. Secondly, they have the wrong image of the BOP market infrastructure (e.g. internet access, transportation), and thus worry about product distribution.[4]

Undoubtedly, no one living on $10 a day will buy a mobile phone from Apple, and someone with a daily income below $5 will even have to restrict his purchases exclusively to food and basic needs BOP people are thus more likely to invest in products they consider as absolutely necessary. However, once their demands are understood and organisations start regarding BOP people as "customers", the market will reveal its potential dimension: 5 billion people, representing 80% of the world's population, with an approximate purchasing power of $11.6 trillion (cf. World Bank 2008: 16). Moreover, the market of the BOP includes 29 of the 35 fastest-growing economies in the world (cf. Dow Jones List Emerging Markets May 2010). Taking these facts into account, the purchasing power of the BOP market becomes immensely attractive and can seise corporate profit.

The second prejudice among managers about a potential market at the BOP is that distribution is complicated and the infrastructure, especially in rural areas, may not be sufficiently established. In fact, however, organisations can make use of the present spirit of commerce and of an uncountable number of micro-businesses. This entrepreneurship attitude might lead to the development of distribution networks. One example may be seen in the Coca Cola Company's distribution network which is responsible for selling 1 billion beverages daily in more than 200 countries, and reaching even the smallest villages. So apparently there is indeed a way to establish lucrative distributive structures in BOP countries: Coca Cola sells and serves at shops that are nonetheless integrated into the communities. Furthermore, they produce in a decentralised fashion and close to their customers, as the use of exclusive retailers or flagship stores may not be attractive. In addition, many BOP cultures are very communicative, which bears the potential that they will participate in stakeholder dialogues (cf. Fuglesang 1973: 48). Here lies a clue for services and customer relation programs. No doubt, the worldwide coverage of internet access to ensure communication is only a matter of time.

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4   For a more detailed discussion about general assumptions towards the BOP, see recommend Prahalad (2005).

The central idea of Open Innovation Responsibility is to engage interaction between stakeholders regardless of their financial status, acknowledging their necessities and ideas, in order to start searching for solutions and to thereby (ultimately) create corporate and social profit.

4.3 The Value of Open Innovation Responsibility at the BOP

The charm of Open Innovation is its democratic approach: People can participate in the innovation process and benefit in return. It is important to direct people's attention to the worldwide developer community. Motivation may come from financial benefits, the social impact, or the respect paid in open software communities. From a moral perspective, Open Innovation has at least three advantages: Firstly, the organisation is given a better chance to identify morally relevant innovations from a broader range of stakeholders (e.g. BOPs). Secondly, a greater number of solutions will thus be at hand, and thirdly, the organisation can exercise its power to subsidise specific ethical solutions and prevent immoral solutions. This is a potent tool for organisations that consider Open Innovation Responsibility, as through these subsidies, developers are encouraged to create social-value-innovations, which will again attract customers.

Let us illustrate this process with an example: Indian pupils usually have to complete their homework after sunset because they must help at family businesses. Imagine that one child submits her problem as a challenge to the platform. There, her idea is discovered by a Finnish light engineer who has no competency in software engineering, but who has an idea about how to use a mobile's display as a source of light. Thus, he uses his knowledge of energy saving techniques: After having explained his idea on the platform, a software developer in the community gets involved and writes the application "Ambition-Light". The product can now be sold on a market – comparable to Apple's AppStore – at an affordable price, perhaps 2 rupees.[5] Selling the application in this way to several millions pupils would eventually generate an extraordinary profit and a social value to many pupils.

But why sell the application at such cheap price? On the AppStore, those applications sell at $0.99 and more. Of course, for 45 rupees, no Indian child in the BOP target group could afford to buy the product. But the engineers have good reasons to sell it at a cheap price: Firstly, they acknowledge their responsibility, especially towards BOPs. Secondly, they will have the prospect of a much larger customer base by offering it at a lower price. Thirdly, the customers will tend to be

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5   2 rupees equal $0.033 US / $1 ≈ 60 rupees (08/2014)

more loyal to such an organisation, because the product is socially responsible and utile. Fourthly, many humans have a philanthropic attitude: They will feel better for creating a light application for Indian pupils than for programming the same application to help drunken dentists' kids finding the keyhole at night. Even though the latter example is admittedly quite polemic, only a marginal number of iPhone users use the "Ambition-Light" App sincerely, i.e. to do their studies under bad lighting conditions. Most of the applications on the AppStore are "nice to have"-products for credit-card owners.

To conclude, one may thus say that, in order to succeed in BOP markets, corporations need utile and socially useful products that BOP customers will regard as upgrades of their personal quality of life. Open Innovation is the cheapest way for a corporation to invent these products, as, in this way, extensive market research costs may be saved. Eventually, this will result in positive price effects, leading to lower fixed costs of innovation. The savings may then be reinvested in subsidies and platform support.

5. Best Practise of Open Innovation Responsibility

5.1 ITC and its e-Choupal

The concept of OIR is promising and has already been realised with great success. The ITC group is an Indian corporation with a market capitalisation of about $4 billion. Their business segments are hotels, paperboards, packaging, agribusiness, packaged food, and more. In particular, ITC has developed a network of small online information desks, called e-Choupals. At the moment, there are about 2,000 e-Choupals whose services are available to a million farmers in nearly 11,000 villages across four states. Each e-Choupal is operated by a local farmer who is trusted by the local population. Their computers are easy to use and allow internet access for up-to-the-minute global market prices, agricultural issues, and e-mail communication. This innovation helps to overcome significant inefficiencies of the traditional crop trading system: For example, the time farmers spend at their local market place can be reduced and the weighing of the crop can be simplified. Both sides benefit economically and socially (cf. Prahalad 2005: 319ff.).

Economic Benefits (Farmer)

▪ Better information and information timing: Real-time prices are available via the e-Choupal. Normally, if a farmer travels to a market place, an indicative price is not available before his arrival; the final price of the transaction is not known until the auction is completed, i.e. until a time at which there is no backing out of the auction. Also, the farmer can gain information about the local weather, which enables him to adjust the seed time or yield. Furthermore, he can send e-mails to address questions to ITC employees about optimising soil usage.

▪ No transportation costs: ITC pays a compensation fee to the farmer for the transportation of his crop to ITC's nearest collection point, which is normally closer than the next market place. Also, ITC is planning to establish collection points in a 25 mile radius of every village, which could e.g. be a location of ITC itself or a cooperating warehouse.

▪ Shorter transaction duration: The farmers are used to travelling long distances to the next market place. Frequently, this takes them several days and they have to be patient until they receive their payment. By contrast, selling to ITC takes an average of only a few hours.

▪ Weighting accuracy: The traditional manual scales on the markets are often inaccurate and can easily be manipulated. Moreover, the crop is first bagged and then the bags are weighed separately so that errors may accumulate over the entire weighing process. Weighing at ITC is impartial, as the crop is weighed in its entirety at once by an electric weighbridge.

Social Benefits (Farmer)

▪ Dignity: The farmer is treated like a customer. The provision of service conveys a feeling of respect.

▪ Problem solution: The farmer has a personal contact to address his particular needs and ask for specific solutions. ITC responds individually, providing him with knowledge about agricultural issues.

Economic Benefits (ITC)

▪ The e-Choupal system reduces inefficiencies: The traditional system involves several middlemen, such as commission agents who judge and buy the crop at the market and sell it afterwards to companies, or workers at the market who pack the crop and may spill some of it intentionally as they are allowed to gather such crops and sell them at the end of the day. These practices cause inefficiencies, which the e-Choupal system reduces to a minimum: ITC directly employs commission agents so that costs of intermediation can be cut and bagging is rendered unnecessary.

▪ Lower transportation costs: Transportation costs are reduced, due to the cutback of intermediate commission. ITC directly collects the crops from ITC collection points and pays a compensation fee to farmers, which is only half the amount they had to pay in the traditional system to self-employed commission agents.

▪ Increase in quality: Since farmers learn about quality differences and respective rewards, they start valuing it. Moreover, manipulation such as the blending of crops is reduced.

▪ Security in supplying and planning: The e-Choupals enable ITC to enter into long-term relationships to the farmers so that they gain supply security over time. The information ITC receives from the network allows to better plan out future operations.

▪ Having established an efficient infrastructure through e-Choupals, ITC is now able to distribute other goods and services such as fertilisers.

▪ Farmers can initiate innovations through the network.

Social Benefits (ITC)

▪ ITC improves its customer care.
▪ The organisation enjoys the reputation of being transparent and trustworthy.
▪ The employees feel good for supporting the farmers (feeling good by doing good).

5.2 Other Open Innovation Networks and Responsible Initiatives

While there is, in fact, a rapidly growing number of Open Innovation communities, only a few of them have developed a sound responsibility-based approach. In general, two types should be

distinguished: On the one hand, there are organisations that launch their own corporate platforms, via websites such as pioneering-innovation.com (BMW AG), ideastorm.com (Dell Inc.), mystarbucksidea.force.com (Starbucks Corporation), or tchibo-ideas.de (Tchibo AG). On the other hand, a handful of open networks have emerged, primarily in the US that include crowdspirit.com, innocentive.com, ideaconnection.com, ideawicket.com, atizo.com, spigit.com, and incuby.com.

One particular example that emphasises a responsible business concept is betavine.com, a Vodafone-powered innovation network that connects people's creativity and technical knowledge. Here, users can programme applications and submit them as solutions to featured challenges. The network particularly encourages solving social challenges in developing countries via Social Exchange. The site was established in October 2009 and has successfully grown in size and membership since then. The website has already brought up some impressive solutions such as micro-lending systems, up-to-the-minute weather forecasts for local farmers, or educational films about HIV that can be circulated via mobile phones. In addition, offline initiatives experience growing popularity, too. Here, two approaches shall be more closely reviewed. Both are examples for responsible innovation.

INNOCOPE

A group of German authors have developed INNOCOPE (Innovating through consumer integrated product development). The project involves a multistage workshop system and specific evaluation processes. In contrast to traditional methods of customer involvement, their concept is not limited to a one-way knowledge transfer. Real customers interact with firms' representatives from general management, R&D, marketing, and sales in a series of at least three workshops. The creators found that personal, repeated interaction is far more beneficial than the analysis of survey questionnaires. In particular, INNOCOPE facilitates discussions related to corporate responsibility such as environmental issues. The project hereby achieves sustainability as customers tend to claim long-term needs, and will also increase customer retention. With respect to innovation responsibility, INNOCOPE can be regarded as a useful tool involving personal interaction rather than digital communication. It will therefore be particularly relevant for local businesses or small segments (cf. Hoffmann et al. 2008).

JUVI

An Austrian business ethics organisation has launched the innovation responsibility programme JUVI ("Jugend" [Youth], "Verantwortung" [Responsibility], "Innovation" [Innovation]). It enables intensive cooperation between companies and schools on innovation topics. Outstanding pupils are invited to work at R&D departments of local companies for one week. They develop ideas and solutions, in which special attention is paid social and ecological responsibility. In particular, they focus on future generations' interests, and company representatives have been amased at the quality and thoughtfulness of pupils' ideas and continue to work on their proposals. At the same time, the pupils gain an excellent insight. With these results, the initiators experience a real win-win situation. Once again, this tool seems suitable for small segments or local cooperations.

6. Open Innovation Responsibility and Nokia

6.1 The Foundations of an Open Innovation Responsibility Platform

With over 4.5 million members, the Nokia Forum is a promising platform that allows customers to develop applications and distribute them via OVI store. Additionally, the Ideas Project website allows to present inventions via blogs or videos, and the Nokia Research Center is a sophisticated service for interaction with universities.[6] However, Nokia has not yet successfully implemented external crowd sourcing as a genuine paradigm of innovation, nor has it sufficiently integrated and unified its various platforms. Therefore, we recommend that Nokia include stakeholders systematically and build up user-friendly and uniform facilities for Open Innovation. We will refer to and discuss such facilities as Open Innovation Responsibility Platform (OIRP) in the following section.

The proposed tool will allow stakeholders to express their needs whilst innovators (i.e. programmers and developers from within and outside Nokia) can freely engage in the innovation process. For Nokia, OIRP will ensure well-suited innovations, greater stakeholder retention and an authentic way of fulfilling corporate responsibility. How exactly can this work?

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6   For further information visit: forum.nokia.com, ideasproject.com and research.nokia.com.

The basic idea is that people from all over the world submit their demands, claims, and ideas to an online platform provided by Nokia. They start up projects open to innovators, which sets off a process of solution thinking. Projects will be open to comments and stakeholders' votes. As soon as a solution has been developed, it will be checked for malfunction and immoral content. Subsequently, it will be offered on the platform for purchase. Nokia may then decide to subsidise specific projects. In this respect, the value that stakeholders assign certain projects (i.e. through sharing the demand or submitting solutions) indicates their potential. Generally speaking, the platform will thus become an efficient, socially responsible marketplace for virtually any kind of innovation, ranging from thoughtful solutions to intelligent applications.

6.2 Managing the Open Innovation Responsibility Platform

Nokia's activities will be limited to a minimum: First, Nokia provides a platform. Second, Nokia reviews the ideas and withdraws immoral content from the innovation process. Third, it guarantees that a sufficient account of stakeholders' interests is represented. Fourth, Nokia, without raising charges, provides all required source codes and offers technical support. Fifth, Nokia implements a payment scheme for external innovators with special incentives for socially relevant challenges.

These activities correspond to a number of thorough implementation policies. First, the platform must be strictly reduced to functionality: Unbureaucratic, free access, easy interaction features as well as compatibility with all Nokia devices are decisive factors for a successful platform with growth potential. Second, an integrity policy must secure that solutions do not contain immoral content. Accordingly, we advise forming a taskforce of ethic consultants, R&D experts, and corporate communications.[7] Third, we propose the establishment of a comprehensive dialogue between stakeholders. Apart from formal stakeholder conferences, local Nokia shopkeepers can be worthy cooperators, especially for BOP countries. Fourth, Nokia must not charge innovators, as barriers for innovators to OIRP must be reduced to a minimum. This also includes free access to all relevant source codes. Fifth, we propose that innovators be rewarded with a reasonable share of the profits made from their solution. Fixed sums may be combined with success-related incentives. In this respect, Nokia will receive a small share, which should, however, be reinvested in socially

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7   All solutions submitted should be checked individually before Nokia offers them to its customers. Solutions must not be discriminative, racist, violent, or similarly unacceptable.

beneficial innovations in order to support the programme in the long run. Of course, these are first proposals and open for modification.

7. *The Win-Win-Constellation of Open Innovation Responsibility*

7.1 *The Win of Open Innovation Responsibility for the Organisation*

Entrepreneurial engagement in social responsibility will not be effective in the long run without sustainable profits. Profitability is an essential condition for any corporate responsibility concept. This is satisfied by OIR, for in contrast to traditional philanthropic conduct or donations, OIR takes corporate responsibility to a more advanced level.

As explained above (3.2), there is a large BOP market. Local growth opportunities can create an enduring spiral of demand for products and services, leading to more production and higher income, which then again leads to an increase in demand. It will be crucial to get organisations involved with these prospects. According to our model financial investors will be attracted to sustainable developing markets, as social markets, like those created via an Open Innovation Responsibility Platform, tend to be sustainable (cf. Mackey/Mackey/Barney 2007: 828). In addition, OIR will not only accelerate an organisational innovation process, but it will also ensure that solutions precisely meet actual customers' needs Moreover, with the help of a large developer community, the organisation will gain more flexibility in responding to consumers' expectations.

In order to make products accessible to BOP customers, they need to be reasonably priced and of good quality. This may be achieved through OIR because it is an efficient innovation technique to design and ameliorate products: Using people's inspiration and creativity saves internal R&D budgets. The only prices to be paid by the organisation are subsidies for responsible innovations and the costs for platform support. As a result, the organisation's reputation will be positively affected, which will strengthen customer retention.

7.2 *The Win of Open Innovation Responsibility for Society*

51 of the 100 world's wealthiest entities are companies (cf. Anderson/Cavanagh 2000: 3). "Given bold and responsible leadership from the private sector and civil society organisations, I have no

doubt that the elimination of poverty and derivation is possible by 2020" (Prahalad 2005: 112), argues Prahalad, who holds the view that corporations have a strong impact on economic and social development. There are numerous reasons to concur with his claim.

Firstly, multinational corporations entering BOP markets often enjoy great respect. They are perceived as more reliable than local governments. In this respect, consider, for instance, the extreme corruption existing in many BOP countries such as Bangladesh, Mexico, or China (Transparency International 2009: 399-401), which makes a corporation's entering such a seemingly hostile environment appear all the more courageous and admirable.

Secondly, another remarkable improvement for BOP customers is that they receive an identity[8] and the possibility to communicate with unknown people. Participating in a global developer community widens their cultural horizon and stimulates their problem solving abilities. Furthermore, on the platform they will be listened to, with foreign people becoming more sensitive to the problems BOP customers have to face.

Thirdly, offering them a wider range of products increases their quality of life. They will gain more freedom of choice as the product variety increases. Moreover, if a wider range of products is available, special products niches are more likely to be filled. Take, for instance, goods such as those for people suffering from lactose intolerance.

Most importantly, however, BOP people see progress in their lives. They can upgrade their daily living conditions. Consider, for example, a farmer receiving up-to-date weather forecasts or information on wheat prices: he will be enabled to work more efficiently now, while raising his financial resources. He and his entire family will profit from this, increasing their quality of life.[9]

8.   Concluding Remarks

In this paper we have argued that organisations should open up their innovation processes to a broad stakeholder community, and have based this argument upon relevant economic and philosophical terms and concepts. In our main argument, we have shown that it is both socially responsible and

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8   Many BOP customers do not even possess an electoral card or any other ID card. Giving them a nickname means a first step in creating an identity.

9   There are many more effects that could be mentioned demonstrating a corporation's influence towards development, such as emancipation issues, knowledge expansion or the reduction of corruption (cf. Prahalad 2005: 77, 105ff.).

economically beneficial to allow stakeholders to engage in innovation. In particular with regard to BOP markets, organisations have the capacity to solve severe social problems by using their core competency. At the same time, they gain market shares in rapidly expanding economies. Opening innovation allows for an efficient response to actual needs, as global innovators will complement traditional R&D activity and increase the organisation's flexibility. Thus, we have proposed a platform tool, which allows for vivid interaction between stakeholders, whilst letting the organisation act as a mediator and booster of social responsibility. We have concluded our argument with specific implementation details for Nokia and an overview of the win-win situation.

Without a doubt, truly innovative organisations inevitably face the rapidly changing business environment. However, they will be unable to cope with the speed and richness of progress unless they engage in genuine listening and collaboration. Apple's AppStore featured more than 200,000 applications in June 2010 and Google's Android Market has grown to offer some 100,000 applications within only one year from its foundation (Spehr 2010). However, none of the Open Innovation strategies has yet paid enough attention to how organisations can create alternative target markets. We have suggested the BOP as one major addressee and have explained how Nokia could engage in responsible Open Innovation. Nonetheless, OIR is not limited to developing countries or the communication sector. Its core idea could serve various other functions: accumulation of knowledge in medical treatment of widely spread diseases (e.g. HIV), improvements of product life-cycles and development of environmentally-responsible strategies (e.g. recycling and multiple usage of consumer electronics), techniques for revealing corruption, or in terms of internal application, improving organisational culture. This said, there are virtually no limits to the application of OIR. It is a promising concept, which – while it may result in quantitatively more innovations – will certainly generate qualitatively better ones which are more open and responsible.

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Emotional
Identity

THE
CORPORATE NETWORK

Emotional Identity

Enhancing Customer Experience Through Emotional Involvement

Anna Hofmann, Julius W. Habenschuss, and Yannick Sonnenberg

This paper explains the concept of Emotional Identity. Emotional Identity is related to products and services in the premium sector of consumer markets of industrialised countries. This identity is derived from the reciprocal communication process between customer, product and producer. Taking Karl Marx' analysis of capitalistic societies into account and employing the theories of George Herbert Mead and Axel Honneth, a theoretical definition of product identity will be developed. Within this concept, purchase decisions are analysed with respect to the implicit and unconscious mechanisms leading to intense customer experiences. Thereafter, insights into the analysis are merged into a concept of marketing as reciprocal communication with respect to cultural codes. It is outlined how companies should establish and communicate an authentic emotional identity to derive a competitive advantage and increase sales figures. To conclude, the cultural, psychological and economic limitations of the concept of Emotional Identity are discussed, and its impacts on modern marketing, advertising and sales are outlined.

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1. Introduction

Since the Industrial Revolution and especially since World War Two, globalisation has led to immense possibilities for trading products and services. Due to growing net incomes, increasing standards of living and progressing individualisation, the demand for customer-oriented services and made-to-measure consumer products has vastly increased and has become a highly profitable global opportunity for companies. The high-tech services and products we consider subjects of an "Emotional Identity" (EID) are developing at a fast pace and threaten the old-fashioned way of doing profitable business, which simply scaled supply-chain costs and sales figures. They even threaten to make firms that have been outperforming others over decades disappear overnight. But since these high-end goods are priced well above their utility value, there is huge revenue to be gained when applying the findings of EID within this dog-eat-dog, ever-changing world of consumer goods. To define EID, a theoretical approach to the term will be developed and implications and practical advice will be given that show how those findings can be applied to management decisions. In order to be able to define EID, it will first be necessary to take a more detailed look at the definition of the term identity. In the course of this inquiry, one needs to be concerned with three crucial questions:

1. How is reality perceived, i.e. which ontological approach underlies human perception? Do individuals experience the world as unaffectionate observers or affectionate participants, and how do they perceive subjects and objects in interaction processes?
2. Is there any fundamental difference between subjects and objects, i.e. does one have reason to hold on to the "Subject-Object-Dualism" of modern philosophy? How does this influence the way one perceives products and their EID?
3. How does identity emerge or develop? Is it a genuine feature of humankind? Do individuals acquire it through interaction and communication?

In part two of this article, those questions will be answered in order to lay the theoretical groundwork for this paper. To this end, a descriptive theory is developed, explaining how purchase decisions depend on the emotionally perceived performance of product, brand and company. It will be shown that products (as objects) should no longer be viewed as categorically different from subjects, since they have an EID and are therefore, according to the latest findings of social

behaviourism, important parts of the customer's identity. EID is understood as the unique selling proposition of a product, which the customer treats as if it had an identity in order to meet his emotional needs and fill emotional gaps. This identity emerges from the on-going communication process between the customer, the product and the company with the implicit goal of creating a joint emotional value. Part three of this paper will present practical implications of the theoretical thoughts presented in part two. It will apply the conclusions of part two to the relationships between consumers, products and companies. We will analyse the emotional components constituting EID that lead to longstanding positive customer experiences, which, in turn, creates significantly higher margins. For this purpose, the latter section of part three will focus on practical advice necessary to establish an EID. To explicate a concept of emotional branding, we will explain how an EID can be developed and supported by the company in an on-going exchange with their customers. Finally, in the fourth part, there will be a critical discussion about the constraints of this model from cultural, theoretical and operational perspectives.

2. A Theoretical Approach to Identity in Social Philosophy and Sociology

2.1 The Ontological Approach

Simultaneously with the increase in labour division, specialisation and globalisation during the last century, customer behaviour has fundamentally changed. This shift in brand perception is the crucial hypothesis underlying this article. To substantiate this hypothesis and to lay the ground-work for further analysis, one has to take a look at the history of the relations between products, producers and consumers in capitalistic societies during the 20th and 21st century. Karl Marx took a sociological and philosophical approach to this relation in his work "Capital". Here, Marx pointed out that the Industrial Revolution and the overall turnaround of methods of production and consumption had led to a shift in the common understanding of labour (cf. Marx 1983: 85). Moreover, Marx stated that due to the expansion of capitalism, accompanied by the division of labour, prices had become completely detached from the production process. Since the workers who are consumers at the same time, were no longer able to identify the real utility value of a product, they were easily forced to pay fictional prices on capitalistic markets. Retrospectively, consumers justify the exaggerated prices with all social variables that might have occurred in the

process of producing and exchanging the product. With such rather abstract prices, the economic paradigm of rationality to maximise profits became increasingly important. Being transferred from the exchange of products to the exchange of favours, the paradigm even started to invade people's private lives as they started to view all their social relations according to their exchange value (cf. Lukács 1968: 276).

Marx claimed that capitalism and the monetised exchange of goods had tremendously changed the way human beings interact[1] and the way they relate to the subjects and objects constituting their environment (cf. Marx 1983: 85). According to Marx, they had started viewing and treating the subjects surrounding them as mere objects, a change of perception called reification. When conceived as an object, everything and everyone could be viewed as an investment or good with a certain usability and exchange value. This process has been outlined not only in Marxian theory but also in various other theories which developed during the first half of the 20th century.[2] Some authors claim that, due to this process, people miss out on the genuine value of interaction and tend to become cold, unaffectionate and calculating observers (cf. Lukács 1968: 257). However, the interpretation of the process of reification largely depends on the ontological approach taken by the observer and the above-mentioned conclusion is not undisputed.

Since there are several different ontological approaches that try to explain how humans perceive their environment, their fellow beings and objects, this question should not be taken lightly. Most economic approaches claim that humans perceive the world in a purely rational way, interacting with everything around them in an unaffectionate manner. However, it is far more likely that people look at the world not as neutral observers but as affected participants, interested in the world and driven by an emotional need to interact (cf. Honneth 2005: 36; cf. Habermas 1984: 353). According to Axel Honneth, who models his term of "Anerkennung", German for acknowledgement (Honneth 2005: 41) in analogy to Heidegger's "Sorge", German for concern[3] (Heidegger 1967: 57), humans are naturally concerned with their interactions with their environment, as it are these interactions that allow them to form an identity[4]. Seeing the world as a network of identity-generating interaction

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1   For further reading about Marxian theory and especially the commodity fetishism whereupon the concept of reification relies, the authors recommend (Lohmann 1991: Section. 5).

2   The term reification appears in works of G. Lukács, J. Dewey and M. Heidegger. Scholars of the critical school have used similar concepts relying on the sociological approach of the Marxian theory; for further reading: M. Horkheimer, T. W. Adorno & J. Habermas.

3   For further reading, compare also Dreyfuss 1991: Section. 4

4   In Theories of Social Behaviourism, interaction is regarded as the essential process of identity development. Compare Section. 2.2.

processes about which they care, humans are surely neither cold nor unaffectionate nor calculating, but affected, affectionate participants driven by the strong emotional need to interact.

Since objects as well as subjects are part of the interaction process by which humans experience the world and themselves, a rigorous differentiation between the two categories is no longer appropriate (cf. Honneth 2005: 41). There is no reason to uphold the Subject-Object-Dualism of modern philosophy any longer. Objects and subjects are part of the same category of entities humans interact with. To the individual, the environment occurs as a set of practical relations. For example, the way a Porsche is driven is just as much a form of interaction between the driver and the world – in terms of revealing his attitude towards the world – as a chat between the driver and his colleague would be. For the individual interacting with the world through driving and communication, these two actions are not categorically different but are both interactions with entities that are part of his environment. As interactions with the surrounding entities are crucial for his identity, he will be genuinely concerned with them. Therefore, under the ontological premise that the world is accessible to the individual in the light of its practical significance, there is no categorical difference between subjects and objects (cf. Honneth 2005: 40ff.).

How do these findings influence the way one perceives products and their EID? Having abandoned the Subject-Object-Dualism, it can be assumed that interaction processes between products and customers are analogous to interaction processes between human beings. Therefore, many emotional features of interpersonal relations can now be applied to consumer-product-relations. These findings also open up a whole range of new vistas on how brands' and products' emotional identity can be created in order to satisfy customers' desires.

Concerning the problem of reification, one needs to question whether the expanding capitalistic rationale really influences humans to such an extent that they become completely unaffectionate, as claimed by Marx and Lukács (cf. Honneth 2005: 19ff.). Taking the Marxian hypothesis that capitalism and the exchange logics have influenced the relationship between the customer (subject) and the product (object) (cf. Marx 1983: 80ff.) for granted, the conclusions we draw from it concerning the degree and the manner of its influence of people's reactions still depend on our ontological approach. Assuming that humans generally have an affectionate and genuinely interested disposition towards the world, the notion of individuals becoming unaffected, calculating agents is rather implausible. Individuals do internalise the rational exchange paradigm but when applying it to their social interactions, they use it to optimise all their relationships (to subjects and objects equally) with respect to emotional and affective satisfaction. As the capitalistic paradigm

of maximising exchange value is linked to a genuinely interested and affectionate approach to the world, the degree to which people treat objects in an emotional way increases.

We have now answered question one and two raised in the introduction. The shift in the relation between products (objects) and consumers (subjects) is due to the individuals' transfer of the paradigm of economic rationality to their private life. But instead of becoming unaffectionate and calculating in their relationships with subjects, the more individuals tend to become more affectionate in their relationships with objects, e.g. products, the more they act in accordance with the rational paradigm of economic exchange throughout all their relations and interactions. They develop their identity by means of their interactions with both subjects and objects and therefore, many emotional features of interpersonal relations can now be applied to consumer-product-relations. Now we can take a closer look at the third question and analyse how exactly identity emerges. This is an important step in being able to explain how products can have an EID. Customers value products not just in a rational way, by defining their value as the sum of their single components, but also an unconscious, emotional way, influenced by their perception of the product's design, smell and taste. Depending on their upbringing and socialisation, customers try to fit products into their social schemes and communicate their way of living and even their moral beliefs through them. To derive a complete picture of EID, we will take a closer look at the processes of perception and socialisation as factors involved in the emergence of identity.

2.2 Symbolic Interaction, Acknowledgement and Identity

There are various concepts in philosophy, psychology and sociology to define identity. All these concepts describe the emergence of identity from different points of view and with different emphasis on the individual and its social environment, i.e. the subjects and objects it interacts with. Due to the process of reification and the ontological approach that sees interactions between subjects and objects as similar to interactions between subjects, consumers' interaction with products (objects) can contain just as many emotions as those with humans (subjects). Therefore, we can assume that a product's identity, in analogy to an individual's identity, is created through the consumers' interactions with the product (cf. Dewey 2003: 117). We will hence present insights from Social Behaviourism according to George Herbert Mead and John Dewey. They show that identity is neither a stable entity nor is its existence an a priori, but instead is defined, created and revised constantly through acts of communication and anticipation.

"Inner consciousness is socially organised by the importation of the social organisation of the outer world" (Mead 1912: 406). According to Mead, identity is built on a reflective mind, which arises through the individual's ability to speak and to take on roles. The first part of his theory is devoted to language as the ability to pose vocal gestures towards other individuals so that those individuals perceive them in the way the speaker intends. To give an example, when shouting "Stop!" towards someone on the street, the person addressed is very likely to actually stop on his way, just as the one shouting intends him to, because the meaning of "stop" is closely correlated to the concept of slowing down for all individuals in this society.

> "The critical importance of language in the development of human experience lies
> in this fact that the stimulus is one that can react upon the speaking individual
> as it reacts upon the other" (Mead 1934: 69).

As individuals grow up, they become aware of this reflexive power of language and start to take over roles in simple forms of role-playing games, e.g. little girls play mother and child with their dolls very early on. Thereby, they do not only anticipate their role, but also the expectations of the corresponding partner. Mead defines the process of identity building as a process of "symbolic interaction" between one person and a property of his called the "generalised other" (Mead 1934). This property is acquired through the above-mentioned role-playing games as well as team sports during which individuals are required to learn how to anticipate not only the responses of specific others, but also the behaviour associated with each of the positions on the field. These responses and behaviours are then internalised, and individuals come to view their own behaviour from the perspective of a system of organised actions and expectations as a whole, i.e. the "generalised other". This generalised other consists of the following characteristics: emotional allocation, permanent interaction and an imbalance of power, all of which are essential characteristics of objects, e.g. products as well.

> "The organised community or social group which gives to the individual his
> unity of self may be called 'the generalised other'. The attitude of the generalised
> other is the attitude of the whole community. Thus, for example, in the case
> of such a social group as a ball team, the team is the generalised other in so far

as it enters—as an organised process or social activity—into the experience of
any one of the individual members of it" (Mead 1934: 154).

The individuals' capability to themselves from the perspective of the generalised other is the most important feature of Mead's analysis. Along with the reflective ability of speaking, it is the major capability enabling individuals to build an identity that is unique as well as social as in playing along with the rules of society, the expectations of the other individuals and their reflective interpretations of the latter.

Let us now apply these results to the customer-product-relation in order to better understand their impact on the concept of EID: Of course, products can neither talk nor can they take over roles or reflect the abstract interpretations of a social surrounding, i.e. consider a generalised other. But one should take into account that according to Mead, human beings, when coming to an individual's attention for the first time, are in the beginning perceived as objects and are attributed with an identity by the observing individual's mind only when they interact with him or other individuals. Taking into account the ontological approach outlined in section 2.1 annihilating the Subject-Object-Dualism, one needs to acknowledge that, in their manners of communicating and interacting, many objects and products actually meet the criterion of the generalised other and support the customer's perception. Therefore, one could imagine that products can go through a similar process of identity development as subjects. In practice, the interaction processes concerning products are carried out by the respective company. However, as the consumer attributes them to the product, he is unable to distinguish between the product's and the company's identity. This phenomenon is due to the on-going process of alienation between producer, product and consumer and is further intensified by the accelerating international division of labour as well as by extensive marketing and cultural branding. The consumer attributes all communicational aspects which in some way or the other refer to the product, i.e. the properties perceived by the senses, as well as those connected to the company and the brand, i.e. advertisement, CSR, social networking, etc., to the product. From the consumer's perspective, his perception of the product is the result of direct communication between himself and the product (the company's perspective will be outlined in part three). Individuals even tend to expand the bonds of social interaction to such extent that they no longer confuse social relationships with exchanging processes, but vice versa: they identify with the products they interact with. This phenomenon is called an anthropomorphic fallacy and emerged from the alienation process of the Industrial Revolution, which caused the reification

described earlier. This process has developed to a point at which people name their cars and tend to confuse the generalised other (in Mead's theory, only persons or groups can form a generalised other) with the communication paths used in interactions with companies and their products. To summarise, people confuse the possession of things and their exchange with their "anthropogenic interactions". Products, therefore, get mistaken for a form of interacting subject and becomes humanised. As Mead put it: "We see the objects as we will handle them" (Mead 1938: 104).

The theory of symbolic interaction provides the ability to point out the importance of communication, language and interaction, whereas it is not able to give satisfactory reason why the concept of intersubjectivity should be limited to human beings (cf. Lüdtke 2010; Knorr-Cetina 1998). Instead, one can have intense relationships fulfilling all criteria of a symbolic interaction with animals and objects as well. Recently, Bruno Latour has made a point of demanding that scientists overcome the Subject-Object-Dualism and handle objects and subjects equally (cf. Latour 1988; 2005), especially in cases where the correlation between the product and the consumer is so close and the web-based abilities of interaction are so dense that astonishing parallels between the daily communication with products and with other individuals can be found. Therefore, under the premises we have outlined in section 2.1, one can consider objects to have some form of identity as long as the customers interact with them by using the pattern of the generalised other.

2.3 Identity, Emotions and the Significance of the Unconscious

Since this article's goal is to help companies creating a product one can equip with an EID, we now need to make the step from theory to praxis. What role can emotions play in people's identity and what role do emotions play when it comes to brand perception and sales figures? According to Freud's modern psychology and additionally supported by neuroscientists and neuroeconomists, the impact of the rational part of our decision making process, something Freud called "I" or "me", is greatly overrated and most of our decisions are based on simple atavistic behaviours (cf. Damásio 1995: 40ff.) which rely on basic emotional and unconscious mechanisms, called "it" or "id" (Freud 1989: Bd. 3).[5] The constant fight against those emotional and unconscious mechanisms shapes the rational part of the individual's identity as it tries to play along with the rules of society, state and economy. The individual usually tries to satisfy its emotional needs without acting against

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5   For further reading and recent research compare (2010).

the rules or morals it grew up with. One of the few ways to do so is to try and fulfil these needs in the compensatory world of consumerism by purchasing goods, because when making a purchase, the greatest part of the decision making process relies on those implicit emotional mechanisms, and as purchase is morally unobjectionable, it is a safe way of satisfying those needs without the risk of breaking the rules. As those emotional needs and mechanisms seem to have an enormous implicit power on purchase decisions, the analysis of those underlying aspects of decision making has to be the first step in the process of creating an EID in practice.

3. Practical Implications on Branding and Strategic Management

3.1 The Emotional and the Unconscious

Before we can understand products as subjects, we need to understand what differentiates products from other objects. If consumers interact with objects which they already own, they no longer perceive them as products. On the other hand, one recognises objects as products if one potentially desires to own them. This expatiates the premise for the expression 'product'. For example, if one likes apples but not oranges, and one finds oneself in front of a market stand which sells apples and oranges, one will perceive the apples as products, as one potentially desires to buy them, whereas the oranges are perceived as mere objects. Since the stand will probably offer a whole range of apples, the customer needs to choose a specific type of apple. As almost any product is nowadays offered in various versions, the customer is constantly confronted with choice. Thus, a closer look at the way he chooses and on the reason underlying his desire to own seems to be essential.

The most obvious reasons for purchase decisions are physical needs like hunger and thirst. Although consumers in industrialised countries can easily satisfy these physical needs on their local markets, the analysis of this kind of needs can serve as an analogy to describe the fulfilment of more sophisticated goals. To exemplify this: One needs a car to get from A to B, a clock to be aware of time and a computer to have access to the Internet. These kinds of goals are called explicit goals. But when thinking about a car, people do not just decide whether to purchase any car, but rather they choose to purchase a specific one. Customers do not make this choice randomly: There are underlying aspects they may not be aware of, but which influence their choices. Neuropsychologists call these implicit goals or unconscious goals. In situations of concrete purchase decision,

the explicit goals constitute patterns of awareness, which preselect the range of desirable products. The fulfilment of explicit goals is recognised through the senses via culturally imprinted signals. This imprinting is formed by infantile experience. Until the age of seven, children acquire a basic understanding of the culture surrounding them, its language, social institutions and interactions. Each time children are confronted with an object, this experience forms the mental representation, visual images, mental constructs and social settings they will associate with this type of objects throughout their lives (cf. Williams/Huang/Bargh 2009). For example: In countries whose cuisine traditionally contains pudding, people know that they can eat pudding because they recognise the pudding from its visual appearance. The perception of an object leads the consumer to the relevance this object has for him. If a person only had the explicit goal to eat pudding, he would simply pick any random pudding.

After pre-selection, the implicit goals allow for an efficient final selection among the remaining products. Similar to the process described above, the fulfilment of implicit goals is recognised through the senses via cultural signals imprinted until the age of seven. Additional implicit goals are influenced or newly formed by the individual's experience within his peer groups throughout his or her life. Presumably, exposure to a person partly activates the goals these individuals value. For example, after reflecting upon someone in their lives – a best friend, parent, and so forth –, individuals are more likely to unconsciously pursue goals they associate with this person (cf. Fitzsimons/Bargh 2003). Using the pudding example, a more detailed look at the neuropsychological process underlying implicit goals can be taken. It has been proven that, as the brain uses the same parts to evaluate physical and psychological situations, the perception of physical and psychological characteristics are closely related (cf. Ijsermann/Semin 2009). The exemplary pudding is perceived to be nutritious both in a physical and psychological sense by someone who grew up in a family where pudding was served as comfort food. As one unconsciously associates its high nutritious value with maternal care, creamy pudding is chosen as comfort food and 'mood-brightener'. Moreover, the psychological and physical connections and their influence on implicit needs are not a one-way-street, but could on the contrary be compared to a Newton's cradle. As people associate warm drinks with social warmth, the partaking of warm drinks leads to more social warmth and vice versa; social warmth activates a desire to partake warm drinks (cf. Zhong/Leonardelli 2008). The scope of these findings is very large and they have far reaching consequences for companies concerning the fulfilment of explicit and implicit goals through products. Since customers are not consciously aware of their implicit goals, companies cannot find out about their customers'

implicit goals through classical customer surveys. Instead, they need a indepth understanding of the cultural codes related to their products, as it is cultural codes which allow for the matching of the products' features and the customer's implicit goals. The main signals products send to the customer need to match the customers' implicit goals. Credibility and trustworthiness of a company depend on whether the perceived performance of its product matches the ascribed promise to fulfil their implicit goals.

3.2 How to Create an EID

The EID of a product is traditionally formed by the brand's identity which consists of many different factors, including the public image of the company, the pictures the advertisements use for its products, and the perception of the social groups known to use or consume the product. The consumer associates the identity of the company with the brand, constructing something referred to as brand identity. Traditionally, companies have tried to manage their brand identity in a top to bottom style, resembling the way regimes use ideologies. Their marketing branch constructs a brand identity, then tries to convince the customer of it and seeks to prevent any interpretation of the brand other than its own. It tries to maintain the sovereignty of interpretation and avoids any outside influence through stakeholders. The company's role in a traditional marketing context is the role of a chief ideologist who defines the brand identity with its correct interpretation, and who chooses the brand's friends and picks its enemies. In the age of non-authoritarian beliefs, consumer empowerment and social media, consumers no longer accept being treated as if they were intellectually incapable. They demand to be taken seriously and treated as mature and intellectually capable beings who are free to express their opinion publicly on whatever subject they please. The buzz which emerged around a documentary produced by German public television (ARD and ZDF) about the WWF's purported cooperation with corporations like Monsanto[6] as well as the scandal which arose around Nestlé's usage of palm oil demonstrates the extent of this phenomenon. In both cases, the outrage spread via social media such as YouTube, Twitter and Facebook simultaneously and aggravated in the blogosphere. WWF reacted by employing a task-force of bloggers in an attempt to pour oil on troubled water, but instead, their "staged" blog posts exacerbated the outrage. A large number of WWF members quit their memberships. The

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6   For further reading: http://de.wikipedia.org/wiki/der_pakt_mit_dem_panda (accessed: 10.01.2014).

WWF took the makers of the documentary to court. Finally, the WWF published an extensive counterstatement[7] addressing all allegations raised in the documentary and producing numerous witnesses and proof restoring its credibility as far as possible. Nestlé, on the other hand, was confronted with a drastic clip highlighting the use of palm oil, some of which is produced on plantations which have been erected on territory which used to be part of the rainforest which is home to the last orang-utans. Nestlé had YouTube remove the viral clip, which depicted an office worker eating a KitKat chocolate bar that turned out to be an orang-utan finger with blood spilling over his desk. The attempt to protect its brand from damage resulted in a contrary effect: more copies of the video were added by several users in protest of the perceived censorship. Moreover, the company's attempt to prevent access to the video exasperated users and media reactions alike, drawing even more attention to the video.

In order to gain and keep consumers' recognition and sympathy, companies need to refrain from such paternalistic behaviour as "top-down marketing style" but should adopt participative marketing strategies and practices. Companies employing participative marketing strategies stop holding on to the sovereignty of brand interpretation. Instead, they encourage their stakeholders to participate collectively in the on-going process of identity construction implying the brand as well as the product. These collective processes resemble the emergence of cultures rather than ideologies. The company's role in these new marketing processes is the one of a host and moderator: initiating the communication process by setting the topic (advertisement), providing the platform where the interaction is supposed to take place (e.g. social media platform), inviting everyone to join the conversation about brand and product, answering questions (on the product, production process) and reconciling conflicts. The advertisement merely serves as an invitation, drawing the customer's attention to the product or brand. As he engages actively in the process, constructing the brand identity and therefore interacting voluntarily with the company, the so-called IKEA effect comes into play:

> "Labor enhances affection for its results. When people construct products
> themselves, from bookshelves to Build-a-Bears, they come to overvalue their
> (often poorly made) creations. This phenomenon is called the IKEA effect, in

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7   For further reading http://www.wwf.de/themen/huismann-kritik-pakt-mit-dem-panda-faktencheck/der-pakt-mit-dem-panda-im-faktencheck/ (accessed: 10.01.2014).

honor of the wildly successful Swedish manufacturer whose products typically arrive with some assembly required" (Norton 2009: 30).

As the consumer participates in the construction of the brand identity, one can assume that he develops some kind of sympathy for the brand as it becomes partly his own creation. He attributes it with his own implicit emotional desires and unconsciously sets his hopes in the company's products to be able to fulfil them later. An (admittedly extensive) example is the Facebook-App called "unserAller", which provides an interface for companies to hand over the complete product development for a single product to the customers. UnserAller organises the product development as a participative and democratic process. During each phase of product development, the participants can first make suggestions and in a second step vote for their favourite suggestion. Every company using this application needs to commit itself to producing the product exactly as it was created by the participants. Though only a few months old, unserAller can already look back on quite a few successes including a shower gel developed for the drugstore chain dm, a chocolate bar for Rittersport and a series of different mustard dips for the small mustard manufacturer Senf Mari[8].

3.3 Communicating an EID

If a company wants to communicate the authentic EID of a product it has to acknowledge that this is not just the subsequent process of introducing the identity to the customer, but an essential part of the identity building itself. It has been pointed out that the process of identity building cannot be based on technical features or any sensorial impression of the product alone, but has to be based on interaction. Therefore, interaction and communication have become a heterogeneous process and need to be understood as a form of interactive dialogue between company, product and customer. This process requires an explicit discussion of the Corporate Identity (CI) as well as the ability to perceive and analyse the expectations of the customers and their social surroundings. It also includes the process of identifying and influencing the customer's implicit goals to match them with the corporate goals and of course the product identity.

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8   For further reading: http://www.unseraller.de/ (accessed: 10.01.2014).
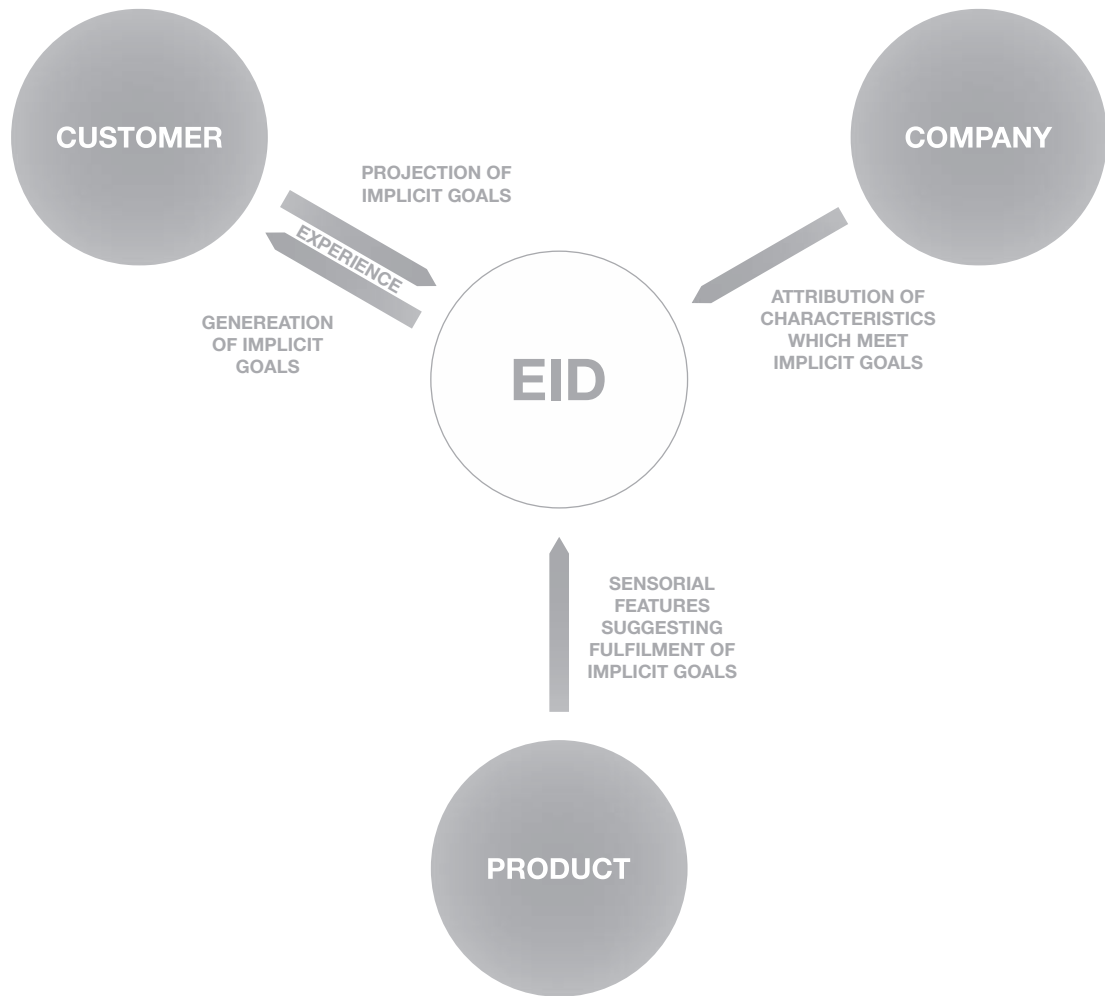
FIGURE 1: EMOTIONAL IDENTITY (OWN SOURCE)

Therefore, interaction and communication have become a heterogeneous process and need to be understood as a form of interactive dialogue between company, product and customer. This process requires an explicit discussion of the Corporate Identity (CI) as well as the ability to perceive and

analyse the expectations of the customers and their social surroundings. It also includes the process of identifying and influencing the customer's implicit goals to match them with the corporate goals and of course the product identity.

For companies to put this into practice can be a great challenge. But with the emergence of Web 2.0, most consumers in developed countries now enjoy the ability to interact with companies in real time. Feedback loops have become tighter and the process of identity building has become far more frequent than it was two decades ago. To use those significant improvements in communication, companies have to rethink their communication strategies to be recognised as authentic brands, as pointed out in the previous section. To understand marketing as a process of culture rather than ideology, the corporate identity has to be analysed with respect to hierarchies, organisational processes and communication structures to give rise to an emotional approach to identity building within the company. To communicate the visions and goals, which can lead to a successful hetero-hierarchic communication process between customers and developers, companies will have to rely on the crowd in their company to understand the specific functioning of social networks. Therefore, "Communities of Practice" and "Collaborative Knowledge Networks" are not only a possibility to leverage costs of "Customer Relationship Management" projects (Deloitte 2001: 12) but also an effective way of learning about the inside out communication process and the challenges companies face when trying to "build up" an EID.

4.   *Cultural Boarders and Emotional Identity*

As stated before, the participative development of an EID is understood as a reciprocal one, and is minted by authentic communication and the establishment of a marketing culture rather than an ideological top-down approach. In the sense of truly reciprocal communication, this may even include the loss of sovereignty of interpretation by the company. As long as the customer is involved in the process of shaping the EID during an open discourse, he will always attribute his preferences concerning morality, sustainability and purpose to the product he wants to communicate his identity with which reciprocally becomes part of the product identity. Hence, the process of sociality with products is not only a form of implicit marketing used by companies to shape the customers' identity and their preferences. In cases where the crowd-based reinterpretation of the product identity partly replaces the corporate identity, the EID can even become a Corporate Social

Responsibility instrument rather than another simple marketing tool. Concerning these aspects of implementation, the first point in understanding corporate identity as culture is in a holistic way. Since corporate identity refers to every single unit of the company, the culture has to consistently permeate marketing-related divisions as well as divisions that are not directly customer-related. It is not sufficient to understand the open character of the culture needed to evoke an EID in the sense of communication only. Rather, it is indispensable that an open culture becomes an essential and inherent part of a company's self-perception.

From a practical point of view, there could be unforeseen obstacles concerning the feasibility of a change from an ideological marketing approach to a cultural one. Employing a cultural approach to marketing and handing over parts of the sovereignty of interpretation from its brand to its customers will make it impossible for the company to transfer the EID attributed to their product from one group who co-created it to another one with different cultural backgrounds. More importantly, it has not yet been possible to verify whether the customers' perception of the brand's identity is elastic enough to allow for it to be perceived as authentic despite major changes. Especially the question whether the customers will acquiesce in an obviously radical change or whether they will hold on to their image of the brand as a "seducing selling machine" is yet to be answered. In order to become more popular, gain higher margins, and sell more, the company cannot singlehandedly rely on its ability to develop and communicate a more emotionally involving identity but rather has to gain credibility for its new brand identity by living up to the expectations it creates amongst its customers. Thus, being authentic depends on the customers' perception, not on the company's promise alone.

Furthermore, for a company trying to establish an EID, there is a risk of failure, whose consequences should not be underestimated. In cases in which, from a customer's point of view, the company's pledge to live up to the customers' expectation has not been fulfilled, returning to the old ideological marketing approach and claiming the complete sovereignty of interpretation for its brand seems to be the natural strategy from the company's point of view. In the eyes of the customers, however, a retreat and the drawback to complete sovereignty of interpretation equals a loss of face on the part of the company. Since customers have by then participated in the identity building process and have emotional involved themselves in this process by unconsciously setting their hopes on the brand and products, their reaction will imply their emotional involvement. In such a case, customers will therefore no longer be ready to pay for products, which are provided by companies stepping back from reciprocal communication. Additionally, they will not keep

quiet, but will mock the brand to a point where its reputation will be completely ruined, finally leading to an EID which evokes antipathy instead of sympathy. Although a very radical one, the best strategy in case of such a failure might be to replace the unpopular brand with a completely new one while simultaneously exchanging the management team to create the possibility of a total turn around and restart in culture and communication, instead of refurbishing the existing one, as it has been done unsuccessfully by British Petroleum (BP), just to give one example out of many. BP tried to evoke positive emotions amongst environmentally conscious customers by simply changing their advertising slogan to "Beyond Petroleum". The customer perception of the brand had recently practically hit rock bottom. After several oil spills and averages had ruined the company's image, in 2001 the management decided to change the company's advertising slogan. But since this change was neither backed by significant customer involvement nor accompanied by significant changes in BP's core business, this strategy resulted in the opposite effect. As the supply of non-regenerative energy remained BP's unchallenged core business and no visible steps were taken in the direction of renewable energies indicated by the new slogan, customers, NGOs and the international press made no secret of their disgust about what they felt was BP's direct lie to their faces. Since then, BP has spent millions on renewable energies in order to assure customers of the sincerity of the change of mindset symbolised by their advertising slogan, with almost sero success. Since the oil spills and tank ship damages have beaten them beyond the sero-point of positive reputation, BP has taken much more damage from its unauthentic rebranding campaign as it could possibly have imagined. YouTube videos and blogs are constantly making fun of the company's new advertising slogan and its outdated way of dealing with crises in the media (trying desperately to hold on to the sovereignty of interpretation). In 2008, BP was awarded the "Emerald Paintbrush" award, a satirical prise from Greenpeace UK in order to highlight its alleged green-washing campaign. Meanwhile, poll numbers and customer reputation have dropped far behind those of BP's archrival Shell. The customer and media outrage developed at such a fast pace and with such intensity that even the sum of $4.5 billion BP spent on regenerative energy projects did not save BP from becoming and remaining the company with the worst reputation within the industry. By the end of July 2010, independent BP station owners reported sales down 10 to 40 percent in the quarter after the Gulf oil spill. This example shows that a change of advertising slogan without a change of culture or customer involvement has no positive effect on an EID but may even be harmful. Apparently, when companies try to evoke emotional reactions using the hopes and goals of their customers, it is all or nothing.

In daily business, EID leads to the necessity of social media expertise in companies. The concept of marketing taught at universities so far equates to a one-way-street of putting any ideology out there while for high quality marketing the contrary is true: social media means communication, discourse and answering questions, being aware of critique as well as listening carefully to suggestions for product improvement. It also means opening up the company to customer participation, which is still very unusual among ordinary business. A discussion of the ethical implications of the concept of EID would be apposite but would go beyond the scope of this paper. Questions concerning the ethical aspects of implicit marketing and consumer persuasion should be the subject of further research. To conclude, one can state that the concept of EID is a new and additional approach which cannot replace regular marketing processes. Advertisement still serves as an invitation, drawing the customer's attention to the product and introducing potential desires to the customer. The concept of EID is a powerful tool to influence the customer's desire and the way the customer communicates this desire to a company. Therefore, we hope this concept will help managers to understand actual challenges in customer relationship management as well as the opportunities of social media. We do believe in this new world of direct communication and interaction as the future of branding. We hope that the inspirations drawn in this paper will enable marketing to forge new paths in order to better serve customers' needs and desires.

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**Values and Leadership
Efficiency Diagnosis**

THE
CORPORATE NETWORK

Nokia's Values and Leadership Efficiency Diagnosis

Jessica Hofmann, Pavel Mozhar, and Holger Quast

Corporate values can be used to provide guidance in complex situations and day-to-day work, and to support the integrity of employees. In this paper we will examine the connection between the four Nokia values, developed via a bottom-up strategy, and the Leadership Effectiveness Development produced by the consulting company 1492 GmbH. Our main intention is to link these two concepts and analyse the results. These results will help move us towards the development of a tool for optimising staffing, and thus Nokia's corporate performance. They will also enable us to offer general recommendations regarding the education and training needs of employees, as well as the adjustment of corporate values. However, this paper concentrates primarily on matching Nokia's values with 1492's corresponding leadership types.

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1. Introduction

The last decade has seen the implementation of more and more Codes of Conduct and Codes of Ethics by a wide variety of companies. In the U.S., this was largely the result of the 2002 Sarbanes-Oaxley Act, which granted sentence reductions to companies holding such codes if they should be charged with infringement, regardless of whether the code was implemented in daily work or not.

Corporate values represent another means to ensure a law-abiding corporate culture, though they rely on integrity rather than compliance. Yet corporate values are often seen ambiguously. On the one hand, they seem trivial and shallow, even non-binding and meaningless, presented as mere catchwords. On the other hand, corporate values can help establish and develop universal standards for a company, and offer assistance in the decision-making process. Of course, not every catalogue of values can provide such guidance, and the effects produced by corporate values may vary significantly depending on whether they were developed in a top-down or bottom-up manner.

Furthermore a continuous improvement process, like constantly elaborating on the definition of company values, a process is initiated which is crucial to the constant evolution of those values. In Nokia's case, the company chose to define its corporate values using a bottom-up strategy. These values were to serve as guidelines during Nokia's transformation into a network company. Yet are Nokia's Values mere catchwords? Do they have a practical meaning and provide guidance? Are they relevant to the company's actions and decision-making?

To answer these questions, we will first describe the four relevant Nokia Values as well as 1492's Leadership Effectiveness Development (LED) Model in its entirety. Thus, we will introduce and concretise two essential parts of our proposed programme. Second, we will introduce the underlying assumptions and methods which allow us to correlate LED soft skills with the Nokia Values. The results of this process will be presented in a number of diagrams and statements. This will also allow us to look for further development in our programme. However, the underlying objective of this paper is the development of a tool for optimising staffing and thereby for optimising Nokia's corporate performance. Accordingly, we will offer some general propositions about evaluating education and the training needs of employees as well as the adjustment of corporate values.

## 2.	Conceptual Basics

### 2.1	The Nokia Values

In 2007, Nokia organised 16 'Nokia Way Cafés', bringing together approximately 2,500 participating Nokia employees to discuss the renewal of the company's values. The idea of the 'Nokia Way Cafés' was based on the concept of the 'World Café', a workshop method which was designed to integrate high numbers of stakeholders in the processes of development and change. The basic idea behind the 'World Café' was to acquire collective knowledge and to profit from collective intelligence. It has often been used in the early conception phases of strategic reformation.[1] During a World Café workshop, participants meet in a relaxed atmosphere, in small, moderated, discussion rounds with alternating participants. The groups come together at tables with white paper tablecloths onto which they can write their ideas. After 15–30 minutes, the group members leave the table, while the moderator stays and welcomes a new group that resumes the thoughts of their predecessors. The workshop then ends with a reflection phase.

In May 2007, a 72-hour online discussion followed the 'Nokia Way Cafés', called the 'Nokia Way Jam'. About 13,000 Nokia employees registered, not only to talk about the new company values that had been developed in the course of the Nokia Way Cafés, but also to discuss future business strategies. Finally, as a first demonstration of the values 'in action', the company launched a photo competition aimed at taking pictures suited for communicating the new Nokia values. Over its entire course, the process of value development was accompanied by various internet applications such as video hubs, Wikis and blogs. They were designed to express and represent Nokia's collaborative company culture, and to nominate Nokia's new future profile as an internet company.

Finally, Nokia's efforts resulted in the development of four basic values: Engaging You, Achieving Together, Passion for Innovation and Very Human. Each of these values was backed up by a range of detailed descriptors (referred to below as subvalues) and a short interpretative description. Table 1 lists the four Nokia Values on the left, with the subvalues on the right, and the description below.[2]

1	For more information about the "World Café" see: www.theworldcafe.com.
2	For an analysis of Nokia's value development see: Schwörer/Waffenschmidt/Winke 2010:87-107.

ENGAGING YOU	DELIGHT
	UNDERSTAND AND EXPLORE
	TURN IT ON
	MAKE IT HAPPEN
	LIVE IT OUT

FOR US, 'ENGAGING YOU' INCORPORATES THE 'CUSTOMER SATISFACTION' VALUE AND DEALS WITH ENGAGING ALL OUR STAKEHOLDERS, INCLUDING EMPLOYEES, IN WHAT NOKIA STANDS FOR IN THE WORLD

ARCHIEVING TOGETHER	REACHT OUT
	SISU AND PERSEVERANCE
	CO-CREATION
	WILLINGNESS TO WIN
	RICH COMMUNICATION
	TRUST
	SHARE RESPONSIBILITY AND SUCCESS

'ACHIEVING TOGETHER' IS MORE THAN COLLABORATION AND PARTNERSHIP. AS WELL AS TRUST, IT INVOLVES SHARING, THE RIGHT MIND-SET AND WORKING IN FORMAL AND INFORMAL NETWORKS.

PASSION FOR INNOVATION	BE CURIOUS
	COURAGE
	FAST LEARNING
	LIVE YOUR DREAMS
	REINVENT YOUR DAY

'PASSION FOR INNOVATION' IS BASED ON A DESIRE WE HAVE TO LIVE OUR DREAMS, TO FIND OUR COURAGE AND MAKE THE LEAP INTO THE FUTURE THROUGH INNOVATION IN TECHNOLOGY, WAYS OF WORKING AND THROUGH UNDERSTANDING THE WORLD AROUND US.

VERY HUMAN	RESPECT
	CARE
	OPTIMISM
	SIMPLICITY
	JOY

BEING 'VERY HUMAN' ENCOMPASSES WHAT WE OFFER CUSTOMERS, HOW WE DO BUSINESS AND THE IMPACT OF OUR ACTIONS AND BEHAVIOUR ON PEOPLE AND THE ENVIRONMENT. IT IS ABOUT BEING VERY HUMAN IN THE WORLD – MAKING THINGS SIMPLE, RESPECTING AND CARING. IN SHORT, OUR DESIRE IS TO BE A VERY HUMAN COMPANY

TABLE 1: THE NOKIA VALUES (URL: WWW.NOKIA.COM, ACCESSED 10.01.2014)

Nokia's transformation process has been supported by 1492, an Austrian consulting company that specialises in change management. One of 1492's consulting tools, the 'Leadership Effectiveness Development', is the focus of this section. The Leadership Effectiveness Development was designed to reveal gaps and overlaps in relevant leadership characteristics, to enhance employees' skills, and to make them aware of their potential as well as their opportunities for improvement. The diagnosis is embedded within a transformation process and accompanied by a transformation coach.

1492 understands a 'leader' as a person in a position of authority over other people and resources, i.e. a person with a mandate to realise the full potential of the employees and resources under their supervision. 1492 believes that true leaders continuously develop their skills in order to enhance their sphere of influence in the most effective way.

The diagnosis takes into account both self-perception and perception by others. Participants must answer the questionnaire, evaluating their own performance; the questionnaire is then sent to five different rating groups: supervisor, colleague, internal customer, direct report and others. With the help of 15 opposing leadership attribute pairs, the participants are then given a rating. Additionally, two free text questions concerning their improvement opportunities must also be answered. This diagnosis leads to different levels of congruence in five leadership types: Expert, Coach, Strategist, Networker and Shaper. Those types are described as follows:

The Expert

Experts are those persons who have a profound knowledge of their field and match that knowledge with the skills and abilities to support others. They have the competence to answer questions in a clear and understandable manner, and are generous in imparting knowledge. Yet Experts cannot show their full potential in a quickly changing environment.

The Coach

Coaches build lasting relationships based on trustworthiness and honesty and can therefore help people to integrate. They take an observing, outside role, give feedback, support and help. Coaches need time to build relationships and can easily lose trust. They can promote people by standing

behind them, but as soon as others withdraw their confidence, that powerful position reverts to a merely observational role lacking the possibility of positive engagement and encouragement.

The Strategist

Strategists have a strategic vision of a goal matched with an understanding of how that goal can be achieved. They establish guidelines concerning interpersonal behaviour and goal attainment. Furthermore, Strategists act as a role model. They set reachable milestones on the way towards major objectives. Strategists passionately believe in their vision and build spirited teams. Yet their guidelines may lead to an operative overload. In their role as a guide, they must exude confidence, otherwise they may effectively lose their mandate and ability to give orientation.

The Networker

Networkers are open, communicative and motivating persons. They do not necessarily need to be a team leader or to initially contribute ideas, but they must be a good listener and capable of stepping in for somebody if necessary. Networkers are characterised by a natural sense of authority, charisma and self-discipline. They do not get involved in jealousy games or rivalries of any sort. Also, they will take responsibility for the allocation of tasks for different work phases, thus showing the ability to recognise both the strengths and weaknesses of team members. Networkers are not strong operational leaders, but rather mediators. Therefore, their leadership must be based on strong authenticity or seniority.

The Shaper

Shapers have the courage to leave their comfort zone. In order to promote improvements, advancements and changes they experiment and take risks. Although their actions may lead to failures or mistakes, they regard these mistakes as learning opportunities. Shapers take on all challenges, including rivalries, but reconcile easily and are not resentful. They do not accept tardiness, laziness, weak ideas or empty words. Promoting change, making strong decisions and the respective task orientation can be a burden on people. Thus, Shapers are not always well-liked by others. Yet they must exude self-confidence, even despite their own self-doubts.

3. Determination of Type-Value Profiles

3.1 Assumptions

In addition to the introduced conceptual basics, there are three crucial assumptions underlying this paper: First, we assume that Nokia employees really are familiar with the Nokia Values. This assumption is based, to a large extent, on the bottom-up way in which the values were formed (see section 2.2). Second, although there are five distinct LED-types (see section 2.1), we propose that real persons will always present as a mixture of two or more types; the actual appearance of pure LED-types is very unlikely.

The final assumption is the most crucial: We hold that there is a meaningful correlation between a specific value profile and each soft-skill type. As this assumption allows us to create links between both central components of our programme – LED-soft-skill types and the Nokia Values – it is worth explaining this point in further detail. Let us start with a less controversial point: Different duties have different ideal LED-types. Moreover, one can also assume that moral values can and should provide practical guidance. Therefore, we can assume the existence of an ideal value-profile for each LED-type. The following example illustrates the concept of this assumption.

Let us consider trustworthiness to be a common value, and compare these across two professions: a police officer and a cashier. Although the scope of their duties is different, it can be said that trustworthiness is an important social value for both the cashier and the police officer. However, for a police officer trustworthiness plays a different role than for the cashier. Without having an intrinsically distinct value of trustworthiness, a police officer will not able to act appropriately within the scope of his or her duties. As for the cashier, being trustworthy is not as vital, since trustworthy action can be provided for externally (e.g. by external accounting). In this way we can see how one value can attain quite a different significance depending on the scope of duties of the person involved and, thus, also for his or her profession.

3.2 Methods

1492's LED-typology is based on the premise that there are ideal profiles composed of different leadership types (see section 2.2) for different duties. Furthermore, we have argued in the preceding section that values vary in their importance depending on the particular duties and professions

NOKIA-VALUES   ENGAGING YOU   ACHIEVING TOGETHER   PASSION FOR INNOVATION   VERY HUMAN

SOFTSKILLES (1492)	DELIGHT	UNDERSTAND AND EXPLORE	TURN IT ON	MAKE IT HAPPEN	LIVE IT OUT	REACH OUT	SISU AND PERSERVANCE	CO-CREATION	WILLINGNESS TO WIN	RICH COMMUNICATION	TRUST	SHARE RESPONSIBILITY	BE CURIOS	COURAGE	FAST LEARNING	LIVE YOUR DREAMS	REINVENT YOUR DAY	RESPECT	CARE	OPTIMISM	SIMPLICITY	JOY
EXPERT																						
CLEAR SOCIAL — UNDERSTANDABLE		+						+		+											+	
CLEAR SOCIAL — UNCOMPLICATED			+					+													+	
CLEAR SOCIAL — CONCISE		+								+											+	
CLEAR SOCIAL — PRECISE		+								+											+	
COMPETENT BUSINESS — EXPERT KNOWLEDGE	+												+		+							
COMPETENT BUSINESS — CLEAR VALUE PROPOSITION																						
COMPETENT BUSINESS — SELF-CRITICAL																	+					
COMPETENT BUSINESS — SKILLED																						
SUPPORT EMOTIONAL — CONTRIBUTING								+														
SUPPORT EMOTIONAL — FACILIATING								+														
SUPPORT EMOTIONAL — ENABLING			+	+				+														
SUPPORT EMOTIONAL — GENEROUS								+				+										
STRATEGIST																						
STRATEGIC BUSINESS — BIG PICTURE							+									+	+					
STRATEGIC BUSINESS — WIDE SCOPE							+						+									
STRATEGIC BUSINESS — HOLISTIC																						
STRATEGIC BUSINESS — SUSTAINABLE							+															
TEAM SOCIAL — STRIVES FOR COMMON GOALS								+														
TEAM SOCIAL — COLLABORATIVE								+				+						+				
TEAM SOCIAL — COMPREHENSIVE								+														
TEAM SOCIAL — CAN DELEGATE								+		+	+	+										
STRUCTURED BUSINESS — METHODICAL			+	+																	+	
STRUCTURED BUSINESS — SYSTEMATIC							+														+	
STRUCTURED BUSINESS — ORDERLY							+														+	
STRUCTURED BUSINESS — CLEAR PRIORITIES									+												+	
COACH																						
INTEGRATING EMOTIONAL — INVITING						+				+	+											+
INTEGRATING EMOTIONAL — CONNECTING						+		+		+								+				
INTEGRATING EMOTIONAL — PROMOTING						+				+												
INTEGRATING EMOTIONAL — COMPREHENSIVE										+												
CLOSE EMOTIONAL — ENGAGING			+	+		+												+	+			
CLOSE EMOTIONAL — WARMHEARTED																		+				+
CLOSE EMOTIONAL — UNDERSTANDING										+								+	+			
CLOSE EMOTIONAL — SYMPATHETIC																		+	+			
FAIR EMOTIONAL — TRANSPARENT										+	+											
FAIR EMOTIONAL — HONEST										+	+							+				
FAIR EMOTIONAL — BALANCING										+									+			
FAIR EMOTIONAL — UPRIGHT										+	+							+				
FAIR EMOTIONAL — FRANK										+	+							+		+		
SHAPER																						
DECISIVE BUSINESS — SELF-RESPONSIBLE													+									
DECISIVE BUSINESS — FAST DECISION MAKING			+	+									+									
DECISIVE BUSINESS — SOLUTION FOCUSED			+	+																		
DECISIVE BUSINESS — ASSERTIVE			+	+		+		+					+		+							
CHANGE BUSINESS — PASSIONATE				+												+				+		
CHANGE BUSINESS — CREATIVE																	+					
CHANGE BUSINESS — EXCITED BY NEW THINGS	+		+										+		+							+
CHANGE BUSINESS — WILLING TO LEARN	+												+		+							
COURAGE SOCIAL — PRO-ACTIVE			+	+	+								+				+					
COURAGE SOCIAL — TAKES INITIATIVE			+	+									+									
COURAGE SOCIAL — RISK TAKING													+									
COURAGE SOCIAL — ADRESSES CONFLICTS													+									
NETWORKER																						
OPEN EMOTIONAL — COMMUNICATIVE						+				+												
OPEN EMOTIONAL — OPEN-MINDED		+				+							+									
OPEN EMOTIONAL — OUTGOING		+			+	+																
OPEN EMOTIONAL — INVITING						+																
MOTIVATING SOCIAL — INSPIRING			+			+				+							+					
MOTIVATING SOCIAL — CONVINCING			+	+		+												+	+	+	+	
MOTIVATING SOCIAL — CHARISMATIC										+						+		+	+			
MOTIVATING SOCIAL — SWEEPING			+	+		+			+	+										+		
AUTHENTIC EMOTIONAL — SELF-CONFIDENT				+			+															
AUTHENTIC EMOTIONAL — GENUINE							+			+								+			+	
AUTHENTIC EMOTIONAL — SINCERE										+								+				
AUTHENTIC EMOTIONAL — UNIQUE				+																		

TABLE 2: TYPE VALUE MATRIX (OWN SOURCE)

that must be performed; this also supports the assumption that specific ideal value profiles may be assigned to LED-types. In this section, we will illustrate how particular ideal value profiles may be developed, and will identify ideal value profiles for pure LED-types. Potentially, these profiles could, in a next step, be applied to mixed LED-profiles, though such a task is beyond the scope of this essay.

In order to determine optimal value profiles of singular LED-types we have matched Nokia Values and LED-types using the matrix shown in Table 2. We have used a twofold matching process: On the one hand, we match the four Nokia Values with the characteristic soft skills of the five LED-types in a rough, intuitive manner. If a value could be associated with a soft skill, this we indicate this using a darker cell colour. If more than one value could be matched with a soft skill, we use a brighter colour. On the other hand, we matched the subvalues in the same way with the
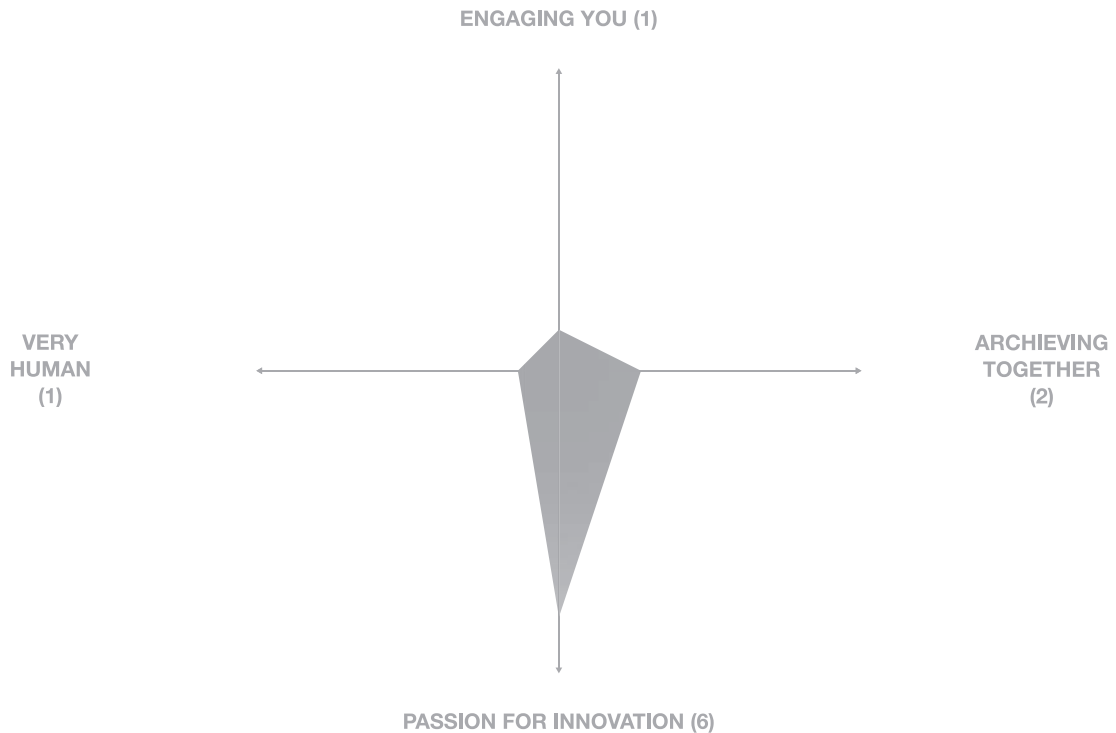

FIGURE 1: EXAMPLE OF A VALUE PROFILE (OWN SOURCE)

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descriptors of the characteristic soft skills of every LED-type, thereby going into more detail. Here, the fitting of two elements is indicated by a +. We made no differentiation for the level of fit; we accepted even weak associative fits. However, in our (subsequent) interpretation of the matrix we do take into account cases of very weak or strong associative fit. Although this approach is admittedly based on intuition, we can vouch for its reliability by engaging deeply with the interpretative content of Nokia Values and LED-types. As to the breadth of the study, the presented type-value-matrix is the result of 20 matrices filled out independently by different participants. In the following, we will refer to the matching of Nokia Values and LED-types as the macro-level approach, and to the matching of value descriptors and soft skills as the micro-level approach.

After discussing the differences and the common ground of the various resulting matrices, the single values are assigned a relative impact dependent on the respective LED-type. For this, a total of ten points is distributed for the values, with higher numbers indicating a higher influence for the respective LED-type. For reasons of clarity and readability, this distribution may be depicted in a coordinate system as shown in Figure 1.

Alternatively, value profiles will be described by 4-tuples of the weights assigned to the values in the following order: engaging you, achieving together, passion for innovation, very human. The sample profile shown in Figure 1 could then be rewritten as (1, 2, 6, 1).

Here, it should be noted that we have weighted the values rather than assign them absolute values. This is due to the fact that we are assuming characteristic values for particular LED-types and in particular positions, respectively, with reference to differing scopes of duties (see section 3.1). This essay does not aim to investigate the general effect of having a strong or weak value disposition but only to explore the effect of the value balance. Moreover, by employing a total of only ten points, the weights of the values are quite broad. Accordingly, it is not our objective to formulate unchangeable value profiles and claim exclusive correctness with respect to accuracy of fit, but rather to discover and investigate definite tendencies.

3.3 The Value Profiles

This section summarises the results of our interpretation of the type-value-matrix, and consists of two parts. In the first part, we present the resulting value profiles for each type. For each LED-type some additional explanations will be given regarding the procedure we used to determine the profile. The second part will present more general observations and criticisms.

SOFTSKILLES (1492)	NOKIA-VALUES		ENGAGING YOU				ACHIEVING TOGETHER							PASSION FOR INNOVATION					VERY HUMAN				
	DELIGHT	UNDERSTAND AND EXPLORE	TURN IT ON	MAKE IT HAPPEN	LIVE IT OUT	REACH OUT	SISU AND PERSERVANCE	CO-CREATION	WILLINGNESS TO WIN	RICH COMMUNICATION	TRUST	SHARE RESPONSIBILITY		BE CURIOS	COURAGE	FAST LEARNING	LIVE YOUR DREAMS	REINVENT YOUR DAY	RESPECT	CARE	OPTIMISM	SIMPLICITY	JOY
EXPERT																							
CLEAR SOCIAL — UNDERSTANDABLE		+						+		+												+	
CLEAR SOCIAL — UNCOMPLICATED			+					+														+	
CLEAR SOCIAL — CONCISE		+								+												+	
CLEAR SOCIAL — PRECISE		+								+												+	
COMPETENT BUSINESS — EXPERT KNOWLEDGE		+												+		+							
COMPETENT BUSINESS — CLEAR VALUE PROPOSITION																							
COMPETENT BUSINESS — SELF-CRITICAL																		+					
COMPETENT BUSINESS — SKILLED																							
SUPPORT EMOTIONAL — CONTRIBUTING								+															
SUPPORT EMOTIONAL — FACILIATING								+															
SUPPORT EMOTIONAL — ENABLING			+	+				+															
SUPPORT EMOTIONAL — GENEROUS								+				+											

TABLE 3: THE EXPERT TYPE VALUE MATRIX (OWN SOURCE)

ENGAGING YOU (2)

VERY HUMAN (1)

ARCHIEVING TOGETHER (6)

PASSION FOR INNOVATION (1)
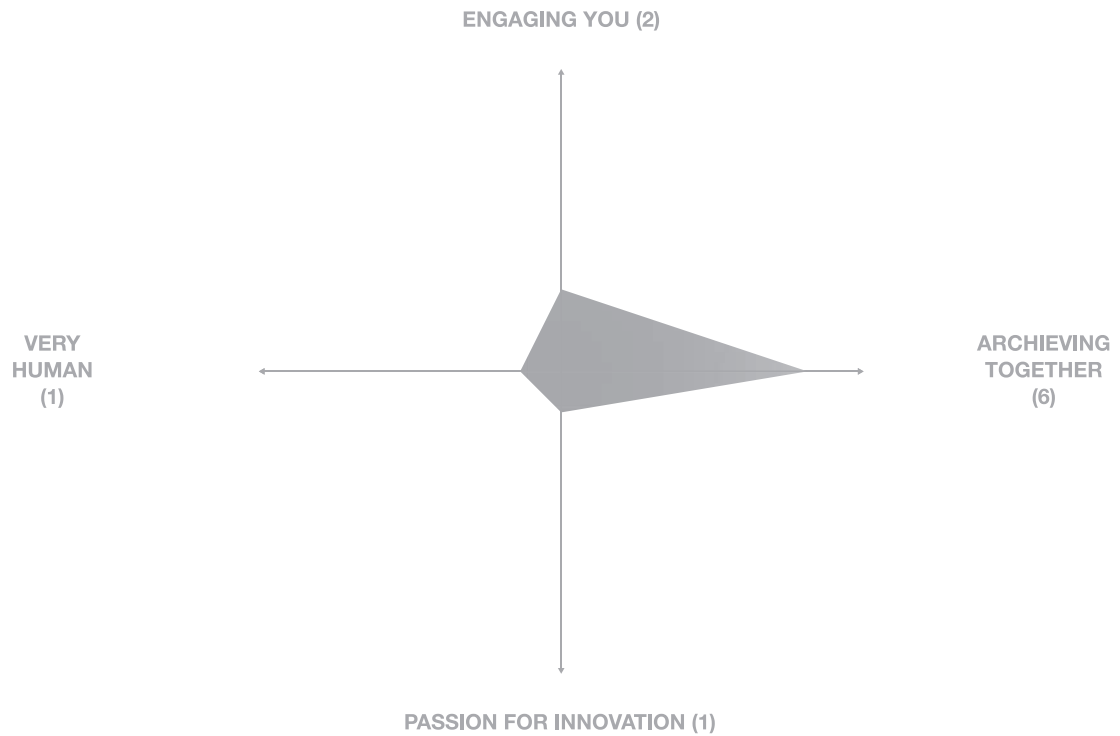
FIGURE 2: THE EXPERT'S VALUE PROFILE (OWN SOURCE)

SOFTSKILLES (1492)		DELIGHT	UNDERSTAND AND EXPLORE	TURN IT ON	MAKE IT HAPPEN	LIVE IT OUT	REACH OUT	SISU AND PERSERVANCE	CO-CREATION	WILLINGNESS TO WIN	RICH COMMUNICATION	TRUST	SHARE RESPONSIBILITY	BE CURIOS	COURAGE	FAST LEARNING	LIVE YOUR DREAMS	REINVENT YOUR DAY	RESPECT	CARE	OPTIMISM	SIMPLICITY	JOY
NOKIA-VALUES			**ENGAGING YOU**					**ACHIEVING TOGETHER**							**PASSION FOR INNOVATION**					**VERY HUMAN**			
STRATEGIST																							
STRATEGIC BUSINESS	BIG PICTURE							+									+	+					
	WIDE SCOPE							+						+									
	HOLISTIC																						
	SUSTAINABLE							+															
TEAM SOCIAL	STRIVES FOR COMMON GOALS								+														
	COLLABORATIVE								+				+						+				
	COMPREHENSIVE								+														
	CAN DELEGATE								+		+	+	+										
STRUCTURED BUSINESS	METHODICAL				+	+																+	
	SYSTEMATIC							+														+	
	ORDERLY							+														+	
	CLEAR PRIORITIES									+												+	

TABLE 4: THE STRATEGIST TYPE VALUE MATRIX (OWN SOURCE)

ENGAGING YOU (1)

VERY HUMAN (1)

ARCHIEVING TOGETHER (7)

PASSION FOR INNOVATION (1)
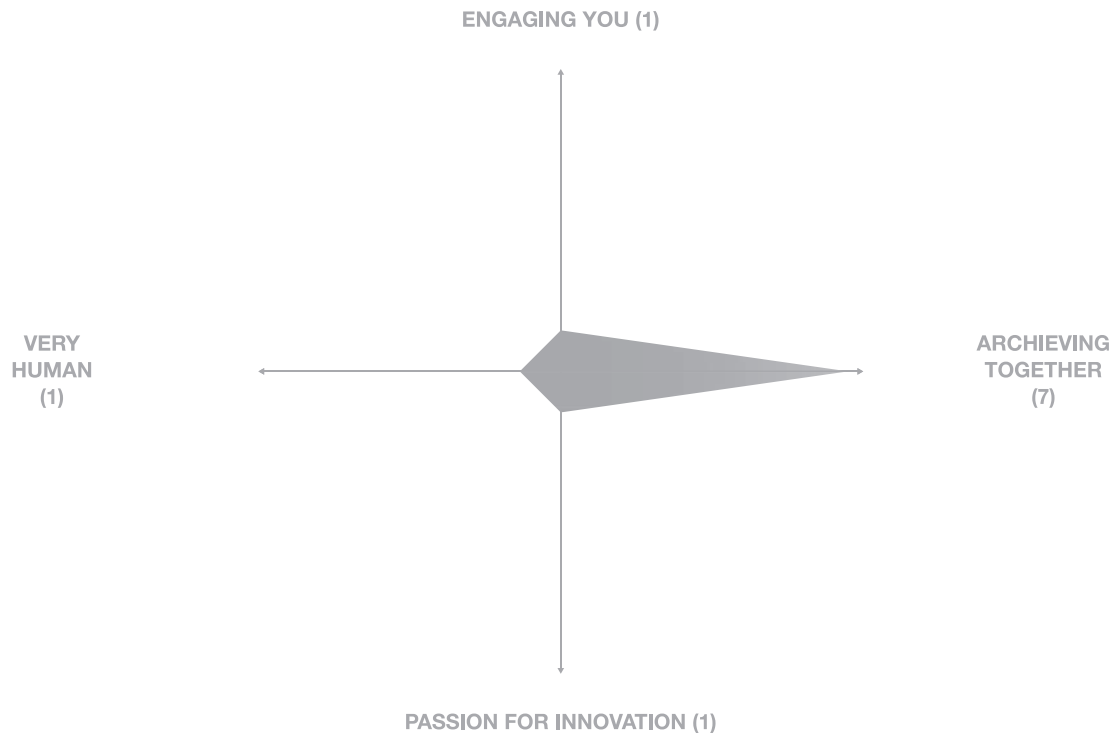
FIGURE 3: THE STRATEGIST'S VALUE PROFILE (OWN SOURCE)

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TABLE 5: THE COACH TYPE VALUE MATRIX (OWN SOURCE)

SOFTSKILLES (1492)		DELIGHT	UNDERSTAND AND EXPLORE	TURN IT ON	MAKE IT HAPPEN	LIVE IT OUT	REACH OUT	SISU AND PERSERVANCE	CO-CREATION	WILLINGNESS TO WIN	RICH COMMUNICATION	TRUST	SHARE RESPONSIBILITY	BE CURIOS	COURAGE	FAST LEARNING	LIVE YOUR DREAMS	REINVENT YOUR DAY	RESPECT	CARE	OPTIMISM	SIMPLICITY	JOY
				ENGAGING YOU					**ACHIEVING TOGETHER**						**PASSION FOR INNOVATION**					**VERY HUMAN**			
COACH																							
INTEGRATING EMOTIONAL	INVITING						+				+	+											+
	CONNECTING						+		+		+								+				
	PROMOTING						+				+												
	COMPREHENSIVE										+												
CLOSE EMOTIONAL	ENGAGING			+	+		+												+	+			
	WARMHEARTED																						+
	UNDERSTANDING										+								+	+			
	SYMPATHETIC																		+	+			
FAIR EMOTIONAL	TRANSPARENT										+	+											
	HONEST										+	+							+				
	BALANCING										+										+		
	UPRIGHT										+	+							+				
	FRANK										+	+							+			+	

FIGURE 4: THE COACH'S VALUE PROFILE (OWN SOURCE)

ENGAGING YOU (1)

VERY HUMAN (4)

ARCHIEVING TOGETHER (5)

PASSION FOR INNOVATION (0)

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TABLE 6: THE SHAPER TYPE VALUE MATRIX (OWN SOURCE)

SOFTSKILLES (1492)		NOKIA-VALUES	ENGAGING YOU					ACHIEVING TOGETHER							PASSION FOR INNOVATION					VERY HUMAN				
		DELIGHT	UNDERSTAND AND EXPLORE	TURN IT ON	MAKE IT HAPPEN	LIVE IT OUT	REACH OUT	SISU AND PERSERVANCE	CO-CREATION	WILLINGNESS TO WIN	RICH COMMUNICATION	TRUST	SHARE RESPONSIBILITY	BE CURIOS	COURAGE	FAST LEARNING	LIVE YOUR DREAMS	REINVENT YOUR DAY	RESPECT	CARE	OPTIMISM	SIMPLICITY	JOY
SHAPER																							
DECISIVE BUSINESS	SELF-RESPONSIBLE													+									
	FAST DECISION MAKING			+	+									+									
	SOLUTION FOCUSED			+	+																		
	ASSERTIVE			+	+			+		+				+		+							
CHANGE BUSINESS	PASSIONATE					+										+					+		
	CREATIVE																+						
	EXCITED BY NEW THINGS		+	+										+		+							+
	WILLING TO LEARN		+											+		+							
COURAGE SOCIAL	PRO-ACTIVE			+	+	+								+			+						
	TAKES INITIATIVE			+	+									+									
	RISK TAKING													+									
	ADRESSES CONFLICTS													+									

ENGAGING YOU (5)

VERY HUMAN (0)

ARCHIEVING TOGETHER (0)

PASSION FOR INNOVATION (5)

FIGURE 5: THE SHAPER'S VALUE PROFILE (OWN SOURCE)

Columns grouped under NOKIA-VALUES categories: ENGAGING YOU, ACHIEVING TOGETHER, PASSION FOR INNOVATION, VERY HUMAN.

SOFTSKILLES (1492)		DELIGHT	UNDERSTAND AND EXPLORE	TURN IT ON	MAKE IT HAPPEN	LIVE IT OUT	REACH OUT	SISU AND PERSERVANCE	CO-CREATION	WILLINGNESS TO WIN	RICH COMMUNICATION	TRUST	SHARE RESPONSIBILITY	BE CURIOS	COURAGE	FAST LEARNING	LIVE YOUR DREAMS	REINVENT YOUR DAY	RESPECT	CARE	OPTIMISM	SIMPLICITY	JOY
NETWORKER																							
OPEN EMOTIONAL	COMMUNICATIVE						+				+												
	OPEN-MINDED		+				+							+									
	OUTGOING		+			+	+																
	INVITING						+																
MOTIVATING SOCIAL	INSPIRING			+			+				+						+						
	CONVINCING			+	+		+														+	+	
	CHARISMATIC											+					+		+	+	+		
	SWEEPING			+	+		+			+	+										+		
AUTHENTIC EMOTIONAL	SELF-CONFIDENT					+	+																
	GENUINE						+					+							+			+	
	SINCERE											+							+				
	UNIQUE					+																	

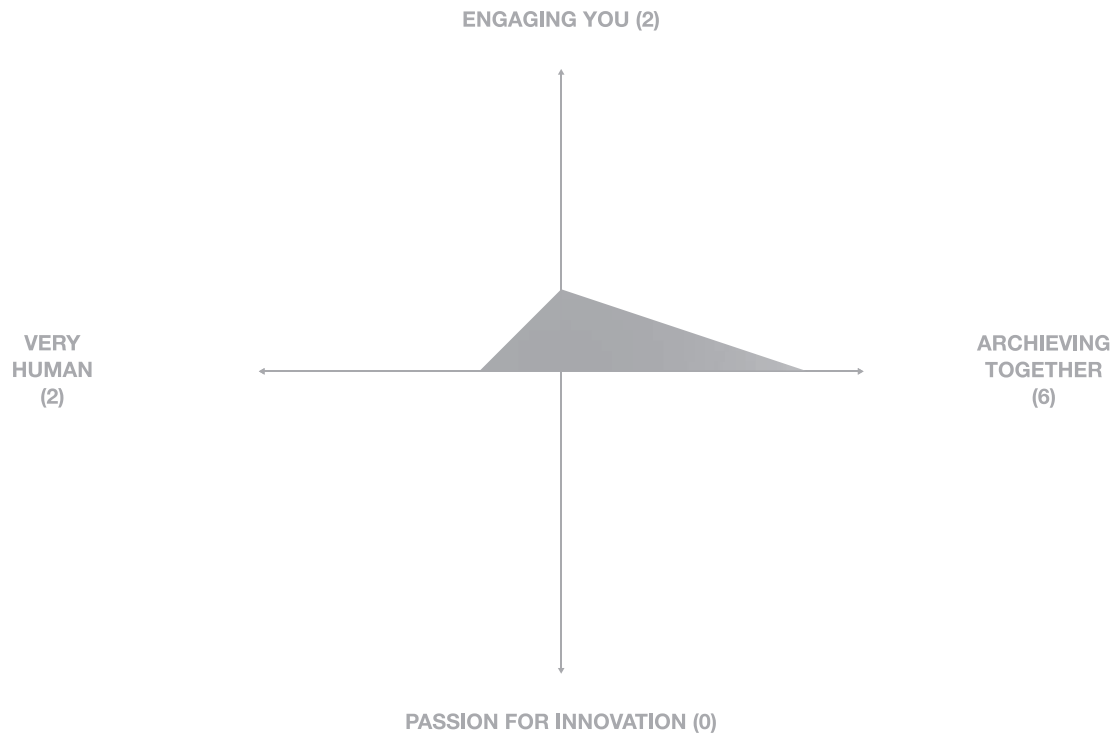TABLE 7: THE NETWORKER TYPE VALUE MATRIX (OWN SOURCE)

FIGURE 5: THE NETWORKER'S VALUE PROFILE (OWN SOURCE)

For the first type (Expert) we determined the corresponding profile on the micro level (3, 5, 1, 1) and on the macro level (1, 7, 1, 1). Since the soft skill 'competent' can be matched only very poorly with any of the Nokia Values, and because the matching with the value 'Passion for Innovation' is based only on 'weak crosses', i.e. crosses indicating only a weak associative match, the macro-level profile is used solely in order to adjust the micro-level profile. The finalised Expert profile is then (2, 6, 1, 1).

The Strategist's profile is identical on both the micro and macro levels (1, 7, 1, 1). Accordingly, this is also the finalised value profile. However, this profile diverges significantly from what would have been expected according to 1492's type description. The Strategist's visionary character is not mirrored in the value profile: after all, one would have expected a high value of 'passion for innovation'.

For the Coach, the micro profile is (1, 5, 0, 4) and the macro profile is (0, 5, 0, 5). Since the divergence results from weak crosses affecting the macro profile, (1, 5, 0, 4) is chosen as the final value profile. This result fits well with the LED description.

Values for the Shaper micro profile are (1, 4, 1, 4); the macro profile values are (0, 5, 0, 5). Since weak crosses for the values 'Achieving Together' and 'Very Human' have influenced the micro profile, we have taken the macro profile as the finalised profile. It matches the LED-type description.

The Networker has as micro profile (2, 5, 1, 2) and (1, 7, 0, 2) as macro profile. The difference in the value of Passion for Innovation results from weak crosses affecting the micro profile. Because the macro profile indicates a high value of Achieving Together, the final profile is defined as (2, 6, 0, 2). For the final profile the higher value of Engaging You in the micro profile is given priority over the lower value of the macro level, because the micro level seems to be more precise in this case. The Networker micro profile is (2, 5, 1, 2); the macro profile is (1, 7, 0, 2). The difference in the value of 'Passion for Innovation' results from weak crosses which affect the micro profile. Because the macro profile indicates a high value for 'Achieving Together', we have defined the finalised profile as (2, 6, 0, 2). For the finalised profile, we have prioritised the higher value of 'Engaging You' in the micro profile over the lower value in the macro level since the micro level appears to be more precise in this case.

3.4 General Results

There are two general observations that confirm the consistency of our matching method. First, the micro and macro profiles are quite similar; minor differences can be attributed to the higher sensitivity of the micro-level matching. Second, every value profile exhibits a characteristic focus on one or two values. This supports our hypothesis that different positions have different ideal value profiles and 'main values.'

Furthermore, when we analysed the content of Nokia Values, we noted that 'Achieving Together' generally had a strong showing across the value profiles. This should be mirrored in the corporate culture and working atmosphere. Only the Shaper lacks a high 'Achieving Together' value. Furthermore, the general low values for 'Passion for Innovation' were a surprising result, especially with respect to a company engaged in the fast-developing technological industry. These results lend justification to our initial aim of developing a tool for optimizing staffing and, thereby, corporate performance. In light of Nokia's declining sales and profits, and since Nokia's values were developed in a bottom-up strategy by its employees, it seems that there is not only a correlation but also a causation between corporate culture and corporate performance. Demonstrating or refuting this hypothesis is beyond the scope of this study.

Another notable problem is the low compatibility between 1492's LED soft skills and Nokia Values in the cases of the Strategist and the Expert. In order to achieve a higher practical value for LED, soft skills and Nokia Values will need to be synchronised. This will involve either adapting the soft skills to match Nokia's values, or rechecking and adjusting the values in order to fulfil the requirements of the leadership types.

4. Prospects

Matching LED-types and Nokia Values is only a first, and rather small step that paves the way towards a more extensive analysis; it establishes a basic toolkit for handling corporate values. The initial, underlying idea behind this project was to promote the best overall performance of employees. There are two crucial criteria for accomplishing this objective: First, employees must be in an appropriate position in order to realise their full potential. Second, they need a productive working atmosphere. Furthermore, while soft skills play a role, attitude and values also contribute

to the quality of a person's professional performance. Therefore, as a first step, it is necessary to assess both soft skills and values. Matching Nokia Values and LED soft skills shows that there is a significant congruence between the two. However, since soft skills are subordinate to values, a person's true attitude and soft-skill profile may be assessed more precisely if values are also considered.

Following this first step, the next move would be to adjust 1492's Leadership Effectiveness Development and implement a set of questions concerning Nokia's values. The first part of the questionnaire should examine the values that a leader (someone in the position of a Coach, e.g. director of marketing or human resources) ought to hold. The results could then be used to support our matching and to build a nominal value profile. Since there are no pure LED-types and since no position will require a pure LED-type, the results of the classic diagnosis will show that every leadership type will present with a range of values. The results of this first part must be interpreted in light of the leadership type classifications. We will call this profile Nominal Aggregated Value Profile (nominal AVP). Here, we would expect a unique correlation between nominal AVPs and specific positions. Furthermore, this approach would allow us to draw conclusions with respect to a weighting of the values within the company.

The third step would be to use the questionnaire to enquire into the actual values of the Coach. In our view, the best performance will be obtained if the actual value profile matches the nominal AVP for that position. We call this ideal profile the actual Aggregated Value Profile (actual AVP). A comparison of the nominal AVP and the actual AVP will allow us to draw relevant conclusions. A mismatch might imply the need for training or recommend a change of position. If both profiles match, the optimum we can anticipate that an employee will perform in line with expectations.

To conclude the extensive analysis, as we already noted when matching values with soft skills, not all soft skills can be depicted by Nokia's values. We believe that LED-types can be categorised as decision makers and non-decision makers. Moreover, we concluded that Nokia's values are more relevant to non-decision makers. To prove that hypothesis, a third part in the questionnaire would examine how the Coach perceives the influence that values have in day-to-day work. We believe that the Shaper and the Strategist tend to be decision makers; therefore, values will be of no great importance for them. In contrast, the Coach and the Networker will display a tendency towards non-decision making. Therefore, in those instances values will play a significant role in their daily work. The Expert will be indifferent.

If these expectations are confirmed, we will be able to display the importance of different values in relation to an individual's position. This may call into question the general idea of overarching

corporate values and lead to the assumption that different values for different classes of position may be required. Such an analysis would need to be the focus of future studies. Nonetheless, this paper seeks to encourage companies to question and recheck their corporate values with respect to their actual applicability.

5. *Conclusion*

In a first step, we discussed the way in which Nokia's values were developed via a bottom-up strategy, and also introduced 1492's Leadership Effectiveness Development (LED) as a basic model for our analysis. We noted that the objective of Nokia's transformation process was to develop a network company, and to support their leaders, so that they may continually enhance their leadership skills.

In section 3 we presented our hypotheses, namely that (i) Nokia's values are known by its employees; that (ii) although there are five distinct LED-leadership-types, the occurrence of a pure type is in reality very unlikely; and that (iii) it is possible to match Nokia's values with LED-types. In our attempt to provide a coherent matching we employed both a macro-level approach (related to the correspondence in values and leadership types) and a micro-level approach (concerned with correlating subvalues and soft skills). Our intention was to discover and investigate tendencies in this correlation between values and leadership types. The results display a characteristic focus on one or two values for each respective type. In four of the five types 'Achieving Together' is the (or at least one of the) dominant values; only the Shaper is primarily characterised by 'Engaging You' and 'Passion for Innovation'. Furthermore, the Shaper is the only type that holds 'Passion for Innovation' as a governing value.

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THE
CORPORATE NETWORK

Collective
Autonomy

Collective Autonomy

Incentives And Chances for Humans to Benefit From a Collective Surplus

Stella Deppe

The biological phenomenon of swarms remains a challenge to many researchers. The complexity that emerges from combining relatively simple individual behaviour yields many questions. The emerging apparent perfection has not yet been investigated satisfactorily. This paper presents an elucidation of the term swarm, both for animal and human swarms. Autonomy as a possible bonding force in swarms is the focus of the analysis. A considerable difference between individual and collective autonomy will be outlined. The potential that arises from the high degree of collective autonomy has to become more obvious in order to benefit further from the hyper organism.

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1. *Introduction*

They are moving as if by command, as if they were one single organism, though there is no obvious commander in this system. Many individuals are part of it but at the same time it is just one: the swarm, a system without steady hierarchy or central guidance. One of the most noticeable things when observing a swarm of animals is its beauty while moving. It appears like a perfect play but there is no director. Not only animals form swarms but human beings do as well. In other words: fish and human beings have more in common than previously thought. Being part of a swarm means copying the behaviour of one another and living in a type of super-organism. The collective of a swarm is a system that attracts attention due to its elegance and its almost perfect coordination. Imagine a swarm of herring that reacts incredibly quickly in the presence of potential danger (for example, a natural enemy such as a whale).

The swarm's quick movements as well as its ability to match its opportunities and challenges are fascinating. Approaching the issue from a rather normative perspective, the possible basis on which properties this super organism exists will be examined; does the swarm only has a functional value or does it possess a sort of intrinsic value? The focus of this paper will be the notion of autonomy in swarms: Could autonomy be a swarm's driver and somehow its social kit?

Firstly, five constituting features of a swarm will be derived from the behaviour of animal swarms. To understand the concept of a swarm, including the matter of swarms in working life, it will be demarcated from other existing systems, such as networks. In order to emphasise the chances that autonomy can generate in organisational structures, a business network will be described. The matter of autonomy will be introduced by describing moral autonomy according to Kant. Autonomy constitutes a central value in his moral philosophy. The reason for choosing Kant's reference of autonomy is that he provides a rigorous deontological account of it. Viewing autonomy as an intrinsic value for the individual seems to contradict the idea of losing individuality and following other's behaviour in a swarm. It is therefore a challenge to analyse whether the individuals in the swarm and the swarm itself can be seen as autonomous in an account of autonomy that centres on the individual's freedom and liberty.

The analysis will reveal certain tensions that arise between individual autonomy in swarms (negative autonomy) and collective autonomy of swarms as a whole. For the purpose of the argument, several ad hoc hypotheses will be specified, e.g. concerning the notion of autonomy. It must be clear, though, that the purpose of this paper is not to deliver a detailed approach to fundamental

philosophical questions, but rather to draw attention to and seek inspiration from a hardly tangible phenomenon to deliver a basis on which further empirical research can be based.

2. Swarms in everyday life – observable phenomena

2.1 Features of a swarm

Closer observations of everyday life reveal that swarm behaviour assumes an important role in people's lives. Consider, for instance, the decision-making process of individuals who participate in a mass event like a festival. In deciding whether or not to head for the entrance (in anticipation of the beginning of a concert), each individual will be guided by the behaviour of others. Individuals anticipate that the crowd has to know whether the event starts or not and they rely on its wisdom.

Swarm behaviour could be characterised as the reflexive reaction to one's surroundings. The mirroring of one's neighbour's behaviour can occur either consciously or unconsciously. Jansen terms this system "leadership of neighbours" (Jansen 2008: 166).[1] A fish swarm is one of the most obvious examples for swarm behaviour in nature (in addition to the collective of honeybees and ants): it moves quickly and reacts incredibly fast to potential threats by successfully dodging them. The principles that enable a swarm to react quickly have been investigated in 1986 by the American programmer C. Reynold. By means of computer simulations, he could show that a herring swarm works according to just three swarm principles:

1. Always keep your minimum distance of one third of your length.
2. Always balance your distance to an average of one time of your length towards your neighbour.
3. a) Try to match the speed and direction of your neighbour …
   a) If discovering food, swim towards it. (cf. Jansen 2008: 167).

Following these three simple principles is sufficient to create something very similar to self-organisation, resulting in the impression of perfect movement that is characteristic for fish swarms. The question why herring are shoaling fish can be answered very easily: a swarm has emergent

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1   Jansen calls this phenomenon heterarchy (leadership of the neighbours) – the opposite of hierarchy. According to him, a swarm is superior due to its heterarchic structures.

properties with respect to enemy protection and assistance in searching food. In other words, the reason for the emergence of the herring swarm is most probably a degree of efficiency that no individual could attain on its own. A swarm's challenge is to act permanently and to make decisions immediately. The results are continuous movement and changes in density. Hence, one of the constitutive swarm features is flexibility.[2]

The fact that there is no leader among the herring means that the swarm is decentralised. It faces the complex task of continually deciding on the direction of the swarm without an external governing entity directing it. From this, we can derive the second constitutive feature of swarms: Self-organisation, meaning that all formative or restrictive influence comes from the elements of the system itself (here, the members of a swarm). There is no centralised control but a governance for each subunit, that is to say, for each individual respectively herring. Self-organisation in biology can be described as follows:

> "In biological systems self-organisation is a process in which pattern at the global level of a system emerges solely from numerous interactions among the lower-level components of the system. Moreover, the rules specifying interactions among the system's components are executed using only local information, without reference to the global pattern" (Camazine/Deneubourg 2003: 8).

A certain underlying mechanism somehow makes it possible that the swarm organises itself. The self-organisation, in turn, results in the incredibly strong cohesion (cf. Kneser 2008: TC00:04:22). The fact that a swarm of herring incessantly changes its density and form does not affect its cohesion. In a swarm, there is no regulative centre – such as a "herring king" – that is needed, for example, to punish in case of disobedience. Instead, every herring that is part of the swarm adapts itself to its neighbour's behaviour. This adaption may be illustrated as the leadership of the neighbours. Fast adaption works according to the aforementioned principle: Regulate the distance to your neighbour in a way that you are on average one length away from him. The individuals of a swarm, which could consist of up to 10,000 members, are determined by their neighbours. Consequently, the average speed does not result from a central command but is the intuitive behaviour to swim as fast as one's local neighbour (cf. Topaz/Bertozzi 2004: 152). Researchers at the University of Rome

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2   These following five swarm features are referring to the consulting company 1492 GmbH, which originally developed them.

found out that the copying behaviour affects a constant number of neighbours. This means that, however, the swarm density may change, while the number of neighbours an individual orientates to remains constant. The four, five or six closest neighbours are always the ones that determine an individual's behaviour in swarms and not – as it is sometimes assumed incorrectly – individuals within a certain radius away from the individual (cf. Ballerini et al. 2007: 1232).

A further step in describing the super-organism would be to characterise it as self-regulating. Self-regulation means that a system adapts constantly to new circumstances (both to challenges and to chances). A self-regulating system thereby entails constant evolution. Changing the blood pressure of humans, for instance, reveals the fact of a self-regulating human system, respectively organism. An observable phenomenon of the herring swarm is collision avoidance (cf. Jansen 2008: 166). It illustrates the matter of self-regulation as a feature. Every individual avoids collision and thereby guarantees the functioning of the swarm as a whole. The swarm optimises itself by neglecting inexpedient or inefficient behaviour of individual members, such as swimming faster than one's neighbour or ignoring food thus adapting to various circumstances. In this way, members realise a high degree of efficiency to the advantage of the mass. The swarm manages to reach goals that no individual on its own is able to reach, like fighting off larger predators. There seems to be an area of tension between the individuals' capacity and the level of collective goal attainment, which will be dealt with later in the paper.

Another salient feature of the swarm is robustness. It does not matter if some individuals do not swim towards food. The masses compensate for the disturbances and are still able to locate the food. It does not matter if a whale attacks a swarm of herring; the swarm remains intact. There certainly is a critical number of disturbing individuals that would lead to a breakdown of the swarm system, but the capacity of compensation of single individuals' incorrect behaviour can still be called very robust. The cohesion works under incredibly aggravated conditions.

One last swarm feature that should be emphasised is the swarm as a fractal system. It is a system where every subunit constitutes of an independent, minimised copy of the whole system regarding its capabilities and competencies. All members of the herring swarm are animals of the genus Clupea, for instance. By identifying some characteristics of a fractal, it becomes more obvious why a swarm can be called a fractal system: Self-optimisation, self-organisation, goal orientation, dynamism and self-similarity are properties of a fractal (cf. Gienke/Kämpf 2007: 118). Regarding the swarm's individual members, the fractals, all these features match. They organise and optimise required processes to fulfil their task and to eliminate disturbances without external

aid. It is the herring's own decision in which direction to swim. The herring decides on its own where to swim (apart from the unconscious leadership of the neighbours) and whether to be part of the swarm or not. All an individual needs are some neighbours. Every animal defines food and survival as primary goals even though they are theoretically free to have different objectives. The advantages emerging from moving in a swarm lead to transparent, similar targeting. Furthermore, the fractal neglects inefficient behaviour according to the swarm principles and thereby contributes to optimising the swarm as the whole – the fractal system. Dynamism just means that all fractals are interconnected; thus, individuals can be seen as fractals. The five swarm features that now have been exhibited serve as a definitional basis for understanding a swarm: flexibility, self-organisation, self-regulation, robustness and fractal system.

2.2 Swarm vs. Network

Can we find human networks or social systems that meet the requirements and therefore can be called a swarm? Before answering these questions, it is necessary to specify what exactly a network is and where its difference compared to a swarm lies. One could define a network as a system with much less hierarchic structures than other organisations, probably the most non-hierarchic system commonly known. A network is composed of informal groups or cliques that are amalgamated into an organisational construction with focus on a non-hierarchical form of cooperation and coordination. As soon as a party, for example an enterprise, searches for and keeps up relations with other parties, the emerging tangle of relations can be called a network (network of enterprises or economic network). In considering a business network, it is essential that connections between organisations are closer than they would be on the free market. A network is more than just a clustering, since it is not just about the existence of connections between elements, but about the kind of connections (cf. Corsten 2001: 2). Similarly, Schulte-Zurhausen describes a network organisation as an "organisation consisting of relatively autonomous members that are connected by their common aims and that work co-ordinately together" (Schulte-Zurhausen 2005: 286). Dynamisation of cooperation structures in many companies leads to a higher demand for looser organisation models with a focus on coordination and cooperation. Networks constitute that sort of organisation. In the days of a more and more virtualised working environment accompanied by the increased importance of e-mobility, network structures become increasingly important, not only in business organisation theory. Network organisations exist since they can realise synergy

effects and competitive advantages. Every kind of a network, no matter whether social, political, technical or business, represents a form of loose organisation (cf. Neef 2003: 1).

A swarm, however, distinguish itself in its capacity to emerge extremely fast and to act flexibly and co-ordinately without any planning. A swarm is perceived as a system with extraordinarily perfect organisation. Observers often fail to notice that unintended self-organisation leads to its perfect appearance. A network is made by humans and can be destroyed by them. A swarm is not constructed artificially but it emerges spontaneously. It is not as sensitive as a network and its robustness is overwhelming: These complementary features are also recognised by bestselling author Frank Schätzing (2004) in his book Der Schwarm. A simple network and its communication system can be destroyed by natural catastrophes, whereas a swarm is robust and superior. Even though a network is weaker than a swarm, its structures constitute essential conditions for the existence of a swarm. The highly coordinated network culminates in a swarm with perfect coordination. As already mentioned, networks can simply collapse. It is necessary to examine the manner of cohesion to see why a human-made network can break down. How does the cohesion in a network function? Considering the incentives of being part of a network, respectively being part of a swarm, it becomes obvious that an individual in a network still faces an incentive to deviate. Networks are confronted with a likely dilemma situation, since a one-sided defection could also guarantee the advantages of a network. This free-rider problem, pretending to cooperate but in fact intending to defect, does not occur in swarms. Both swarm and networks are purposeful systems. The former is characterised by a transparent goal that is visible and the same for each member. In principle, a network shares these characteristics but a common objective does not seem to be a sufficient remedy to get cohesion. A swarm's fractal would not deviate from the cooperation strategy, since it would be disoriented acting as a separate individual. Without its affiliation, a swarm animal would neither be successful enough in avoiding enemies nor in finding food. Consequently, it probably would perish. If the existence as a swarm member were not that essential, the individuals would not be part of it. Why should a person decide to head to the entrance of a festival without further information when she did not anticipate something pleasant by following her neighbours?

2.3 Human Swarms

After considering the difference between swarms and networks, the existence of how this perfect appearance performs considering humans or more precisely human swarms will be examined. Swarm behaviour can be found in many social phenomena. The above-mentioned behaviour on mass events (see page 2) constitutes an example. The fact that usually two distinctly opposed trails are formed on highly frequented sidewalks is also such a phenomenon. Here, humans seem to coordinate themselves without anybody who tells them where to go. They communicate without verbal communication, that is to say they communicate silently, just through their movements. However simple the examples of swarm phenomena might be, so useful and efficient are human swarms. Another example for human swarms is a so-called smart mob.[3] Smart mobs are anonymous and mobile processes of cooperation functioning according to the principles of social swarming. The term social swarming means rather technologically based swarm behaviour. These more complex kind of human swarms strongly rely on communication. Mobile and ubiquitous technologies make it possible and attractive to act co-ordinately with even unknown people (cf. Neef 2003: 2). So-called critical mass movement is totally non-hierarchic and self-organised via Internet or mobile phones, such as bicycle demonstrations that try to paralyse all traffic.[4] Critical mass is an example for social swarming. The human swarm behaviour or social swarming culminates in the World Wide Web. Each Wiki,[5] for example, constitutes swarming individuals who try to collaborate in sharing their knowledge. Each individual on its own could never be able to create a Wiki, as the format results from letting everybody participate (or at least a certain group of members; for example, concerning captive Wikis). Human swarms emerge since they also, as a herring swarm, provide a high degree of efficiency. As pointed out already, there is no incentive for swarm individuals to deviate, because they profit from the cooperation strategy. This applies to the cited examples also. Smart mobs reach their goal by acting and communicating spontaneously and without having a leader. Their self-organisation is highly timesaving and thus more efficient than other organisations that have the same objective. The crowd at a festival would not know when head to the entrance without trusting the neighbour's behaviour.

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3   The term is invented by Howard Rheingold (cf. Neef 2003: 2).

4   "Critical Mass is not an organisation, it's an unorganised coincidence. It's a movement ... of bicycles in the streets" (www.critical-mass.org quoted in Neef 2003: 2).

5   A Wiki is a hypertext-system for websites that enables their users not only to read the content but also to modify it online.

The enormous potential of animal swarms has inspired researchers to assess human swarms under experimental conditions. Swarm experiments are constructed in a way that swarm behaviour emerges in groups of humans. Researchers try to clarify to what extent humans are similar to animals and how human swarm behaviour can be influenced. Certain groups of people are instructed to follow some typical swarm principle as e.g. "Don't let your neighbour get closer to yourself than one body length." Jens Krause and John Dire from the University of Leeds are initiators of the world's largest swarm experiment with humans that took place in 2007 in Cologne. 200 people participated and were asked to walk through a huge fair hall. The tasks for the participants were firstly to move constantly without communicating and secondly to stay close to one's neighbours (at around one arm length). The experimenters found a number of parallels between human and animal swarms. Even the torus-movement that is typical for animal swarms could be recognised that day. However, it has to be noted that the researchers also found that a critical number of individuals can disturb a swarm's robustness. In a modification of the experiment in which a small number of group members were instructed to move in a certain direction,[6] Krause and Dire found out that 5% (10 people out of 200 participants) are sufficient to direct the movement of the swarm and thus, to lead it (cf. Kruse et al. 2008: 786). It becomes obvious that the functioning of the swarm is dependent on participation (acting according to the principles) and thus fragile, howsoever robust it may be when acting according to the rules.

It is easy to figure out that the five determined swarm features fit into the human swarm emerging in the experiment: The masses move flexibly and each individual stays close to his neighbour but avoids collision. There is no organiser that modifies the game by giving spontaneous instructions. The experimenter only instructs the participants to act according to simple principles. Once the experiment has started, he does not interrupt the process anymore. The experiment's swarm shares the feature of being self-regulated. There is no external force that regulates the swarm but the movements according to the simple instructions are sufficient to regulate the masses. Whereas a herring swarm does not even need simple instructions but manages to regulate and organise itself due to the so-called lateral organ, the human swarm in Cologne first needed a short instruction. Robustness is not as obvious as the other features because Krause and Dire did not modify the experiment in a way that individuals stopped moving according to the principles (move constantly, do not communicate and stay close to your neighbours). However, if a certain number of individuals

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6   The instruction to move towards a certain direction was only known by the individuals concerned.

stopped moving, it would most probably not have any effect on the swarm and its movement as a whole. The individuals simply would no longer be part of a swarm. The robustness of a swarm, presumably, would then be maintained since a few outliers would not disturb the swarm. The non-participating individual would just not reach the targeted direction and thereby not profit any longer from being part of the swarm. Therefore, the swarm is robust in the sense that individuals do not have influence on the swarm as a whole. This fact is also underpinned by the empirical result that a critical number of approximately 5% is needed to influence the swarm.

The case is more difficult if we assume that a critical number of individuals try to lead the swarm by actively trying to direct it (see above). It must be said that this case seems a bit farfetched since 5% of the group would have to develop their own group-norm and act strictly according to it. The crucial point is that it is not sufficient if 5% of the members decide not to follow the swarm principles. Rather, the 5% must act as a subgroup in a coordinated fashion according to their own principles to influence the whole. The robustness is therefore not dependent on the individual behaviour of 5% of its members but dependent on the coordinated behaviour of 5%. These different cases must be strongly demarcated from each other, since the latter feature of the swarm can be seen as a condition of flexibility. Considering the herring swarm, it is obvious that a certain number must have influence on the direction of the swarm since its aim is to find food. The ones who detect the food must be able to some extent to influence the movement. The robustness of the swarm must therefore be understood as being independent of individual's behaviour.

The last feature, the fractal system – can be slightly misleading because human beings obviously are highly differentiated beings and their unique character traits lead to totally different reactions under common conditions. Recalling the fractal feature makes clear that the human swarm also displays a fractal system: The individuals all have the same capacities needed (to accord principles, to move freely etc.) and all are Homo sapiens. They definitely share the goal that per instruction is known by everybody. Self-similarity in goal orientation is a feature of a fractal and matches the human swarm phenomenon observed here.

3. Intrinsic Cohesion

3.1 Autonomy as a Non-Material Incentive

Five important swarm features have been presented so far and it has been shown that these criteria even concur with human swarms. The further question now is whether there is more than that constituting the swarm. Is there some kind of a value of a swarm besides its functional and highly efficiency-raising features? Does the fact that there is no functional centre in a swarm mean that a normative control centre cannot exist – a normative telos? A high degree of autonomy, for instance, could work as an appeal for one's involvement in a swarm or, to put it in other words, to join a swarm. Up to this point, the incentives of a swarm have been degrees of efficiency that could not be reached on one's own. Being part of a herring swarm diminishes the risk of getting preyed upon considerably. Individuals join a swarm because it increases the probability of survival. Being nourished and diminishing the risk of enemies are the most obvious advantages of animal swarms. What exactly are the incentives for an individual to join a swarm? Concerning human swarms, it is no longer just a matter of mere survival; it is rather a question of how to improve one's circumstances of life and how to benefit from one's neighbour.

3.2 What Is Autonomy? – Three Criteria

Autonomy basically means governing oneself. Self-administration, independence, self-reliance and freedom of choice are some of the words coming to mind while considering the meaning of autonomy. The reason why being autonomous seems to be an important objective within society is that when acting autonomously people can be held accountable for what they do. Additionally, autonomy is connected with some kind of self-integration: people do not want their intentions to be controlled by somebody else. People initiate their actions themselves and usually want to be held responsible for it. It is often argued that in absence of autonomy, our private sphere is threatened (cf. Rössler 2001: 34). Autonomy seems to be something fundamental that everybody aspires to some degree and that deserves a central value in everybody's life. Autonomy often is discussed in terms of personal autonomy – the ability to lead one's life in a sense of one's own choices.

Immanuel Kant described autonomy as important to human beings since it is the foundation of human dignity and the source of all morality. It is called "moral autonomy" (Hill 1989: 99)

when people are able to impose the moral law on oneself. According to Kant's Critique of Practical Reason, morality is conditioned by autonomous practical reason. Autonomous practical reason for Kant means freedom:

> "The autonomy of the will is the sole principle of all moral laws and the duties appropriate to them ... So the moral law expresses nothing else than the autonomy of pure practical reason, that is, of freedom, and this is itself the formal condition of all maxims, under which they can only harmonise with the supreme practical law" (Kant 1778:1, §8).[7]

Consequently, there is a fine line between freedom and autonomy. Kantians often talk about autonomy understood as freedom. Keeping in mind Kant's examination, the freedom of will is considered. Kant's notion of the freedom of will is based on autonomy of one's practical reason. For Kant, the individual will is the initiator of all acts; it is self-legislating and not obedient to any foreign but only to its own laws (cf. dos Santos 2007: 103). The fact that reasonable humans can choose their doings and thereby their lives, presupposes a will. The autonomy of the will means that all acts only obey one's own principles or laws. Decisions are not obedient to exogenously given principles.

One's own moral principles must be chosen according to the categorical imperative[8]. In broad terms, the categorical imperative demands that the maxim of the will must be consistent to serve as a universally applicable principle. The question of whether a principle is suitable to serve as universal legislation can be judged by humans when practicing moral reasoning. The crucial point is that there is no exogenous entity that determines the principles. Practicing moral reasoning is an autonomous process during which the individual has to define its (moral) principles. Thus, if one's principles are chosen by practicing moral reasoning then acting autonomously equals acting morally (cf. Schneewind 1998: 515). Moreover, the distinction between autonomy and heteronomy

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7   In the original: "Die Autonomie des Willens ist das alleinige Prinzip aller moralischen Gesetse und der ihnen gemäßen Pflichten [...] Also drückt das moralische Gesetz nichts anderes aus, als die Autonomie der reinen praktischen Vernunft, d.i. der Freiheit, und diese ist selbst die formale Bedingung aller Maximen, unter der sie allein mit dem obersten praktischen Gesetse zusammen stimmen können."

8   "Handle so, daß die Maxime deines Willens jerdeseit zugleich als Prinzip einer allgemeinen Gesetzgebung gelten könne." (Kant 1788: 54, § 7) Can be translated as: "Act in such a way that the maxim of your will could always be held at the same time as a principle of a universal legislation".

is fundamental in Kant's notion of autonomy. Heteronomy means determination by others or to express it in Prauss' words, "causal-determined legality". To act heteronomously means acting according to foreign principles. Consequently, the autonomy of will is not given. Autonomy, however, constitutes a form of freedom and is the antonym to heteronomy. According to Kant, freedom (or autonomy of will) is anomy or lawlessness (cf. Prauss 1983: 58).[9] As autonomy is the base for freedom and the former is the condition of acting morally, heteronomy means acting unmorally. To put Kant's conception of autonomy more simply, it should be noted that autonomy of will means self-legislation and the freedom to create one's own principles.

Another understanding of autonomy constitutes the concept of personal autonomy. Fundamental is that a person does not act autonomously (even if she performs the act herself) when her point of view does not coincide with her act. In some way, the act is not consistent with one's personal conceptions (cf. Buss 2008: 2). Motives are no longer authentic. Acting autonomously, therefore, means having authentic motives behind one's doings. The concept of personal autonomy emphasises the authenticity of one's doings. The debate about autonomy extends over a wide area of research and is not easy to grasp. In this paper, three criteria that appear in different discussions about both moral and personal autonomy shall serve as working hypotheses for the understanding of autonomy.

- Freedom.
- (Self-)reflectivity.
- Responsibility.

Freedom in this sense is to be understood as freedom of will or freedom of choice respectively. It must therefore be distinguished from (absolute) freedom of action. This notion of freedom refers to Kant's account of autonomy: Freedom means autonomy of one's practical reason in a sense that one is free to self-legislate within the frame of the categorical imperative. Kant considers negative freedom[10] on the level of generating moral principles. In the following, the criterion of freedom shall be considered on a less abstract level, e.g. freedom of choosing one's individual lifestyle and of making decisions. Freedom revives the idea of an authentic will or choice to act in a certain

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9   "Wenn der Wille...in der Beschaffenheit irgend eines seiner Objekte, das Gesetz sucht, das ihn bestimmen soll, so kommt jederseit Heteronomie heraus". Kant, I. (1785) in Prauss 1983, 58. Can be translated as: "If the will […] in the nature of any of its objects examines the law that shall determine it, heteronomy always emerges."

10 Negative freedom refers to freedom from external and internal constraints.

manner. It means that a decision can be made independently, in the absence of foreign constraints and influence. The second criterion, self-reflectivity, implies that people are able to reflect upon their values, desires and emotions. As soon as a person is able to weigh up possible consequences to others, she acts in a (self)-reflected manner and adapts her comportment to her aims. Autonomous decisions require knowledge about the consequences. Being aware of possible consequences means that people are conscious of what they can expect. Self-reflection, thus, serves as a condition for authenticity. Authenticity means identifying with one's decisions, values and desires. Authentic doings, thus, presuppose self-reflectivity. As long as a person's doings are authentic, they can be autonomous. Authenticity in turn can be guaranteed through (self)-reflection.

The connection between autonomy and self-reflectivity becomes even clearer when assessing autonomy on a non-individual level. Self-reflectivity is needed to determine the constraints set by the autonomy of others.

Responsibility constitutes a third condition, which gains relevance for autonomous acts. Acting autonomously is intimately connected with the notion that a person can be held responsible for what she does. For Paul Benson (1994), responsibility entails a certain self-worth that we trust our capacities of decision-making to be responsible. Kantians would argue that responsibility is an unavoidable implication of exercising practical reason. The main idea is that if an individual acts autonomously in the sense that he reflects on his own principles, then autonomous acts presupposes that individuals can be held responsible for what they do. Therefore, only if people are able to act autonomously can they have moral, social or political responsibility. Thus, responsibility and autonomy must be seen as mutually dependent.

In the following, the extent to which individuals within a swarm and the swarm as a whole act autonomously will be examined. That is why those criteria of autonomy just identified have been given different degrees of relevance. Freedom from now on serves as a fundamental criterion, as an absolutely necessary condition for autonomy. Self-reflectivity and responsibility are complementary conditions for autonomy. They have to be examined only if freedom can been considered as fulfilled.

3.3 Autonomy in Swarms

A commonly asked question in swarm research is how an individual has to act so that a perfect whole results (cf. Kneser 2008: TC00:04:57). What role does autonomy play in a swarm? How autonomously do swarm individuals act and what does the degree of autonomy induce? One could

suppose that autonomy gets lost in swarms, even more than in networks because being part of a swarm means to be guided by others. Orientation towards one's neighbours or leadership of the neighbours is a fundamental feature of a swarm. The autonomy criterion of freedom is obviously injured. To argue in a Kantian way, one could say that to be determined by others will lead to heteronomous and thus unmoral acts. As soon as the autonomy of the will is affected, morality can no longer be taken for granted (cf. Preuss 1983: 56). A Kantian could argue that the obvious foreign control prevalent in a swarm undermines autonomous practical reason. Not only Kantians but also our intuitions would have a problem concerning freedom in swarms: At first sight, autonomy in swarms seems to be something counterintuitive that cannot exist simultaneously. As we have seen, some external forces come into effect in swarms. The neighbour-orientated behaviour applies to both animal and human swarms. By moving towards food (in case of the herring swarm), the individuals are automatically forced to share the hidden food. A potential decision not to share the food is restraint since all the neighbours are encouraged to follow one's behaviour. To the extent that freedom means being able to act against the swarm principles, this seems to violate the first criterion of autonomy. What if any one individual does not want to share the food that it found? Then participation in the super-organism would force it to act against free will. Considering this problem thoroughly, it becomes obvious that every individual has a free choice on a higher level which equally expresses its free will; that is a condition of being part of the swarm and accepting its rules. At this point, it is important to underline that the above-expressed understanding of autonomy (three autonomy criteria) does not include Kant's strict notion of freedom, which excludes any form of determination by others. The determination in swarms is voluntary and indeed consistent with one's freely chosen personal concept of life (for example, to maximise utility). To participate voluntarily in a swarm does not restrict the autonomy of the will, which according to Kant forms the source of all morality. The argument that because of the determination by others, the idea that swarm individuals do not act autonomously can therefore be rejected. Swarms do not imply a loss of freedom if one can be part of them or not by choice.

It has become clear that the criterion of freedom as part of the available definition of autonomy is not restricted. What about the other criteria that has been determined above? Can self-reflectivity or responsibility be fulfilled? Self-reflectivity seems to be missing. Coming back to the swarm experiment in Cologne, none of the 200 people is able to observe the immediate consequences of one's behaviour when being a part of the swarm. To act self-reflectively without being able to see the results of one's behaviour seems to be impossible. The individuals follow two simple rules that

lead to a phenomenon but it is no longer possible to figure out the origin of the result. This effect applies not only to the swarm experiment but also to swarm behaviour in enterprises that will be explained in more detail later in this paper. To find the origins of relevant information and to assign an individual to some element of an innovation might be impossible. Consequently, self-reflectivity is no longer given and the individuals might not act authentically. The individuals make decisions even though they cannot keep an overview of the swarm as a whole and hence cannot foresee possible consequences. This effect of a loss of reflectivity becomes very clear when regarding the point of view of the individual at the centre of the swarm. From the centre of the swarm, it is impossible to have an overview over the swarm and to determine how extensive a particular behaviour's consequences may be. It can be supposed that the degree of loss of self-reflectivity is the highest in the middle of the swarm. Positioned further away from the centre, one could at least assess the effects on one's local neighbours (obviously, there are fewer neighbours) and in this way act in a more reflective manner – that is to say autonomously. Individual autonomy, regarding self-reflectivity is restricted and there might be a different degree of autonomy depending on the position in a swarm.

Looking at the third autonomy criterion, the influence on responsibility, it seems to be difficult to hold people in a swarm responsible for their doings since it is impossible to figure out the source or individual whose movements cause the swarm to change direction. The individuals go with the flow and follow some fundamental rules. As soon as they decide to be part of the swarm (respectively, part of the artificial swarm in the fair halls), they agree that their behaviour is no longer assigned to their own decision but is just the result of following some simple rules. Furthermore, the results can only be observed as a whole from outside the swarm (e.g. the masses change direction) and not in particular individuals. The larger the swarm, the more difficult it is to find the origin of an observable phenomenon. It becomes almost impossible to define the source of a swarm's movement. Even though individuals in a swarm probably still want to be held responsible for their doings (as mentioned in the definition of swarm made at the beginning of the paper), it is extremely difficult to assign the consequences of individual actions to a certain individual. However, individuals get real-time feedback in swarms since they can observe the immediate results of collective doings. The swarm changes direction as a result of collective movements and each individual participates in this process as the smallest unit. Real-time feedback thus constitutes an incentive to act in a certain way, i.e. to follow the principles. Considering the criterion of responsibility from this perspective, one could argue that individuals have an incentive to act responsibly due to the real-time effect.

Nonetheless, responsibility as a criterion for autonomy cannot be taken for granted since individuals in swarms cannot be held responsible for their doings.

It has been elucidated that freedom and independence can be guaranteed in a swarm whereas both reflectivity and responsibility are restricted. The degree of freedom cannot compensate for the intense constraints of the other criteria. Consequently, these criteria are the reason for a loss of autonomy in swarms. Nonetheless, the high level of freedom and independence that individuals benefit from in swarms has to be underlined. Later in the paper, this advantage will be elucidated by considering swarm organisations.

3.4 Swarm Structures in Organisations

Assuming that some kind of swarm organisation, respectively swarm enterprises, exists, would their employees be autonomous? Swarm organisations would be enterprises that display the five swarm features: Flexibility, self-organisation, self-regulation, robustness and fractal system. The absence of any kind of hierarchy (impressed through the swarm criterion of self-organisation) would be indicative for a higher degree of individual autonomy. The principles by which a swarm organisation can work are clarified later in the paper. Voluntary participation clearly applies to swarms in working life. Nobody is forced to act in a certain manner and thereby to participate in the swarm. Employees are free to decide whether to follow the swarm principles or not. The latter would imply an exclusion from the swarm. Having experienced the advantages of a swarm, one's desire would rather be to participate, even though the choice to join is completely free. One could suppose that swarm structures in organisations create the greatest possible degree of autonomy compared to other organisational structures, such as a network. The necessary condition for autonomy, namely freedom, is not granted in network organisations. Self-organisation structures are not very common in business which is why there are only a few examples. Google Maps is the innovative result of an enterprise's internal self-organisation: Google employees were told to spend 15%-20% of their working hours on any project they want to. Swarm features come into effect during this working period at one's free disposal. Through continual evolution, evaluation by fellow employees and circulating information, Google Maps has been created. Google meets the conditions that C. Wentz considers as essential for creating self-organisation: An enterprise needs to have a surplus of resources to be able to create innovation; and there are more workers than necessarily needed who work at full capacity. These circumstances enable the employees to choose different tasks in

accordance with their abilities. Secondly, Wentz describes the appearance of natural hierarchies. They arise based on the underlying problem and are not fixed, which strengthens the first condition by also leading to a structure in which everybody acts in an appropriate manner with respect to one's abilities. A third assumption made by Wentz is that information is redundant. A huge amount of information circulates between the workers who facilitate accessibilities of relevant information. Employees are able to assimilate the information. The same principle is referred to problem solving. Employees accomplish a task simultaneously and hence alternatives are created, with the best alternative accepted (cf. Wentz 2008: 221). Furthermore, the Google example demonstrates the other swarm criteria. Self-regulation can be fulfilled through the non-hierarchic communication process. Information and ideas that are not needed or not considered as useful will be rejected. This communication process also guarantees flexibility. Individuals adapt quickly to new information and ideas and could, if possible, completely change their direction (here: direction of developing and not of movement), since there is no surveillance that would prohibit a change. The matter of robustness becomes clear by imagining that a few people participating in the swarm would use their time for playing video games instead of participating in the developing process. The remaining employees still would be able to create innovation in this timesaving, efficient way. Certainly, there is a critical number of employees that could let the innovation collapse. After all, innovation relies on collective information, ideas and thus collective intelligence. However, assuming the majority is willing to share its knowledge, robustness can be guaranteed. The last swarm feature, fractal system, also is fulfilled. It means that the individuals all have the same, transparent goal and are in general self-similar. Their common goal is to profit from an added value generated by knowledge sharing and thereby to create innovation. The case of Google Maps as a successful result of implemented swarm structures illustrates the high degree of freedom and independence that the individuals enjoy as soon as they are part of this kind of organisation.

The advantage a swarm features concerning its degree of autonomy compared to a network becomes clearer by imagining a swarm organisation rather than by considering Krause's swarm experiment. The more independently an employee works, the more innovative the results (see the Google Maps example above). Likewise, the constraint of reflectivity and responsibility can be observed: The higher the number of people working independently and the more participants the working swarm counts, the more difficult it becomes to reflect one's doings. That means that individuals never know who will further develop their thinking and their initial stages. Due to a redundancy concerning information flow, everybody is able to access the necessary information

to be innovative. The probability that several employers use circulating information increases and to maintain an overview of the potential consequences becomes more or less impossible. This redundancy also leads to a loss of responsibility. It is no longer possible to determine the source of a result as it is no longer an individual who acts but rather a group of employees as a whole who creates innovation. Even though individual autonomy is restricted in swarms, a swarm organisation still constitutes an organisational form that allows people to work independently and non-hierarchically. The organisational form is not a top-down hierarchy but rather a bottom-up one that appears and disappears in accordance to specific problems. It is assumed that a swarm, compared to other organisations, is a highly autonomous (concerning individual autonomy) system. Other hierarchic organisation structures do not satisfy the freedom criterion for autonomy.

How can a swarm, no matter whether an organisational or an experimental one, be so efficient while providing such a high degree of individual autonomy in comparison to other organisation forms? After all, the fundamental and necessary condition of autonomy, i.e. freedom, can be taken for granted. The individual autonomy (respectively the degree of freedom, thus only one out of three criteria) helps reaching a swarm's goal. Everybody is free to leave the swarm. By being part of a swarm, the individuals clearly demonstrate that they share the common goal and have an individual interest in this goal being fulfilled. It is important to underline that the common goals have to be transparent. Otherwise, swarm individuals would not be able to feel capable of being part of the swarm by participating in the goal achievement. Consequently, they probably would not confirm a high degree of freedom and independence, hence of autonomy. The fact that self-reflectivity and responsibility are constrained does not seem to impact the efficiency of the whole. At this point, an analogy to John Stuart Mill's essay On Liberty can be drawn: One's liberty is restricted according to Mill's harm principle (cf. Mill 1991: 16). Individuals are restricted via law. However, freedom makes life worth living, according to Mill. Nevertheless, freedom has to be constrained by law in order to avoid harm to others. Mill understands freedom in a negative way. Individuals are free to act as long as they do not violate the rights of others. Being free from interferences as much as possible make their lives worthy. Consequently, freedom is an essential condition for Mill. Individuals enjoy freedom within the frame of law that ensures the functioning of the harm principle. Therefore, the state functions because of individual restrictions via law. Individual restrictions lead to a collectively more efficient result, respectively a more efficient society. In every eastern society, most inhabitants tolerate following rules and accepting laws. After having recognised that everybody benefits from the resulting mutual advantages, the majority accepts laws. People within

the society would presumably even describe themselves as acting freely. Understanding autonomy, as Mill understands liberty, one could speak about negative autonomy. To make the collective work, one's individual autonomy is restricted.

3.5 Collective Swarm Autonomy

Even though individual autonomy in swarms is restricted (called negative autonomy from now on), a certain force may have an effect on the swarm's cohesion and leads to a collective phenomenon: collective autonomy. The swarm functions in spite of great individual restrictions on autonomy. It is to be found out what role autonomy plays for a swarm as a whole, as a collective.

What could collective autonomy, respectively swarm autonomy, mean? It becomes clearer that something like swarm autonomy may exist by considering the following paradox: As shown above, the first criterion is fulfilled. Every individual that is part of the swarm decides freely and independently. However, nobody is able to maintain an overview over the whole. As a result, this leads to a severe restriction of criteria two and three (self-reflectivity and responsibility). The observable swarm behaviour is the result of individual decisions even though they cannot explain the former. Swarm behaviour is not just the sum of individual decisions. Swarm autonomy, therefore, seems to be more than just the sum of individual autonomy (the sum of its parts). This phenomenon can be described using the concept of the methodological collectivism. It proceeds on the assumption that individual behaviour can be derived from macro-sociological explanations and that collective behaviour cannot be explained by the behaviour of the individuals (cf. Rönsch 1973: 345). Swarm intelligence constitutes an example for methodological collectivism: Individuals are simple and equipped with a limited degree of intelligence. The collective, however, has impressive potential and its capacities exceed the sum of all individual capacities. Assuming that collective autonomy might be more than the above-examined individual autonomy, one difficulty of swarm autonomy might be diversity. How could a group of different individuals act autonomously as a whole (or collectively autonomously) if each individual is able to act autonomously on its own? It might be easier to conceive concerning the animal swarm since they seem to be much more similar than human beings. Even a human swarm is a fractal system consisting of Homo sapiens (see above) but still has very diverse members. All members, howsoever different, share a goal and a diversity of opinions does not impede a swarm's efficiency, as the experiment in Cologne and the Google Maps example have both shown. The tension between possessing a collective property, i.e. collective

autonomy, and the diversity of the swarm members remains. Explaining the collective phenomenon in terms of the methodological collectivism would, however, include such tensions.

Does the swarm as a whole fulfil the autonomy criteria freedom, reflectivity and responsibility? A swarm collective matches all three criteria. It acts freely, independently and sets itself its own goals. No one tells the swarm to move in a certain direction (to refine an idea or innovation). Neither is the herring swarm told to evade enemies, nor is the human swarm told to move in a certain direction (or to create innovation – talking about the organisational swarm). A swarm still has an exit option, is able to stop existing and faces several courses of action. Its decision-making is independent and uninfluenced. A swarm can act in a reflective manner since it interacts as a whole with its environment and learns, for example, to evade dangers or to use information in a more efficient way (see the Google Maps example). By means of experience, the swarm optimises its behaviour and adapts to different circumstances. Reflectivity of a swarm as a whole cannot result from individual reflectivity as shown above. One of the swarm criteria presented – self-regulation – could already have indicated the issue of reflectivity: Inefficient acts in swarms are eliminated and thus swarms are exposed to permanent evolution. Reflectivity of the swarm as a whole constitutes a condition for evolution in swarms. Responsibility can also be fulfilled in swarms but poses some complications. Actions and consequences can be assigned to a swarm; a certain movement or certain innovations can be declared to be a result of the doings of a group of individuals, regardless of whether it is herrings or people. To put it in other words, superficially or visually, a swarm as a whole can be held responsible for its acts. Consequently, it has to be the collective, the swarm, which is responsible and thus has to be brought to account. At this point, theory does not coincide with practice. The German penal law, for example, does not contain criminal sanctions for enterprises and other legal entities. Only fines are possible. This is based on the principle that an act can only be criminally sanctioned if the agent is culpable in moral terms (nulla poena sine culpa). The reasoning behind this argument is that collectives are not able to act morally (cf. Dannecker 2001: par. 3). This very strong assumption is blurred in the light of collective autonomy. The fact that an International Criminal Court exists speaks for an increasing awareness of collectives and a necessity to be able to punish states. However, the juristic debate about collective penal law is an extensive one and is not treated here. Additionally, the question of responsibility and guilt would need to be revised and examined from a juristic point of view. The matter of collective responsibility is not easy to grasp and needs to be used carefully. Nevertheless,

the swarm as a whole fulfils the three criteria of autonomy better than a swarm's individuals do. The surplus of swarm autonomy may foster a swarm's cohesion.

4. Forecast And Future Aspects

As autonomy is highly esteemed in liberal-democratic societies (cf. Rössler 2001: 15) swarm autonomy must be seen as a chance. A high degree of collective autonomy (and likewise already of individual autonomy, e.g. compared to other forms of organisations) constitutes an incentive to participate in a swarm. It is supposed that the individuals are aware of the surplus of autonomy that a swarm as a whole enjoys. Individuals may presume that a swarm thus reaches its highly efficient results.

The revealed tension existing between individual autonomy and collective autonomy can also be considered from an institutional, economical point of view. Individual rationality would demand that swarming be avoided because of the restrictions of individual autonomy.[11] Collective rationality, however, would demand to aspire to participate in a swarm because of the increased degree of collective autonomy and the highly efficient results.

The prisoner's dilemma, a part of game theory, shows similar structures. Individual rationality conflicts with collective rationality. In the case of a one-sided defection, the defecting individual would be better off if both cooperate: Since it is individually rational to defect, the game presumably ends up in the dilemma situation where both players are worse off than they would be if they both cooperated.

	C	D
C	2 / 2	0 / 3
D	3 / 0	1 / 1

TABLE 1: THE PAYOFF MATRIX OF A PRISONER'S DILEMMA (OWN SOURCE)

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11 Reflectivity and responsibility are restricted (see page 15). The fact that it could still be rational to join a swarm – when facing a decision between swarm and a hierarchic organisation – (since the latter would not guarantee freedom and independence to the same degree) is not taken into account here.

Since the payoffs in the dilemma situation of the prisoner's dilemma are higher than the payoff of one-sided cooperation, it becomes obvious that the rationality problem in swarms can better be modelled by means of a chicken game.

	C	D
C	2 / 2	1 / 3
D	3 / 1	0 / 0

TABLE 2: THE PAYOFF MATRIX OF A CHICKEN GAME (OWN SOURCE)

One-sided defection means that person A refuses to be part of the swarm because of the alleged low degree of autonomy (since the individual's autonomy is restricted, person A assumes that he will improve his situation by not participating). Person B would still enjoy more advantages if both persons rejected swarming. Nevertheless, his payoff decreases from the socially optimal level since there is a loss of the advantage through ideas and innovation that person A would contribute to the swarm. Consequently, the payoff of person B decreases in the case of one-sided defection. A mutual defection would lead to an outcome that falls both below the outcome of one- sided defection and of mutual cooperation. Therefore, the (Nash)-equilibrium would be the strategy of one-sided cooperation. Individual rationality undermines a socially desirable result.

The awareness of collective phenomena has to be generated and moreover reinforced in order to make people – in spite of their restricted individual autonomy – rely on the swarm and its collective autonomy. Thereby swarming could be one's attitude to life and simplify (make it more efficient) both personal and working processes. Being aware of collective forces and the potential swarm could become a service.

Regarding swarms, individual autonomy makes way for collective autonomy. Swarms are hyper-organisms, not only on the functional level but also on a normative one, which cannot be explained by the sum of its parts. A further challenge would be to examine how to skim off this surplus of autonomy and how to use it more purposeful.

It can be concluded that the matter of collective autonomy of swarms (that exceeds individual autonomy in swarms) constitutes one of the non-investigated causes of the highly efficient results.

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THE
CORPORATE NETWORK

Social
Micro-Payments

Social Micro-Payments in Enterprises

How to Foster Intrinsic Motivation and Overcome Social Dilemmas

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Keywords

Implicit Contracts, Overjustification Effect, Social Dilemma, Trust Capital, Awards

This paper presents a management tool named 'Social Micro-Payments in Enterprises' designed to deliberately invest in trust capital as a key success factor for knowledge enterprises. We explain the problems of generic incentives regarding the employees' intrinsic motivation and the semi-optimal outcome of social dilemmas by using the concept of implicit contracts. Subsequently, we demonstrate socio-psychological mechanisms to improve the quality of implicit contracts, like communication, participation and awards. Examining the underlying conditions of implicit contracts in detail, we present necessary prerequisites for the internalisation of values and the build-up of system trust. Based on this theoretical framework we construct a new management tool and deliver a best practice perspective.

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1. Introduction

> "'Tis impossible to separate the [chance of] good from the [risk of] ill" (David Hume).

Who would have thought at the beginning of the 21st century that the largest and most successful encyclopaedia in today's world is almost completely based on voluntary participation? Wikipedia excelled against prominent and well-endowed competitors on its way to world leadership, including Microsoft Encarta and Encyclopaedia Britannica. The online participation that enabled this unexpected development was not induced by payments but was seemingly intrinsically motivated. People posting or reviewing articles on Wikipedia contribute to a worldwide collective good without getting paid. Their individual reasons for doing so may differ – some may simply like the project while others may want to promote a certain topic – but the overall outcome shows that the risk of delegating the main responsibilities to the users themselves has eventually paid off.

Facing such new possibilities to connect people and their efforts of contemporary social media, this paper works towards introducing a management tool based on the idea of micro-payments in order to psychologically match the wish for autonomy with the wish for social relatedness, building up trust capital and fostering intrinsic motivation.

We will start out with the common approach to the contractual relationship between employer and employee. Therefore, we will qualify the contract theory and the principal-agent problem as some general terms of the economic theory (section 2). From this, we will conclude how common incentive systems, based upon an overestimation of explicit contracts and due to a lack of implicit contracts, lead to a so-called 'crowding out' of intrinsic motivation. We will define the concept of intrinsic motivation and its importance for knowledge management (section 3). Then, we will show various phenomena that support a further improvement of implicit contracts and, simultaneously, of intrinsic motivation: namely communication, participation and 'now-that'-rewards. Subsequently, we will demonstrate the psychological mechanism of awarding (section 4). In the following part, we will extensively concentrate on implicit contracts and their underlying mechanism – trust. We will introduce a two-level conception of trust and outline the functionality of promises. Implicit contracts are strongly connected with and dependent on reciprocity and internalised values (section 5). We will give economic reasons why a typical social dilemma – which is the basis of the principal-agent problem – under certain constraints cannot be solved solely via explicit contracts.

Dealing with the public good paradigm, we will explain the concept of system trust, emphasising the importance of the crowd (section 6). To summarise this analytical part of the paper, we will illustrate the necessities and capabilities for creating trust capital in social groups such as enterprises (section 7). Thereafter, we will introduce and explain our tool 'Social Micro-Payments in Enterprises' (SMPE) (section 8).

2. Fundamentals

2.1 Contract Theory

Contract theory is based on the idea that economic actors make contractual arrangements in order to build up reliability regarding mutual expectations. Complete contracts, which are of the most importance, are defined as those contracts in which the respective rights and the behaviour of the participating parties are determined for a possible future state. However, such complete contracts remain a mere hypothetical model, as their development would be far too complex and expensive with regard to time, money and rational capacities. The absence of complete contracts in the real world leaves us with the creation of incomplete contracts to operate and manage human relations. For example, no contract explicitly forces you to be polite to your neighbours, but politeness is certainly a widely accepted social norm and can be described as an implicit contract between almost all residents in the world. Implicit contracts like this tend to be incomplete, while explicit contracts are normally aiming at completeness by continuously revising them in order to include every possible state of the world.

Thus, the concept of explicit contracts does not deliver a feasible descriptive model for reality because it leaves out the level of interpersonal and implicit expectations via informal agreements of the contracting parties. In other words, the parties "share an unwritten understanding about pay, hours, work quality, working conditions, job security, and other dimensions of employment" (Bertrand 2004: 724). From here, the bundle of all these understandings will be deemed 'implicit contracts'. In fact, the labour market is governed just as much by 'invisible handshake(s)' as by Adam Smith's 'invisible hand' (cf. Okun 1981: 9). Once these implicit contracts are concluded, "Firms will not opportunistically renege on implicit contractual agreements with their workers because they may suffer higher labour costs in the future if they do so" (Bertrand 2004: 728).

The concept of implicit contracts – i.e. where they are needed, how they may be improved, and what effects they may have – will be delineated in the following. As a paragon for the importance of implicit contracts, we will qualify the subject matter trough the principal-agent problem.

2.2 The Principal-Agent Problem

The principal-agent problem describes a situation in which a principal wants to hire an agent to perform a certain task under the constraints of an asymmetric information relation between the principal and the agent. One may transfer the principal-agent constellation to various situations. In this paper, however, we will concentrate exclusively on the relation between employer (principal) and knowledge worker (agent). The employer is interested in the manpower of the employee, who in turn demands stable and fair wages in order to plan with a sense of security.

In the academic discussion, the problem is generally described in terms of diversified opportunistic behaviour on behalf of the agent. According to this view, most agents can be described along the following aspects: hidden information, hidden action, and hidden characteristics. Here, one may distinguish two situations: before the explicit contract is enforced ('ex ante') and once the contractual arrangement binds ('ex post') (cf. Jensen/Meckling 1976: 305ff.).

1. Agents may 'hide information' from the principal if they have knowledge about some outside effects that could influence their future work ('ex ante').
2. Agents may 'hide actions' because the principal does not have the possibility to supervise and control all their actions ('ex post').
3. Agents may 'hide characteristics' if they have not shown all of their qualities or flaws before the contract with the principal was concluded ('ex ante').

The traditional measures to solve such problems involve designing an incomplete contract that sets incentives and control mechanisms to let the agent (worker) not abuse the concessions of the principal (employer). The mechanism behind this design is the desire to create an interest alignment between principal and agent, which is sought through variable incentive wages, bonuses and control systems. With respect to these approaches, one clearly sees the concentration of theoretical approaches on incomplete and explicit contracts. As Hiller points out:

"Indeed, the standard principal-agent theory predicts that an explicit contract provides more incentives to workers than an implicit contract. Consequently, this latter should have vanished over time" (2008: 2).

By describing the principal-agent problem, we laid down the foundations for working out the meaning of implicit contracts and the borders of explicit contracts. Therefore, we will further concentrate on the general and psychological effects that can arise from the incorrect design and use of incentive systems in knowledge companies.

3. *Designing Incentive Systems*

3.1 *Overjustification Effect*

"With other words, rewards could effectuate a strange kind of behaviour: they are turning a game to a graft" (Pink 2009: 7), as the quote by Daniel H. Pink argues, the problems that arise from the application of bonuses and incentive systems in knowledge-based enterprises[1] are manifold. Moreover, Pink hints directly at the psychological impact that incentive systems have on our intrinsic motivation to work. Intrinsic motivation is, according to Frey and Osterloh, the root of and the condition for the joy of working and job satisfaction, intrinsic adherence to values and norms such as fairness, ethical norms, team spirit, and achieving one's aims. Here, one can already perceive the importance of intrinsic motivation for the quality of implicit contracts. In contrast, examples for factors influencing extrinsic motivation can be the appreciation from others, wages, bonuses, or grades that can be managed by explicit contracts (cf. Frey/Osterloh 2000: 25ff.).

In their seminal paper from 1973, Mark Lepper and David Greene discovered the 'overjustification effect'. From a psychological standpoint, it is described as the phenomenon that "subjects [in the expected-award conditions] show less subsequent intrinsic interest in the target activity than subjects in the unexpected-award and no-award conditions" (Lepper/Greene 1973: 130). But what does that mean for the daily routine and why should it be a problem? Before determining

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1   Knowledge-based enterprises are businesses that deliver knowledge-based products or services and therefore are strongly dependent on their intellectual capital. (Brinkley: 2008: 5).

the reasons for the foundations of these results, the constraints under which they appear, and the importance of subsequent intrinsic motivation or interest, let us take a look at some examples.

3.2 Examples: Bob and the Kindergarten Teachers

Let us imagine Bob, who is working as a car designer in an enterprise. Bob truly loves inventing and creating new cars and has dreamt of doing this since he was a child. He considers himself to be appreciated and well-paid in his job. Due to a restructuring measure, the management of his enterprise decides to set him an incentive to finish more drafts. Let us imagine that it is decided that he is to be paid an extra of €200 for every new draft. What is going to happen, according to the overjustification effect? After a while you will notice that Bob will not produce drafts that are as good as those he made before. To be sure, he will increase his output in order to create quantitatively more drafts, but the originality and quality of the drafts will decrease. In fact, Bob will not seem to commit as much as before. What is the problem? In response to management's incentive, Bob is focused only on pitching new drafts in order to gain the bonuses, which takes away from him the ability to enjoy his work and consequently his capability to be creative.

The decision to introduce variable wages is a result of the principal-agent perspective and the assumption that one can regulate everything via the design of an explicit contract. One can find a similar result if kindergarten teachers give candies to the children for every painting they submit: They will eventually show less interest in painting than before (cf. Pink 2009: 21).

The effect can also occur with expected punishment. In a school in Israel, the kindergarten teachers had a problem with parents who were picking up their children too late, because some of them had to work longer every day. The teachers asked for more parents' support, but only with minor success. Therefore, they set up a financial punishment for every 10 minutes they had to wait for the parents. The result: Parents came even later than before. Why? By using financial punishments, the educators changed a formerly personal relational obligation between themselves and the parents into a transactional obligation. The guilty consciences (or cognitive dissonances, described below) that the parents had when coming to late changed into free-rider behaviour, where the parents felt that they could use a service and let their children stay longer in the kindergarten (cf. Gneezy/Rustichini: 11ff.).

In general, one may therefore conclude that it is, on the one hand, very difficult to trigger intrinsic motivation, while it is, on the other hand, very easy to destroy it. Thus, the overjustification effect should, if possible, be avoided.

3.3 Reasoning for the Overjustification Effect

Why does the described effect appear under expected reward conditions? Generally, one has to distinguish between 'expected rewards', also called 'if-then'-rewards that are paid for a predefined action that has been delivered by the agent at a particular time, and 'non-expected rewards', also called 'now-that'-rewards, which are distributed spontaneously for a reached goal or a particular effort.

The perception of every reward has two sides, an informational or relational and a controlling side, whereas the latter effect is much stronger for 'if-then'-rewards. When receiving such a reward, its control function lowers the self-autonomy of the rewarded individual, which partly explains the overjustification effect: from a certain moment on, the controlling outweighs the informational character. The mean of a reward, the original intention of which had been to motivate a better outcome by informing the individual about what is good, has become an end in itself and now controls the behaviour of Bob, who is just focusing on submitting as many drafts as possible in order to get the bonus (cf. Frey/Osterloh 2000: 30).

Additionally, expected rewards may evoke a change in the psychological relation between principal and agent. If this is the case, a former environment of trust, in which the principal knew that Bob does a good job, may be transformed into an environment of mistrust where only the transactional character of the relation remains. This change results in impersonal and opportunistic behaviour, as illustrated by the kindergarten example. The efficacy and modes of actions of trust and mistrust will be analysed in section 6 (cf. Frey/Osterloh 2000: 34ff.).

3.4 Intrinsic Motivation and the Management of Knowledge

Every enterprise has a 'resource pool', which contains all soft factors and routines such as good relations to customers and suppliers, a good image, a special kind of corporate culture, fairness and a kind of team spirit. Accordingly, it is obvious that this pool represents a main strategic resource in knowledge-based enterprises. Only the cultivation of intrinsic motivation enables employees to

participate and further develop these pool resources, as these fields cannot be measured explicitly in financial terms (cf. Frey/Osterloh 2000: 35ff.).

An effect that accompanies the neglect of pool resources is the refraining from unappreciated and hardly measureable goals and achievements such as customer satisfaction. When introducing fixed goals, employees will tend to demand too little of themselves and to take the easiest way out: shirking responsibilities is highly probable. Intrinsic motivation, in contrast, is the foundation for the development of creativity and innovation. Sam Glucksberg, a psychologist at Princeton, has researched this phenomenon by testing how quickly two groups could solve a brainteaser: While the first group had no prospect of a reward, the second one was offered monetary bonuses related to the quickness of problem solving. The second group required on average three and a half minutes longer than the first one (cf. Glucksberg 1962: 36ff.). What is the explanation? Solving a brainteaser problem requires creativity and new heuristics – attributes only available through intrinsic motivation, while extrinsic incentives promote algorithmic thinking. Another aspect of intrinsic motivation, as will have been noticed, is its very strong link to the implementation of values and norms, which can be seen as a framework to create the so-called 'corporate culture'. As a result, one can conclude with Frey that "organisational knowledge coupled with intrinsic motivation of the employees is the main source for sustainable and defendable market advantages" (Frey/Osterloh 2000: 57).

As such, it can be observed that the principal-agent approach, based on incentive systems, is, from a management perspective, only useful for very generic and measureable tasks. The more complex the task gets, the less one can forego intrinsic motivation. This has major impact on a knowledge-based economy, where a lack of creativity and a neglect of pool resources would render innovations and economic success more difficult. If managers focus only on explicit contracts that contain explicit incentive systems and neglect the development of qualitative implicit contracts, intrinsic motivation will be crowded out. The endeavour for the future of the knowledge economy, therefore, consists of finding a balance between extrinsic and intrinsic motivation and developing adapted incentive systems that do not conflict with the latter. As a possible part of the solution in the following section we suggest three mechanisms for the improvement of implicit contracts: communication, participation and awards.

4. Mechanisms for the Improvement of Implicit Contracts

4.1 Communication

What is the special benefit of successful communication networks inside an enterprise?

> "[E]xchanging mutual commitment, increasing trust, creating and reinforcing norms, and developing a group identity appear to be the most important processes that make communication efficacious" (Ostrom 1998: 7).

This quote by Nobel Prise winner Elinor Ostrom emphasises the outstanding importance of communication within groups and companies. Moreover, empiric research by Frey and Osterloh shows that uncomplicated and institutionalised channels of communication decrease transactions costs, whereas it is not important whether the communication is institutionalised or not (Frey/ Osterloh 2000: 225ff.). Additionally, humans generally behave in a more cooperative manner if they communicate.

The following experiment conducted by the University of Zurich shows this explicitly: Scientists gave the participants a certain amount of money and left it up to them to decide whether or not they would pay an arbitrary amount to another person. The observation: If the other person was unknown, they donated on average 26% of their total amount. However, if the participant could communicate with the recipient before the transaction, they spent on average 48%.

Furthermore, only well promoted communication networks can enable a 'bottom-up' debate about what, why, and to what extend certain norms are important in an enterprise. Thus, communication networks provide an initial investment to create norms that can be the groundwork for cooperative behaviour. Additionally, employees tend to perceive a process as fair if they have the possibility to share their opinions on the issue. This socio-psychological effect, called 'procedural fairness', enhances a "bigger acceptance even from inconvenient decisions" (Frey/Osterloh 2000: 225). Especially in knowledge-based enterprises where incentive systems can lead to unintentional side effects, a mutual atmosphere of institutionalised communication appears to be crucial to create a framework for functional implicit contracts. To sum up, institutionalised communication tends to make individuals more cooperative and forms the basis for the development of common norms and for the emergence of procedural fairness.

4.2 Participation

By defining participation in enterprises, one can distinguish between immaterial and material participation. Material participation denotes the financial participation of employees through share-options and wages, while immaterial participation can be defined as the "direct or indirect participation of the employees in information, coordination and decision-making processes of the Company" (Martins et al. 2005: 14). With regard to the above-mentioned description of intrinsic motivation, it seems obvious that more immaterial participation bears the potential of the self-setting of goals and, hence, an increase of intrinsic work motivation. Material participation, by contrast, can obviously be described as providing for extrinsic motivation. By participating, an effect called 'psychological ownership' can occur. Potential psychological ownership can refer to the entire enterprise as well as to specific aspects of the organisation such as the team, work equipment or the work itself.

In terms of our previous example, Bob could experience such psychological ownership in three different dimensions: Firstly, there could be the perception of self-efficacy. Bob may have the general confidence that he is able to accomplish a given task for the organisation and will, hence, make a difference. The second dimension of psychological ownership is accountability: Bob may tend to make individuals and circumstances accountable for failures and misguiding decisions concerning his organisation, because it "is the nature of psychological ownership that owners want to achieve 'the best' for their ownership objects" (Martins/Pundt/Nerdinger 2005: 24).

With the third and highest level of ownership, the enterprise will become part of Bob's self-conception: identification is reached.[2] Regarding its implementation, psychological ownership appears to be more likely if

> "[…] individuals can exert the ownership rights related to their formal possession [(extrinsic motivation)], receive information about the object [(communication)], and have an influence over it [(participation)]. Consequently, financial employee participation will only lead to a high level of psychological ownership if it is accompanied by mechanisms of immaterial participation in the company" (Martins et al. 2005: 25).

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2   See in this volume Hofmann/Habenschuss/Sonnenberg 2014:181.

This statement by Erko Martins suggests that in order to evoke psychological ownership, material participation is only one ingredient in addition to communication and participation. This insight can be supported by research by Frey and Osterloh which tries to measure the quality of implicit contracts through the variables of trust, loyalty, corporate commitment, job satisfaction and working atmosphere, and determined that institutionalised participation and communication have positive impact on all five categories (cf. Frey/Osterloh 2000: 227ff.).

4.3 Awards

Awards express a form of extrinsic motivation, although they can also be immaterial. The main characteristic of awards and what distinguishes them from rewards is that they typically come as a surprise for the recipient. Therefore, the informational quality outweighs the controlling dimension of the award. Apart from the famous example of the Academy Awards presentation, an award is usually given 'now-that' and not 'if-then'. In fact, this absence of a controlling component establishes positive emotional reactions that will be specified in section five of this paper.

It could be argued that a person, who already received an award, cannot be motivated for future actions. However, studies show that the opposite is true, and a likely reason for this may be found in the concepts of justification and self-image: The recipient, if potentially able to reject the award before it is given, will try to prove himself loyal to the spender's reasons for the award. Thus, the reception of an award provides the commitment from the agent to adapt his self-concept onto the content of the appreciation. One may even understand this adaption as a promise to the spender and oneself (cf. Frey 2010: 1ff.). Furthermore, every award can be perceived as a contentious signal to the community, illustrating the values and measurements of the spender, which are apparently fulfilled by the receiver. In this sense, awards can implement role models (section 5).

As opposed to payments where an adequate measurement of performance and its translation into money is often impossible, an award expresses general appreciation and can thus scale and honour efforts that cannot be measured. Regarding this gradation, the character of awards involves a certain kind of publicity, while payments are normally treated as a private issue.

This publicity remains a significant and lasting motivational aspect for the recipients of awards: The reputation they possibly gain increases their willingness to contribute their work to the community. Regarding the development of pool resources, this increased desire to contribute constitutes an advantage of awards as opposed to normal financial payments. If awards are connected with

money the amount will mainly symbolise the importance of the award. Additionally, the meaning of an award obviously also depends on the status of the spender as well as on its uniqueness. If everyone could received a Nobel Prise for anything, it would certainly lose much of its value.

After qualifying our theoretical work with the principal-agent problem, we have here delineated the problem of displaced intrinsic motivation that emerges from traditional incentive solutions. In fact, we have shown that communication, participation and a certain usage of awards in terms of extrinsic 'now-that'-motivators can improve the quality of implicit contracts, and that those have to be the foundations for the development of new approaches in order to solve the principal-agent problem.

5.   Trust as Underlying Mechanism

5.1 Reduction of Complexity

Given the situation of a job interview, supposedly few applicants would indicate 'trusting' as one of their personal strengths (quite unlike 'trustworthy'). The reason may be that in such 'professional' contexts, many would rather consider trust a weakness. Annette Baier, a female philosopher investigating trust in terms of ethical behaviour, seeks to explain this repudiation with the 'psychology of adolescents': While every newborn has to show an innate trust (towards the parents) in order to survive, the ability to overcome this infantile "readiness […] to initially impute goodwill to the powerful persons" and its replacement with "vigilance and self-assertion, by self-reliance or by cautious, minimal, and carefully monitored trust" is seen as an important step towards adulthood and is subsequently "glorified as the moral ideal" (Baier 1994: 108).

In order to deal with the term 'trust', we will first place it in contrast to the mechanism of mistrust, and then examine the motives a person may have to trust and to fulfil trust on two levels. "Trust reduces social complexity, therefore it eases the life by overtaking a risk", writes sociologist Niklas Luhmann (1973: 78). Such reduction of complexity is necessary for us to create viable life-situations we can handle and base decisions upon. However, let us first look at the other side of the coin to reduce complexity: mistrust. What is the difference between the two mechanisms? When we display mistrust, we most often have a specific negative expectation of how the other party will act – mistrust is grounded in a narrow view (cf. Luhmann 1973: 78ff.). Optimal incentive

contracts, as defined above, are settlements spiked with mistrust: As we expect something unpleasant from our counterpart, we try to protect ourselves against it by explicitly specifying fines for misbehaviour and rewards for good behaviour. Therefore, we try to reduce risks instead of taking them on. When trusting someone, on the contrary, we do not expect one specific action from the other party, but rather a generally good-willed attitude within a generously wide frame of allowed actions. Therefore, implicit contracts are trusting, as they do not explicitly mention expectations. Can such a reliance on good will only be naive?

5.2 Two Levels of Trust

Mostly, the reasons for trusting someone are based on the perception of the person whom to trust. As mentioned above, the most basic, infantile level of trust is driven by the motive to trust such people who have power over oneself and that one is dependent on. In such cases, one could easily imagine that this level of trust is very likely to be abused. However, this view would neglect one scientifically observable mechanism that is likely to occur on the side of the one trusted: As the brain region Nucleus Caudatus that forms part of the human reward system, which is important for the establishment of trust and fairness, is stimulated in such cases, a person that receives trust as a reward is affected positively on an emotional layer and more likely to justify it (Priddat 2010: 47f.). Thus, the trusted can be "capture[d] and hinder[ed] emotionally by [the] demonstration[s] of trust" (Luhmann 1973: 71). Still, trust-giving and –receiving in this basic sense is rather primitive and seems unlikely to promise reliable persistence.

The second level of trust is more reflective. As it can take place in interactions with people on the same level of power, it is more voluntary than the first variant of trust (cf. Baier 1994: 116f.). In these cases, the central motive for a person to trust another is a certain kind of promise given by the latter. It is important to note that promises – depending on their degree of explicitness – may mean quite different things: They may range from rarely trust-dependent, safeguarding contracts (that contain fewer trusting (implicit) than mistrusting (explicit) elements) to mere votes of confidence (cf. Baier 1994: 118f.). The more trusting and, implicit a promise becomes, the more it focuses on the promisor's identity and integrity. It becomes more relational.

The following considerations will relate predominantly to the second kind of promise, showing of what use integrity may be in terms of reputation, and how promises can be a very effective way of making people internalise values. Firstly, however, one has to address the question of how

a promise may be focused on a person's identity. Given the existence of a "reflection of the own self-display" in the person that is to be trusted, his or her outwardly shown character traits can be called promises in themselves – because a person naturally "feels obliged to his or her own self-concept" (Luhmann 1973: 67). In other words: The signals a person sends out to others that suggest certain character attributes have as well passed that person's own self-perception and thus represent a more or less conscious promise about oneself to the outer world.

5.3 Reputation and Reciprocity

> "[W]hen the probability of two individuals meeting each other again is sufficiently
> high, cooperation based on reciprocity can thrive and be evolutionarily stable
> in a population with no relatedness at all" (Axelrod/Hamilton 1981: 1394).

This famous hypothesis by the political scientist Robert Axelrod[3] suggests that the probability of a repeated encounter is a very strong factor with respect to building up cooperation. More explicitly, organisations or working teams that fulfil the constraint of recurring reciprocity are likely to trigger off "reputation effect mechanisms held by a network of relational contracts" (Zanini 2007: 33). Relational contracts are a sub-form of implicit contracts and consist of promises concerning identity that can create reputation. Reputation itself can contain a set of character attributes (for example, competence), but always has to imply trustworthiness. As mentioned above, signalling those attributes can happen consciously or not, but if someone purposefully tried to achieve a good reputation, feigning admired attributes would be a feasible option.

This approach entails many difficulties, though, and its chances of lasting success are low: As mentioned before, trust is a mechanism that reduces social complexity. Therefore, "if someone misuses trust, one has to overtake this complexity oneself" (Luhmann 1973: 70). To illustrate this, let us assume a situation where one wants to impress a person and displays a certain conviction one, in fact, does not really have. On the level of analysis of promises, this means that one makes a promise about one's character; if the addressed person 'accepts' it and therewith trusts the promisor, not actually being this character would be like misusing trust. Meeting this person again then requires remembering the expectation one has created, as one would not fulfil this expectation

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3   In his empirical studies, Axelrod proved that the strategy 'Tit-for-Tat' – an 'a priori' cooperative, but very provocative behaviour in social interactions – was more successful as opposed to less cooperative strategies.

naturally; one would have to take on social complexity. Subsequently, "justify[ing] trust is easier as rule of conduct in all lasting relationships" (Luhmann 1973: 70). Justifying the trust in promises about one's character is the meaning of behaving with integrity. Thus, integrity is the easiest way to achieve and preserve reputation (in the sense of trustworthiness).

This is the first reason why promises and, similarly, relational contracts can work: They are reliable if "[the participating] agents […] exhibit preferences for reciprocity" (Hiller 2008: 2), or in other words, if they expect iterative encounters between them, because their integrity and therefore reliability is highly probable due to the building up of reputation and the chance of reducing social complexity.

5.4 The Free Decision to Give and to Keep a Promise

It is worth noticing that a promise about one's character does not have to be explicitly given at all: On this level of promises, there is the possibility of unconsciously inspired confidence and of the subsequent reception of unwanted trust. Still, before the emergence of an intentionally reliable trust relationship, the trusted person should always have the possibility to reject it.

This normative statement is reasonable not only because of the general right of self-determination, but also as it entails a psychological effect interesting for motivational purposes. According to the concept of cognitive dissonance, people will feel a certain amount of discomfort if they harm their self-concept, and they may do so in two ways: Either if they purposely did something that appears silly to themselves, or if they – purposely or not – harm someone else with their behaviour (cf. Aronson 1994: 238f.). While the latter situation can basically be described well with the traditional mechanism of guilty consciousness, the former is more interesting in combination with the concept of promises.

Let us come back to our example and imagine that the boss of Bob's car manufacturer someday comes up to Bob and says: "Mr Andrews, I appreciate very much the way you work together with your colleagues." Bob, who feels honoured by this, answers: "Thank you very much." Clearly, the compliment is a statement about Bob that he can harmonise well with his own self-conception. A few days later, however, the management sets up a little competition among the employees for the best draft. The winner will receive a prise; however, if a team created the draft, the prise will have to be evenly distributed among its members. While Bob works on his draft, a colleague addresses him and confesses that he does not have a good idea yet, and then asks Bob if they could work together.

Bob already had a good idea himself, though. Now, it is his decision whether to cooperate or not. If Bob decides not to cooperate, he will justify this with respect to the prospect of receiving the full prise. Perhaps he will ask himself whether he is not as cooperative as he should be. To clarify this issue for himself, he will either evaluate that special situation as not being a typical situation for cooperation, or he will lower his own aspirations for being cooperative, reasoning that one should also be an individually ambitious person.

If, on the other hand, Bob decides to cooperate, he will be distracted by the fact that he obviously did a stupid thing: He will have chosen to cooperate, though he could easily have had the prospect of the full prise. But why did he do so, then? Probably because he accepted his boss's compliment so light-heartedly that he felt an obligation to it whilst at the same time feeling somewhat stupid for this. Nonetheless, as Bob obviously does not consider himself a silly person, he will begin to come up with reasons for his behaviour. Therefore, he will begin to think that, in this case, being cooperative was really worth it: His colleague is a really nice person, and working together is a lot more fun. Furthermore, Bob believes that his colleague will certainly return the favour sometime. To sum up: What happens is that Bob will begin to think of reasons why his colleague is a nice guy and, alongside, will discover some advantages of cooperation in general. The generality descends from the fact that his reasoning takes place before the actual experience of this very cooperation, only induced by his cognitive dissonance. In this way, the next time the management announces a competition, Bob will not feel that stupid again for cooperating. Perhaps, he may even propose collaboration to his colleague the next time. The reason is that Bob arrived at the advantages of cooperation for himself, which made them become part of his own evaluation system. Bob learned the value of cooperation.

5.5 Self-Justification and Cognitive Dissonance

The process that takes place after Bob has decided to cooperate is called self-justification after the experience of a cognitive dissonance (cf. Aronson 1994: 213f.). The latter occurs as he opts for an action he comes to regret afterwards – even though, in fact, he will not be able to regret his decision to cooperate, as he feels obligated to it due to his former decision to accept his boss' compliment. This acceptance created an obligation because similar to the awards mentioned above the compliment was a statement about his identity. As Bob accepted it as part of his own

self-concept, he simultaneously sent a signal back to his boss promising to stick to this value. To illustrate it metaphorically: his boss offered Bob a relational contract (see above) and he signed it.

Let us assume for a moment that Bob's boss did not compliment him, but instead sent out a newsletter to all employees, which said that cooperation is demanded from everyone, and that non-cooperative behaviour will be sanctioned if noticed. This would have had an impact not primarily on Bob's decision, but on his subsequent reasoning. Now, if he is cooperative, Bob will not blame himself for being silly at all: The question "Should I not have known it before?", and thus the feeling of regret will not arise. Bob will perceive the 'disadvantage' of sharing the prise with someone else as not freely precipitated by him, but as enforced from the outside. In other words, he will not – induced by a cognitive dissonance – be intrinsically motivated to justify his cooperation. Instead of having deliberately agreed to an implicit, relational contract, he was forced into an explicit, 'complete' one. Thus, his justification will be taken in by the extrinsic motivation of (in this case) a threat.

The mechanisms of cognitive dissonance and self-justification in this form have been mainly researched by social psychologist Elliot Aronson, who sees them as "a big step for the development of a steady system of values" for an individual, as it "leaves the possibility to find an own justification" (1994: 218). In combination with trusting, one may then list the following steps of a process: Demanding a promise of someone – via a compliment, for example – can be the necessary prelude for a situation in which that person comes in the conflict of…

- … keeping or breaking the promise. If the person keeps the promise, although the opposite would have been more reasonable…
- … the person will feel stupid – not for keeping the promise, but for making it in the first place, as it 'should have been clear' that this promise would not be easy to be kept. Therefore, the person will experience the unpleasant feeling of a…
- … cognitive dissonance. To solve this, however, the person will be intrinsically motivated to think of other reasons for keeping the promise, i.e. the person will be longing for…
- … self-justification. As an outcome, the person will then internalise these reasons, which can be special character attributes of the persons involved as well as reflections on the subject of the kept promise itself.

The process could alternatively be described as the sequence of being offered a relational contract, singing it (metaphorically), regretting this decision afterwards facing the effort to adhere to the contract, and finally reasoning in favour of it in order to solve the cognitive dissonance.
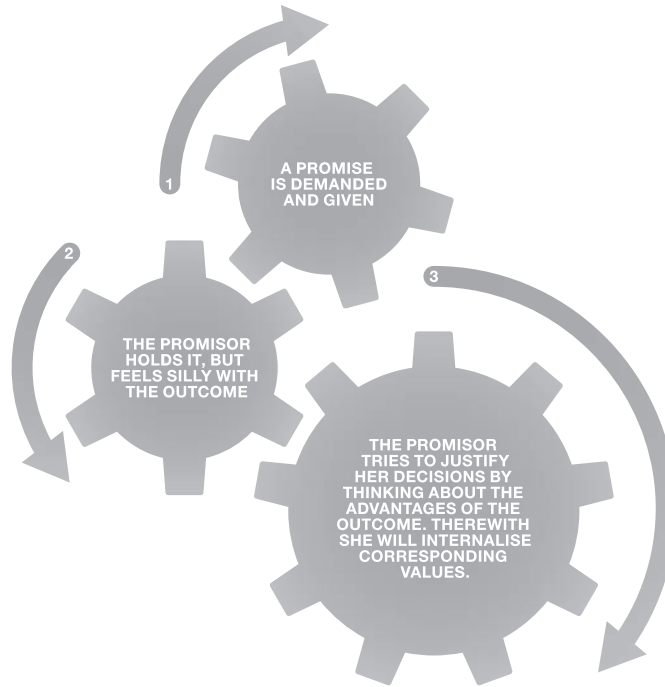
FIGURE 1: THE SELF-FULFILLING FORCE OF A PROMISE (OWN SOURCE)

5.6 Moral Values and Norms

It can be reasoned, as such, why intrinsic motivation is the root of personal adherence to values and norms: These components of corporate culture have to be internally reasoned and justified in order to become binding for the individual. Rules of conduct based solely on compliance (extrinsic motivation) are, in this light, not very likely to induce such individual reasoning. What is crucial about promises is the ability of making a free decision of whether to keep or break it. Only this

form of freedom, in combination with not being forced (but perhaps nudged) to promise something (or, accordingly, accept trust) in the first place, can ensure the functioning of the presented process of self-justification and internalisation (cf. Aronson 1994: 55f., 239f.).

Of what importance are these commonly shared values, such as cooperation or fairness? According to business ethicist Josef Wieland, "[the functioning of] implicit […] contracts [is] dependent on the former efficacy of moral standards" (Wieland 1993: 13). What is the reason for this? Let us look back at the example of Bob's cooperation: Once he had justified to himself why cooperation with his colleague and in general was a good thing, his adherence to the implicitly given promise to his boss became much more likely. In general, most implicit contracts are likely to be grounded on some general idea or conviction (like the idea of cooperation); if such a moral conviction is already internalised in the self-conceptions of both parties, it will be most helpful for the contract's functioning. Therefore, the education of such values through the self-fulfilling force of promises is likely to reduce the risks of implicit contracts.

To conclude, steady trust relationships can therefore mainly be built on the second trust level, i.e. the level of promises. The emotional affectedness on the first level of trust only plays an intensifying role if trust was transmitted in a rewarding way (e.g. with awards or compliments). Implicit contracts depend on formerly internalised moral values. These values can be induced into people by the self-fulfilling force of promises on identities (offering and accepting relational contracts) that is explainable through the effects of cognitive dissonance and self-justification. Given reciprocal expectations of iterative encounters, a steadiness of such character attributes (the adherence to the relational contract) is likely, as integrity is the easiest way to maintain reputation.

6. Approaches to Social Dilemmas

6.1 The Prisoner's Dilemma

As already shown in the beginning, the traditional approaches to the principal-agent problem are incentive and control systems based on explicit contracts. However, regarding the outcomes for both parties, such a system of mistrust can only be the second best option. The reason for this is best demonstrated with the so-called 'Prisoner's Dilemma' (cf. Tucker 1950: 1ff.).

	P2 COOPERATES (REMAINS SILENT)	P2 DEFECTS (CONFESSES)
P1 COOPERATES (REMAINS SILENT)	- 2 / - 2	- 6 / - 1
P1 DEFECTS (CONFESSES)	- 1 / - 6	- 4 / - 4

FIGURE 2: PRISONER'S DILEMMA (OWN SOURCE)

The matrix shows that the Prisoner's Dilemma describes a situation between two players. Imagine there are two prisoners who committed the same crime, who are now being held in two different cells without being able to communicate with each other. The state's attorney attempts to make a deal with them: Although the jail sentence for the offence committed is normally six years, they can get out earlier if they confess. When both confess, they will both be imprisoned for four more years. If both remain silent, they will both get only two more years. However, if one remains silent and the other confesses, the principal witness regulation will be effective, meaning that the one who confessed gets only one year, while the silent one has to serve the full six years.

We are observing this situation from the prisoner's point of view: Cooperation for both means remaining silent, thereby generating the best outcome for both: a common good. However, considering the scenario with only one prisoner in isolation, the situation presents itself in a different light: If player 1 assumes that player 2 will be cooperative, the only rational thing to do for player 1 will be to defect, because, in this case, his outcome is even better. But player 2 will be aware of this beforehand, and so, fearing such exploitation/abuse, will defect as well. They will both confess, thereby arriving at an outcome not optimal for both of them, even though they have decided on a rational choice basis. In the Prisoner's Dilemma, two mistrusting players will both prevent their personally worst outcome, but taken together will yet not reach the first best outcome. They will not rely on each other, assuming that they both would always choose the personally best outcome instead of the commonly best.

The usual solution of mistrust to this scenario is a third party that threatens the participants with sanctions and makes a defection too costly: which is the concept of the principal-agent relationship. This effort, though, produces costs in itself. As mentioned regarding the principal-agent problem, this would be the agency costs[4] as well as the negative results of the overjustification effect. These costs make the first best outcome unachievable.

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4   They are defined as the result of firstly, the monitoring expenditures by the principal; secondly, the bonding expenditures by the agent; and thirdly, the residual loss (cf. Jensen/Meckling 1976: 308).

Only if both players trusted each other beforehand would they arrive at the first best outcome. However, as this cannot be presupposed, the question arises how such implicit contracts could be established. According to Wieland, "moral goods [such as trust] must, from the economical perspective, as well […] be evaluated by prises" (Wieland 1993: 16). This shows that the use of trust relationships implies costs: They have to be created – the implicit contract has to be arranged – before they can be used (cf. Luhmann 1973: 84ff.). Still, once moral goods, like the internalised sense of cooperation, are created, they do not necessarily have to be enforced the next time. In contrast, controlling and sanctions have to be in place all the time in order to remain effective. Therefore, it can be assumed that the more social dilemmas occur between the two players, the cheaper the solution based on trust, once established, will be.

6.2 System Trust

In real-life situations, social dilemmas like the Prisoner's Dilemma occur mostly with more than two players involved. If collective goods are involved, they are called public good paradigms and generally describe situations, in which individuals are dependent on the allocation of such goods. The problem of these situations is that for everyone, there is an incentive to act as a free rider, which means letting the others pay for the allocation of the good and consume it for free (cf. Leschke 1996: 85). A prominent case is the payment, or evasion, of taxes. Generally, tax collection is enforced in order to ensure the functioning of the system: The government demands reports from its citisens and threatens them with sanctions. It is the nature of the beast, though, that the mechanism of sanctions can never be complete. As this seems to hold true in general, there is a certain necessity for the voluntary good-will of the members in all public good paradigms. The relative importance of this 'moral' behaviour will be shown in the following.

An empirical study on the collection of taxes found out that the opinion on taxation within the society has a significant impact on the extent of tax evasion, while the severity of its punishment and the rate of controls were less influential (cf. Leschke 1996: 89). On the contrary, it was assumed that extensive measures by the state sent the wrong signal to the individual because they implied that the majority of the other citisens evade taxes. Consequently, taxpayers believed that they were paying too much in relation to the others. The study shows that the fear of being exploited, combined with the prospect of not paying taxes, outweighs the fear of sanctions by the government, even though their severity and probability increase. It follows that the suspicion of

exploitation presents a great threat to the voluntary contribution to the tax system. The citisens do not trust the system.

System trust is, according to Luhmann, the "trust that others do trust a third party like I do" (1973: 76). As mentioned above, trust means the reduction of one's own complexity through the expectation of good-will in another party. Regarding tax collection, such trust would directly concern the government, therewith making the assumption of its good-willing behaviour (and competence). What, now, is the distinctive feature of system trust? "Paying taxes always is a good thing" would be an opinion that may help justify the trust in the tax system. Still, however, such a conviction would have to be very strong to stifle the suspicion of free-riding behaviour of others.

6.3 Influencing the Group

For a more convincing justification to system trust, the individual will need more information: The opinions of the group, or at least of its majority, will have to be evaluated, as trusting a system will naturally become easier "with the increasing cooperation tendency of the others" (Leschke 1996: 87). Therefore, the key to making trusting in a system simpler is to endorse communication. Within this communication, people will possibly try to have an influential impact on others, for example by way of what Leschke calls "spontaneous social sanctions" (1996: 89). These social sanctions would function on the level of compliance, i.e., on the level of extrinsic motivation, and could force those system-members who have not internalised reasons to trust in the system themselves to collaborate. They could, in the same ways as the sanctions from the government, also have an effect of habituation on those formerly free-riding individuals (cf. Aronson 1994: 55f.).

The other way of influencing potential free-riders would be to make them internalise respective values that would make them justify their system trust. Such a process could be induced by the self-fulfilling powers of promises as they were displayed above (e.g. the instrument of compliments could be used here). Additionally, with every person that noticeably joins the contributing part of the group, the task of trusting in the system for all the others will become easier:

> "[…] if individuals believe that everybody will continue to play the trust-game,
> although the short run payoff from defecting is higher than the long run payoff
> from the rule obedience, it ensures an on-going cooperation of all parties"
> (Zanini 2007: 34).

Therefore, system trust can be seen as a self-enforcing mechanism. To sum up, the possibilities of a system's members to influence the group are: (1) sanctioning others to ensure compliance, (2) complimenting others to induce the process of internalised justifications, or (3) trusting in the system and informing others about it.

6.4 Between Mistrust and Trust

The solution to social dilemmas such as public good paradigms is often to be found in a hybrid between institutionalised mistrust and the dependence on system trust among its members. Accordingly, in addition to the motivation balance described above, extrinsic motivations such as controlling structures or explicit contracts are necessary in order to ensure a foundational willingness to contribute to collective goods. However, such measures should not be driven as far as to hamper system trust through signals of mistrust. After all, as Luhmann points out:

> "A social system that needs or cannot avoid a mistrusting behaviour of its attendees for certain functions, needs at the same time mechanisms that avoid the mistrust to gain the upper hand, becoming a destructive force through processes of mutual increase" (1973: 84).

Addressing especially the economic environment, one must not forget that the neoclassical economy generated an "egoistic acting model figure [named] homo oeconomicus" (Leschke 1996: 96), which was chosen to be the determining actor of all its theories, leaving by definition no place for such 'weak' attitudes like trustworthiness.[5] This theoretical background suggests a prevalence of mistrust in economic systems. Especially in this environment, system trust is rather likely to be hampered by the wrong signals. What can the above examination of trusting in a system contribute to enterprises? As we have explained above, knowledge enterprises store a lot of their value in a so-called resource pool, containing commonly shared knowledge about the "what" and the "how" of the enterprise's business. There is, however, no guarantee that employees will contribute to this pool, as this most often means additional effort. While, so far, we have laid the focus on communication and participation in order to solve this, one could also declare an enterprise's

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5   By Luhmann's definition of mistrust, the concept of the neoclassical homo oeconomicus and of the agents in the game-theory is a mistrusting one, as it narrows the human down to a subject showing opportunistic behavior (self-interest-assumption).

resource pool a collective good of the enterprise. Overcoming the underlying social dilemma and the investment in system trust would thus contribute to one of the essential values of enterprises, which is the commonly shared knowledge amongst the employees.

6.5 Summary: Trust Capital in Enterprises

At first, we delivered a two-level definition of trust, then explained relational contracts with the promise-mechanism and showed why the latter occurs on the layer of personal identities, and has two implications: firstly, that individuals are likely to behave with integrity within repetitive relations, and secondly, that demanding promises, for example by giving respective compliments, can induce their self-fulfilment by way of the promisor's internalising of self-justifications. This last educational effect can, again, positively affect the functioning of promises or, in a broader sense, of implicit contracts. We consider such iteratively developed trustworthiness and internalised moral values and norms, all of which leading to high reliability, to be integral components of trust capital.

Subsequently, we problematised trusting systems, employing the Prisoner's Dilemma as a typical social dilemma. We reasoned that, in order to come closer to the first-best outcome, a balance of explicit as well as implicit contracts is needed, as only the dependency on trust, therefore the deliberate "investment in a trust capital, whose return is the establishment of stable expectations, which implies sinking [agency] costs" (Wieland 1993: 22), accounts for the fact that complete control is economically unreasonable. Lastly, we exemplified that system trust is highly dependent on a group's behaviour, and showed that the allowance for influential and informative exchanges between the system members is therefore crucial. We see these interactions as another integral component of trust capital.
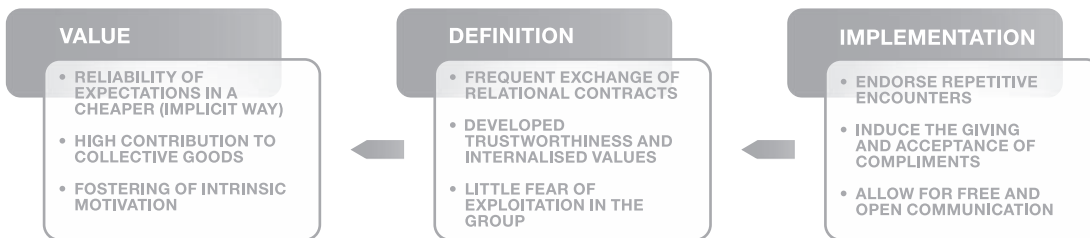

VALUE	DEFINITION	IMPLEMENTATION
• RELIABILITY OF EXPECTATIONS IN A CHEAPER (IMPLICIT WAY) • HIGH CONTRIBUTION TO COLLECTIVE GOODS • FOSTERING OF INTRINSIC MOTIVATION	• FREQUENT EXCHANGE OF RELATIONAL CONTRACTS • DEVELOPED TRUSTWORTHINESS AND INTERNALISED VALUES • LITTLE FEAR OF EXPLOITATION IN THE GROUP	• ENDORSE REPETITIVE ENCOUNTERS • INDUCE THE GIVING AND ACCEPTANCE OF COMPLIMENTS • ALLOW FOR FREE AND OPEN COMMUNICATION

FIGURE 3: TRUST CAPITAL IN ENTERPRISES (OWN SOURCE)

7. *Social Micro-Payments in Enterprises*

7.1 *Social Micro-Payments in the Web*

The two internet enterprises 'flattr' and 'kachingle' that both started their service in 2010 developed the business concept of Social Micro-Payments: for content on webpages that internet users appreciate, they should be able to reward the creator with a small amount of money – a so-called Micro-Payment (cf. L.M. 2011). The payment is based, unlike with other payment systems for the web like flat rate-tariffs, on a purely voluntary whish for appreciating someone's work: the access to the delivered content remains unrestricted. Peter Sunde, cofounder of the Swedish start-up 'flattr', explains the idea in an interview with Meike Dülffer: "The system is here to show that people are willing to pay for things and they don't have to be forced to pay. There is a will to give money. It doesn't have to be a payment, it has to be more an appreciation model" (Dülffer 2010).

Another interesting aspect about especially 'flattr' is its payment procedure. Every user who has a 'flattr'-account is both: a giver and a receiver. One can receive payments over a little 'flattr'-button that can be attached to own web content. To make the procedure of spending easy and feasible, the user at first charges his account with a certain amount of money (from €2 to €100). Anytime he appreciates delivered web content, he clicks on the respective 'flattr'-buttons. Only at the end of a month, the 'clicks' will be counted and the user's available amount of money will be distributed to the recipients proportionally: the user's money gets divided by the number of clicks. This approach has two advantages: Firstly, the user doesn't have to limit the 'flattering' at any time due to lack of money. Secondly, the operation of appreciating another's work remains simple, without the need to exactly measure the worth of the content (cf. L.M. 2011). Sunde: "If there is less problems with giving money, more people will give money" (Dülffer 2010).

As one can see, Social Micro-Payments in the web are driven by the user's intrinsic motivation to appreciate other's work. They presuppose internalised values like a sense for fairness and offer an easy and elegant way of voluntary participation through a fast payment procedure. Thereby, these services were a great inspiration for our tool.

Bob is disillusioned with his job as a car designer. Although he received some appreciation in the situation described in section 5, his resignation is well advanced through the overjustification effect and due to a lack of trust in his corporation. He has no more intrinsic motivation to design the car of the future and thinks about quitting his job. All of a sudden, however, the management presents a new business tool that awakens his interest: Social Micro-Payments in Enterprise.
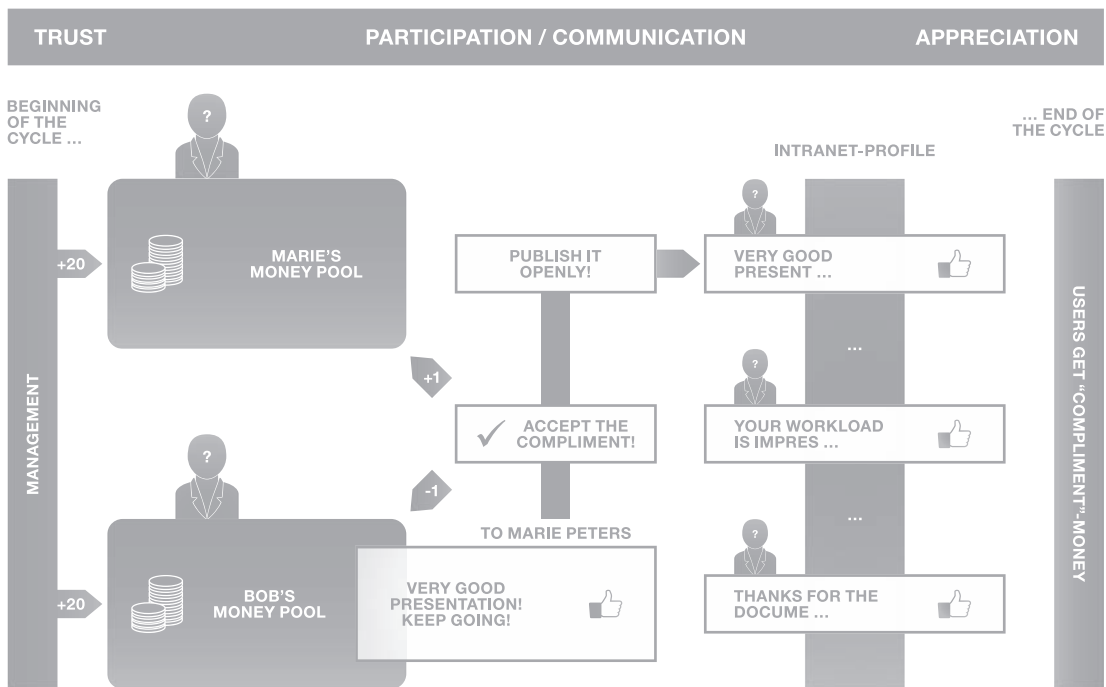

FIGURE 4: PROCEDURE OF SOCIAL MICRO-PAYMENTS (OWN SOURCE)

The six key points of the tool are:

Credit of Trust

Bob and his colleagues get the same amount of money in their intranet profile account that cannot be paid out to oneself.

Appreciation

They can communicate with their colleagues by clicking a "compliment" button on their respective intranet profiles. This action will eventually transfer a part of their own money budget to the colleagues.

Informational feedback

Bob has to give a short comment feedback with the compliment, giving reasons why he thinks the recipient has earned an award.

Transparency

Both compliment and feedback are openly visible (without any information about the transferred money) on the respective profile if both the recipient and spender agree with this. Otherwise, it will only be delivered as a private message.

Autonomy

Bob is free to decide whether he wants to participate in the tool at all. Every recipient of a compliment can decide freely whether to accept the award or not. In the second case, the transaction will be cancelled.

Continuity

The recipient's money will be paid out in accordance with the spender's budget at the end of a temporally randomised pay-out cycle.

7.3 Reasoning

In the following we will analyse the emergence and merits of the tool's key features: credit of trust, appreciation, informational feedback, transparency, autonomy and continuity. To apply SMPE in an enterprise or working team, an initial monetary investment is required. This money, however, is invested without imposing any constraints regarding its subsequent use and therefore communicates a credit of trust, which gives responsibility to Bob and his colleagues and allows for meaningful participation. However, one has to be careful about the exact amount that is provided by the principal in terms of the overjustification effect: The setting of a too high incentive for the employees could make them be more interested in the tool than in their actual work. Instead, the tool should only do a background job as a transmitter and supporter of social relations.

The uncomplicated form of spending is a result of usability reasons. The combination of the awards with money plays an important role in strengthening the importance of the award, the feedback and hence the accompanying appreciation. Giving a compliment can be perceived, like demanding a promise about one's personality if it is combined with appropriate informational feedback. The feedback plays the role of the subject terms of the relational contract that the complimenting person offers.

If this feedback concerns the recipient's self-concept in a complimentary way – if the relational contract is set up in mutual agreement – the foundation for a trusting interaction is laid. Also, through the mechanisms of communication and participation, a general debate may evolve about which, what and why norms, rituals, actions, decisions are important. Therewith, the kind of corporate culture that is desired and enforceable by the employees emerges, and their feeling of 'procedural fairness' rises. As a result of the participation, the effect of a psychological ownership is likely to occur, which would lead to an increasing identification with the organisation. Moreover, the feedback weighs the informational as opposed to the controlling character of the (already 'now-that') award in order to avoid the crowding out of intrinsic motivation.

Transparency correlates with the given signal character of any public award. However, the use of this instrument remains a double-edged sword if it is mandatory: Bob may not want to be a role model concerning an aspect of behaviour that does not fit his respective self-perception. Additionally, a potential competition for feedback and appreciation would be more likely to occur if every transaction was visible. Competitions like these represent one of the purest forms of 'if-then'-rewards. The means of feedback and awards would turn into an end in themselves. Still, accepted compliments about contributing behaviour that are openly visible facilitate the spread of information necessary for the self-enforcing mechanism of system trust to occur. Therefore, transparency is a sensitive feature that we believe to be controlled at best by the employees themselves.

The credit of trust that enables the implementation of SMPE as well as every given compliment should be refutable in order to be perceived as a valid offer. Consequently, if someone does not feel comfortable with the responsibility of giving feedback at all, they should be able not to participate. This autonomy is an important constraint for the self-fulfilling force of promises. Only if Bob accepts a compliment autonomously will he feel truly committed to it. The option of refutation must always exist beforehand. The case of refutation, moreover, can get interesting as well: The negative consequence for the trust relationship between him and the spender is obvious and should be dealt with through communication. Bob's internalised values, in contrast, will be even stronger, given the fact that he gave up money in order not to betray them.

Our tool is designed to animate a continuous process of communication. Therefore, randomisation of the moment of pay-out is important in order to set up an unexpected award condition. The avoidance of making awards predictable at the end of a predetermined pay-out cycle shall prevent the development of 'if-then'-loops between colleagues. The employee's attention should be focused on the process of giving and receiving awards rather than on the expected pay-out. A fixed pay-out cycle would encourage the abuse of the tool.

7.4 Discussion

SMPE enable the creation and preservation of Bob's intrinsic motivation while implementing participation through a communication network. Inspired by the award-concept and the first level of trust, the main form of communication consists of a compliment combined with feedback. This tool will create trust capital in the previously defined sense in order to overcome social dilemmas and to promote the functioning of implicit contracts. It stands out due to the responsibility Bob

and his colleagues experience: As its appliance requires a monetary investment without hedging the explicit contracts involved, the tool truly corresponds with the fact that moral competence does not arise through formulas or definitions of virtues, but through one's own experience of acting responsibly in one's own right (cf. Pfriem 2007: 97).

Understanding corporate culture in the sense of Lazear[6] we suppose that SMPE are an initial investment in the implementation of values such as participation, appreciation and open communication which are induced by trust and promises/relational contracts and work technically through the giving of award-like compliments. If we consider that "[…] the relative proportion of each type of contract is driven by an evolutionary process" (Hiller 2008: 1), we assume that SMPE could shift the distribution of contracts in an evolutionary process towards increasingly qualitative implicit contracts. We understand SMPE as a possibility and inducement to give many small 'invisible handshakes'.

SMPE lay the foundation for intrinsic work motivation, paradoxically through the extrinsic 'now-that'-rewards, and hence point out a path to more creativity, innovation and joy of work. From this perspective, we assume that SMPE can contribute greatly to an appropriate balance of extrinsic and intrinsic motivation and offers, due to social relatedness and the innovative way to allocate moral goods through an effective, self-induced value education, a new approach for solving the principal agent-problem.

7.5 Best Practice

Regarding the implementation of SMPE, some questions remain open. To exemplify the kinds of issues that could arise concerning the application we ask three of them:

How to examine the amount of money that should be distributed?

The amount that every employee receives at the beginning of a cycle should fulfil two main functions: On the one hand, it should be large enough to signal trust and the importance of the awards every employee can distribute. On the other hand, it must not be too large in order to prevent the

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6   "Corporate culture is thought to change the way that workers choose to act without using direct monitoring and compensation. It generally requires an initial investment that instills a particular set of values in its workers so that they behave in the desired fashion as a natural consequence of utility maximisation"(Lazear 1995: 89).

overjustification effect that would cause the users to think more about the money than about the content of the awards: the feedback they carry.

How to introduce the tool to the employees?

As the aim of SMPE is the establishing of trust capital, its reception as a sign of trust and not as (another) attempt to control the employees is crucial. Accordingly, there should not be any possibility to analyse the statistical data the tool generates. We think that it is highly probable that the employees in general will make use of the tool due to its focus on social interaction, the pleasure of participation, and the prospect of being honoured with a monetary award.

How to set up a feedback template?

Some employees may be uncertain about how to express a compliment to a colleague or what elements feedback should contain (in other words, how to arrange a relational contract). Therefore, it could be reasonable to develop a template for the creation of compliments that pre-sets and provides the basic structure or some phrases. This instrument should be used carefully, though: Too many restrictions would certainly lower employees' sense of self-autonomy.

Concerning its general application, we expect the tool to be most utile in enterprises that are dependent on the creativity of its employees and therefore on intrinsic motivation and implicit contracts in general, just like start-ups, consulting firms, but also in internal project groups of big enterprises and public sectors. Similarly, the whole sector of knowledge enterprises we recognise as an area of application, as the optimal use of the employees' knowledge demands for the deliberate adaptation of communication systems and the valorisation of the enterprise's resource pool. Further we suggest that especially multi-cultural workgroups could benefit from the extensive building up of relational contracts and the reciprocal education of values that SMPE are capable of delivering.

'Now-that' rewards have already been successfully implemented in Kimley-Horn and Associates, a big civil-engineering company in North Carolina: Here, at any time, for any reason, and without any permission, any employee can award a bonus of 50 dollars to any other employee. Regarding the outcome of this tool, the management experienced that trusting in employees in this way pays off:

"It works because it's real time, and it's not handed down from management," says Barry Barber, Kimley-Horn's human-resources director. "Any employee who does something exceptional receives recognition from their peers within minutes. […] There's very little oversight and virtually no abuse. And when we think of what our clients received for that $55 [the extra $5 is to cover taxes]", Barber says, "we know it's money well spent" (Pasquariello 2007: 1).

8. Conclusion

To sum up, we have shown the importance of implicit contracts concerning intrinsic motivation, delineated the problems of generic incentives regarding the semi-optimal outcome of social dilemmas, and demonstrated possibilities to improve the quality of implicit contracts with communication, participation and the award-mechanism. Subsequently, we have introduced and examined the investment in trust capital, signifying the creation of relational contracts and internalised values, and evaluated it as an indispensable ingredient of any effective approach to solve social dilemmas. Furthermore, we have expressed ways to create system trust and enhance the contribution to collective goods. Building up on this theoretical framework, we finally presented our tool: Social Micro-Payments in Enterprises. After launching the tool, its design and its premises that we reasoned based on the previous insights, we illustrated a best practice perspective. Naturally, we are very interested in proving the hypotheses we deployed and the benefits SMPE promises to accomplish in reality in order to meet the further need for empirical research. As we believe in the great value of trust capital, we consider this tool to have a prosperous future. We would like to end the paper with a quote by Niklas Luhmann:

> "Instead of bracing oneself against the unpredictability of the other's full complexity of possibilities, one can as well try to reduce this complexity, namely by concentrating on the education and preservation of mutual trust" (1973: 71).

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THE
CORPORATE NETWORK

**Collective Intelligent
Management**

Collective Intelligent Management

A Review of the Nokia CMO Customer Care "Learning Journey"

Michael Hengl, Maximilian Kammerer, and David Rohrmann

In 2004, the CMO (customer & market operations) Customer Care division of Finnish corporation Nokia was struggling with inefficient processes and rising costs. Consequently, top management initiated a program to drive cultural change as a way to meet this challenge. Four years of leadership development and training later – and Nokia Care's managers no longer wait for orders from above. They act in a flexible, efficient and autarkic collaborative way to provide their services in a collective intelligent manner.

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1. Introduction

1.1 The Setting

> "The only organisation capable of unprejudiced growth, or unguided learning,
> is a network. All other topologies limit what can happen" (Kelly 1994: 26).

It is the third week in March 2008, and the conference area in Schloß Pichlarn, a luxury hotel in Austria, is buzzing like a beehive. People move through the corridors like swarms following untraceable routes, grouping in hallways and around food, going off into the surrounding woodlands. They are given highly specialised information, they must solve complicated tasks, find solutions and – most importantly – communicate with each other. This is exactly how it should be. One hundred selected leaders, from all countries in the world representing the Customer Care department of the world's largest mobile phone manufacturer, Nokia, have flown in to develop what is now considered by network researchers, organisation theorists and management consultants, as the most progressive form of business management today and which is known as: Collective Intelligence.

Nobody is really certain how a high level of intelligent behaviour emerges within systems where agents work together following simple rules yet without any central point of control. In his book Out of Control, Kevin Kelly (1994) – the visionary editor-in-chief of the internet-technology magazine Wired – explained the network theoretical premises of the intelligence patterns of bee and ant colonies, swarm robots and Wiki-communities, and did so in a way clear enough for even commercial organisations to understand. Since then a trend has emerged where more and more companies are considering the possibilities of using collective intelligence teams as an answer to a marketplace which is increasingly spinning out of control. The underlying idea is that self-organising, interference resistant, developable and adaptable multi-agent-networks can supersede declining organisations based on old-fashioned, trivial and static hierarchical structures and which live off heroic style management cultures.

1.2 The Challenge

Nokia CMO (customer & market operations) Customer Care is not just considering these ideas but have already begun implementing them. In 2004 Maximilian Kammerer, former Vice President

of Global Customer Care, and Michael Hengl, founder of 1492.// GmbH, an integral consulting firm, launched a high quality diversification project: the "Nokia Learning Journey". The aim was to turn the corporate problem child – the customer service department and its repairs administration – into the driving force behind this technology-orientated mobile communications giant and its future global corporate development, and to achieve this all within 4 years. The impetus was the realisation that the conditions for competitive strategies in this tough market have recently seen some major changes.

The boom era of growth and the seemingly endless demand that grew out of the first two decades of the mobile phone industry is now clearly drawing to a close in an expanding and maturing market place. Customer demands are getting higher, not only with regard to extra features and phone quality, but especially for after-sales service. If buyers are unsatisfied with the service, they will take their business elsewhere. According to Maximilian Kammerer's vision of the future, "We can safely assume that customer service will have a higher priority in the future as technology, products and design become more and more unified, leaving only the level of service that will make the difference".

At the same time, there is a constant increase in technological innovation as well as new routes for accessing information, which is especially important for young users and impacts on their purchase decisions. Not so long ago, Nokia launched a small range of "feature phones" onto the market that were designed primarily for telephoning, and yet now there are 10 times as many "smart phone" models on the market that include an endless choice of software programmes and extra features. This places a rapidly growing and increasingly complex demand on the customer service department, which is then heightened by the immense volume of Nokia's market share. One sixth of the world's population uses a mobile phone made by Nokia – and when they do not work they are returned. Total profits from mobile sales are radically cut when higher service costs arise from inferior quality and service. It is becoming more complicated to set up, operate and update phones, making it more and more necessary to simplify things for the customer.

Before the beginning of the Learning Journey, the repair administration department were not in a good position to make things easier for the customer. During the mobile "gold rush" the service infrastructure was limited to a hectic and disorganised set-up of repair services that needed to cope with a high demand. The result was a worldwide patchwork service organisation. Isolated and far away from the customer, the service points complacently muddled along with arbitrarily introduced rules and methods in over 120 different countries. Take for example a new model

that was first released in the Japanese market: it was found to have a common software error and was sent back to the repair centre, but nobody thought to inform headquarters of the problem, which would have prevented the faulty parts from being released to sensitive European consumers. International communication, information exchange and unified problem solving – in short the entire behavioural patterns of a collectively intelligent agency network – were simply not occurring.

2. *Getting Started*

This needed to change as soon as possible. In 2003, Kammerer was commissioned from Apple to help break the company out of this old format. It took two years to prepare for this extremely ambitious and costly development project. When we look into the busy beehive of the Learning Journey, we see Kammerer giving his incentive, stimulation and drive to the whole process. Yet the question was how he proposed to take this massive, segmented organisation, which has grown complacent with success, and direct it towards collective intelligence? The answer turned out to be making these changes from within instead of using a top-down, hierarchical structure to pass on orders. This meant building upon the collective intelligence of individual agents and orientating them towards the central hub of the entire organisation. The 100 leading members of the staff should become disseminators, whose behaviour towards their immediate 1,000 members of staff would then spread infectiously to the 10,000 associated employees working in this business section.

This particular path can be difficult to follow and may stretch some employees to their limits, especially if they do not understand the rules of this new network, namely:

- You are one part of a total system, whose aim it is to reach a high level of customer satisfaction!
- If you want to stay in the system, then you have to want a better system, i.e. make yourself useful!
- Stop always doing things the same way!
- Develop new paths together with others!
- Don't always blame others for mistakes!
- Take responsibility!
- Communicate!

Collectively this will result in a higher quality of service. This is what intelligent networks are all about: usage and responsibility, exchange and communication. From now on, swarm compatibility is decisive for continuity and status within the system. The groups have been carefully formed to allow the airing of as many differing opinions as possible on a particular problem. In such a system it is entirely feasible to have a Country Junior Manager from Argentina, a Global Senior Director from the USA, an Indian Repair Centre manager and an IT-Support Specialist from England sit down together and work out such problems. "This is truly a novelty for Nokia Care. And if somebody from a lower position displays excellent network qualities, it is possible that they could be going home as a Global Manager, approaching their job in a new light", explains Kammerer. Yet in this new hierarchical set-up, a quick climb to the top can just as easily go the other way. Since launching the Learning Journey, practically all job positions have been reshuffled. "Actually the pressure should already be high enough", says Hengl, "but market leadership is like opium – a numbing high of self satisfaction. It requires a very high level of energy, to make the people at Nokia Care understand that from now on this is what it is all about." It is only when the slope gets really steep that the angular pebbles start to roll.

This is where the core competencies of executive consultant Michael Hengl come into play. The work of the former ski racer, entrepreneur, and Top Management Advisor is as unconventional as his methods. "In the conventional approach of experts or during systemic consultation, it is usual to speak about the customer system and consultation system", explains Hengl, "and because of the fear of corruption, no consultant is supposed to dig too deep into customer systems, otherwise he might find himself taking on the same responsibilities as the management. In systemic terms this is known as asking unguided questions. What we, on the other hand, do is known as cannon ball consultation! Not only do we enter a customer system, but take a running jump into it and explode." With the aim of changing systems, 1492.//consulting and associated experts aimed at driving participants to make a range of valuable experiences at a number of different levels. This is a holistic approach "that works. We use the energy to provoke crisis situations. Crises are vital for making sustainable changes. We generate waves that bring the energy to another level, creating a new kind of resonance that was previously unthinkable", says Hengl.

The integral consultative approach fuses analysis with implementation, diagnosis with therapy. The high potential candidates experience and fight together through a five-stage, inter-related modular programme that aims to eliminate their cognitive limitations and equip them with an intelligent network attitude. These "Swarm meetings" take place every half-year in Austria, where

candidates struggle together through one of the weeklong learning modules. Leading experts and university-based research teams contribute with their avant-garde approach. Their "lateral thinking and inspiration", adds Hengl, "has to strike a chord in each candidate at the right time. The traditional recitals of renowned management gurus seduce you into only believing in methods and expertise. Contrarily, participants of the co-ordinated programme within the Learning Journey are taught to radically think for themselves and in so doing to act for themselves too. Only then can your global potential increase."

At the heart of the "Whole System Change" is a multi-stakeholder feedback instrument used for measuring and evaluating collective intelligence. In the most recent model, Nokia Care intelligence is made visible in real time. It is based on the thesis that collective intelligence is far superior to the singular intelligence of agents in the system. Strategic decision-making is no longer based on historical data or expert opinions at Nokia Care but on the intelligence of all concerned. "Allowing our collective intelligence tool to record the paradigm shift at the executive leadership level, this results in a quantum leap in business performance and efficiency", says Hengl.

Accordingly, the individual modules of the Learning Journey have the function of matching up the human-software involved in leadership positions with the technical possibilities for measuring collective intelligence, and then to make them compatible with one another."

3.   The Modules

3.1 Module 1 – Beyond the Horizon

The main problem is the way in which senior management thinks. As in every large company people at Nokia are inevitably trapped in their every day work routine with its limited internal perspectives, and they are stuck working at a mostly operative level. During a 2,000-hours work year, they are barely able to glimpse the bigger picture. Furthermore, Nokia Care has always "suffered" from chronic market leadership, which means that they often lose track of the customers and forget that it is customers who generate Nokia through their purchases. This leads to reluctance in Nokia to compare oneself with others. Complete company departments continue to live in the past, driving at full speed into a situation while using the rear-view mirror to guide them. This

high-risk approach only works as far as the first bend. This ignorance leads to an arrogance that is continuously criticised by customers.

"To begin with, we had to show all the groups that there exists a world outside of Nokia", says Kammerer. "We started with the first group in Europe, the second one in Silicon Valley and additional ones in Singapore, London and New York. We have visited businesses that also have a global customer care department. We have led open discussions with Google, Yahoo, HP, Apple and Amazon in Silicon Valley. What are we going to do? What are you going to do? What is good and bad? We stayed in top hotels in New York. Although having nothing to do with mobile telephones, it was very good for generating ideas about customer care. The issue at hand was for our people to know where they stood and to understand the benchmarks." This bigger picture and the open discussions were finally evaluated in detail and compared to the current status quo. Scholars from Witten/Herdecke University and later from the University of Bayreuth helped to supply the expertise.

3.2 Module 2 – Leave Your Comfort Zone

The second step is to personalise these new perspectives: "Rate your overall performance! This has been totally forgotten at Nokia – individually and collectively", stresses Hengl. Those who want to achieve something beyond their immediate horizon must leave their comfort zone and learn again to objectively evaluate their own work on customer values, doing so with brutal honesty and a performance orientation. To experience their own limits, the participants climb a 12 metre high pole in snow-covered woodlands, aiming to climb onto a small platform at the top – and then jump off, secured only by a single rope in the hands of a colleague. "Nothing more than nature can bring people back to themselves", Hengl stresses, "because nature and its reality cannot be bribed." Once back inside, it is down to business. The group is confronted with common problem scenarios taken from the Executive Board.

All around the castle participants can be seen musing, discussing and arguing into the early hours of the morning – ready to present their strategies to the committee the next day. All know that the feedback is brutally honest and that repeating old methods will have its consequences. The goal is to compel a sense of responsibility and to reveal what really can be achieved. Socio-romantic groups within the company that have lost sight of their competitive aims quickly stand out by displaying an average collective intelligence that is far below standard.

"All this drives you to make a comparison between self-assessment and outside-assessment with hair-splitting exactitude", explains Hengl. "Stop being complacent: What was the exact output? What was your contribution? How do you judge yourself? What is revealed when others judge you? Whether or not you've given your best is of no interest here. What is the best? How far away are you from being the best? Success can grow out of failure. No breakthrough without a breakdown." Questions and sentences like these bring participants to the edge of what they can stand, and what they can deliver. Yet this is where the learning takes place. "The harsher the performance evaluation, the more respectful and loving you have to learn to treat each other. Only trust in a setting without fear, like in the Learning Journey, will help to win favour amongst the most different of colleagues. Only a mutual goodwill, love and online feedback can enhance the collective intelligence. This holds the seed for the new Nokia Care DNA."

3.3 Module 3 – Utilise Your Potential

How do we make a difference? New skills are needed for those new to this context. Just being faster and more efficient with the old methods is not enough. The aim here is to use free space creatively. "To achieve this we place in the hands of the participants creativity techniques and alteration methods", says creativity trainer Daniel Wetz while around him small groups puzzle over a creative problem on the plush carpet of the conference room floor. Wetz' workshop results can be seen in many large, brand name products piled high on supermarket shelves. "Most engineers, business managers and administrators are still thinking on a far too traditional basis, when it comes to problem solving or innovation. Over the decades they have been instilled with the adage of 'fault free production!'. After years this becomes etched into your mind. To make the mental change to 'faults are vital!' has a shock effect because most hardcore engineers cannot believe how fast one can collectively learn and see their profits making a quantum leap. Although new ideas don't always have to be spectacular, often new ideas that have a maximum effect seem to be quite trivial at first glance."

Innovation, therefore, not only needs techniques but also a new way of thinking. "We make it clear to people that blockages not only come from the influence of complacency, but that human consciousness is often not in a position to think things out in a new way, mostly because we extrapolate the future out of the past", concludes management mentor and creativity expert Christo Quiske. In intensive workshops about social constructivism in management (Quiske/Wiek 2009),

this established manager goes on to explain to the audience that their entire picture of the world, with its behavioural patterns, fears, targets and values, is simply a mental construct. But they are the only ones who can change it.

3.4 Module 4 – Simplify Your Life/Love

Afterwards there is a mental clean-out. Management programmes often aim at training participants to do something new. But few, however, explain how to stop following old ways. Leading positions are, as a rule, packed with work, because the positions are carried out inefficiently within inefficient structures. There is usually not enough time to achieve things differently, i.e. far more simply. An example is the degeneration of the reporting system from Nokia Care. "There are reports on simply everything", says Kammerer. "How do I find out whether or not a report to which I am contributing is at all important? Maybe by not sending it off for three weeks and see if anyone asks after it. In case they ask, work with them on something new and far more efficient." Werner Tiki Küstenmacher was invited to develop such complexity reductions in all living and working areas. He is the author of "Simplify Your Life" (Küstenmacher/Seiwert 2008), which deals with the group development of intensive simplification strategies for everyday working life. But it does not stop there. Leading on from this is a principle that deals with how to "simplify your love". If participants are unable to establish and maintain successful relationships, then they cannot be expected to understand and implement the concept of customer intimacy, or of lifetime relationship management. This is because behind all customer satisfaction statistics are real people looking to communicate with the company and maintain an ongoing relationship – otherwise they would cut all ties before they even begin. "In relation to this, many leading executives used Jack Mitchells successful 'Hug Your Customers' (Mitchell 2003) concept for the first time in their production company only to see their Net Promoter Score (cf. Seidensticker/Reichheld/Pross-Gill 2006) shoot right up", says Hengl.

3.5 Module 5 – Become a Guide to the Future

Those who can do all this now ultimately require the skills to teach others. This is attainable with a new method – leading without force – which is the ultimate challenge for all participants. All that is needed to achieve this goal is a stage. A most magical of places, standing on a stage can

mean so much for so many, and it is a place where the majority of leading executives can appear visibly uncomfortable. The programme is known as "Shakespeariance" and focuses on moments of truth, of which there are plenty in the service environment. Actress and leadership trainer Katja Bellinghausen has specialised in helping top managers in their new leadership roles to participate in a play that is shown on the international stage: Service.

"It is very difficult for many to drop their social status", says Bellinghausen. "Anyone acting the role of Vice President will send the audience off to sleep. If the Vice President, however, learns that his high-status role is only one of many that he can bring on the stage, then he or she can break away from the stiff cliché to present a role that is true to them instead." This makes any character far more interesting and keeps the audience surprised and attentive. Only those who have the courage to present their own authentic performance can survive the critical spectators. "The audience can smell inauthenticity a mile off! That is why my main question to the actor is if he or she wants to be identified by customers and colleagues as a 'pretender'. This form of acting work has mainly to do with your battle with your inner critic. Shame, fear of failure and of not being good enough let many shy away and thus prevent the development of their potential. It's great to experience leading executives discovering their centre and watch these previously introverted managers outgrowing themselves."

"To make the Learning Journey experience a success for any business it is of decisive significance that the leading executives can stand in front of their employees and convey their own vision with emotion", explains manager Kammerer, emphasising the importance of this art form, which is often neglected by many businesses. "Just like they are doing here on the stage, this is authentic leadership. To be convinced enough of oneself to be a sustainable influence. To achieve this there has to be a repeated scrutiny of your own role and its attractors. Anyone in our structures who is devoted to the illusion of power and control will fail miserably."

During the break, when the exhausted swarm re-groups over snacks, the most important aspect of this whole Learning Journey can be found there, and it is not led by any one. People gather at tables in multi-national, multi-ethnic, multi-functional, multi-hierarchical groups. At last they are living up to the company motto: Connecting People. Many of these relationships will continue on after the programme. A week later, chances are high that an executive in Singapore and another in Helsinki will call each other up to discuss a problem.

4. *Results of Collective Intelligent Management*

Dirk Glienke, at that time Global Controller Customer Care and one of the first participants in the Learning Journey, boils it down to one aspect: "We quite clearly see the programme as an investment and not as a cost factor. I have just come from meeting some people at different tables and I listened to what they were talking about to each other. Looking at it realistically the tips that they were passing on to each other and the exchange of knowledge has a much higher equivalent value than what we invested. And they will continue to communicate in much the same way upon returning to their countries around the world. We invest in this community, because to keep up with this fast business you have no other choice."

With continuity, pressure, continuous repetition and enough space to meet up with others, one can reach the driving force required to bring businesses into a collective intelligence movement. "Decisive is that I, as leader of the company section must at all times show absolute commitment from the beginning to the end", says Kammerer. The theory behind collective intelligence states that self-organised intelligent behaviour can only unfold and develop in networks that lack central control and leadership. But how will the role of the manager change as soon as old hierarchical and power structures become obsolete?

"I see myself as a Servant Leader", says Kammerer. "My role is not to be the top of the pyramid and to give out orders, but to be in the centre of a network and create conditions where functionality is ensured. Being part of the network I do not direct it, but fill in the gaps and initiate processes and tasks that the network can then solve as a collective. This means that I am making a contribution to the collective intelligence, just as everyone within the network. And when things are running well, then I just restrict myself to making corrections and giving impulses. We are still at the learning stage and I still have to give orders and put on the pressure sometimes. Now that we have put five groups through the Learning Journey, however, we will soon reach the critical mass for collective intelligence. From this moment on, I see myself operating more and more from the edge of the network where I will have a better overview of everything. Finding the right balance for a collective intelligence community, that for me is the new face of leadership."

It takes a new form of management that, even in these intermediate stages, does not need to shy away from the old ruling system. Since this conversion process started, the company has seen sensational operative results. "I won't mention any figures", says Kammerer, "but the costs of guarantee revaluations have sunk considerably." People are now looking at the role of Care within

Nokia in a different light. "Even the leading executives have suddenly noticed that it is not only an enormous quantity of money passing hands, but that also a nationally expanding service intelligence will cut costs tremendously." A comparison of two situations shows what the association has been through. A crisis situation arose in Latin America where the people concerned had not participated in the Learning Journey. The problem was ignored and it spiralled out of control. Around the same time, a problem also arose in Thailand. Some of those involved were at the Learning Journey and they immediately contacted Europe to ask for help, "without my intervention" remarks Kammerer, in a modest but proud way. "They organised themselves, thus saving considerable costs which, although they cannot be directly calculated, can be identified through the altered method of communication."

5. Next Steps

New methods of communication have been helping to overcome company boundaries more and more often. Social media plays its role as well as a new mindset towards the needs and benefits of communication. The question at hand is when customers will be able to become an agent within this intelligence network? "We would be happy to get this far", says Kammerer talking at the end of a tough week, "but Nokia is a production company in the hands of engineers. It took enough time for us to develop beyond the purely engineering set-up to a customer orientated one. To build upon our collective intelligence and to eventually include the customer within our community is the next step. Particularly in our department at Care we already have a close relationship to the customer, but it doesn't make sense to start with something in one department when another department hasn't even given it any thought."

A start however has been made. The new development concept has already caught on in other company departments. Manufacturing Solutions, who are responsible for production technology in the factories, and Delivery Solutions, responsible for IT processes and systems have set up their own Learning Journey. They caught on to it after hearing from some enthusiastic participants and simply went straight to Hengl's consulting firm – without even asking their CEO, who is responsible for budgeting, or arranging it with the Customer Care department. They reasoned that: this is exactly what we need! So let's get self-organised! A perfect example of collective intelligence at work.

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