New for whom? Initial images from the social dimension of innovation

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Abstract: The paper presents a system-theoretical concept of innovation differentiating between an object-related, a temporal and a social dimension of newness. Due to a so far strong bias to the two former dimensions an exclusive focus on its social dimension is imperative now. Innovations thus are introduced as new, exclusive forms of relations to oneself, to others and to the relationships of others. The difference these relations make is the distinction between social entities, i.e. the differentiation of social systems. Social differentiation can take three forms: segmented, stratified and functional differentiation. We thus can relate three types of relations with three forms of social entities and receive nine dimensions of sustainable innovation management. Using the example of a Swiss crowdsourcing service provider, the paper finally shows how rewarding the balancing of these dimensions can be, and that too strong a focus on an innovation's economic outcome may result in lower profit.

Keywords: robust innovation; NTI; social innovation; social systems theory; dimensions of meaning; functional differentiation; sociology of advantage.

Reference to this paper should be made as follows: Roth, S. (2009) 'New for whom? Initial images from the social dimension of innovation', *Int. J. Innovation and Sustainable Development*, Vol. 4, No. 4, pp.231–252.

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1 Introduction: looking for a robust concept of innovation

It is impossible to deny a certain technology bias of innovation research (Rennings, 2000; Aderhold and John, 2005; Kaudela-Baum, 2008). An economy bias is also observed, although this is less apparent. Together, these result in the normal case of innovation research: technology goes economic market.

Besides this 'hardcore of innovation' (Scheiber, 2009), in line with the concepts of non-technological and social innovation, a new mainstream is now emerging that offers itself as an alternative to the classical mainstream approach while at the same time complementing it.

On closer inspection, however, also in the wake of the above-named alternative concepts, certain reductions occur: in silent agreement with the OECD STI Scoreboard (2007, D8), the overwhelming majority of work on non-technological innovations concentrates on management and marketing innovations in economic units. The concept of non-technological innovations thus has an economic bias. Unfortunately, this also applies to the second offer of the alternative mainstream: social innovation act as a label for a residual category of non-economic conditions for the success of economic innovations (McElroy, 2002, p.37) or simply as a synonym for non-technological innovation (Pot and Vaas, 2008; Simms, 2008). Somewhat less indirectly, social innovations, as well as new organisational forms, can also be defined as new rules and standards, or as new lifestyles (Zapf, 1994) and, again in somewhat more general terms, as new ideas with regard to social relationships (Marcy and Mumford, 2007). These definitions are consistent with the most general formulated by Böschen et al. (2005), according to which the term can be applied to all forms of social change. In this spirit, all change in the field of the economy and, particularly against the background of virtualisation and hybridisation (Miles, 2006), almost every form of technological change is social innovation. In the end, almost everything can be defined as social innovation[1] while we still do not really know whether the term social innovation is not just a synonym for non-technological innovation. Accordingly, does this not mean that technological innovations are also non-technological innovations?

Geoff Mulgan's (2006, p.145) work, '*The process of social innovation*', is a completely consistent example of the 'Babylonian confusion of tongues' (Aderhold and John, 2006, p.1): he regards the process of the tertiarisation of the economy as just as good an example of social innovation as the political process of women's right to vote. Furthermore, he maintains that social innovations differ fundamentally from economic innovations, however, not without finally acknowledging that there are 'of course many borderline cases' (ibid., p.146) between social and economic innovations.

Finally, the alternative discourse on non-technological and social innovations inherits the innovation paradox of the more general innovation discourse: At least for authors like René John (2005, p.54), this paradox arises because the term innovation can refer both to an object and to a process; the process of innovation can thus create innovations. If we also consider that the fact of innovation is only regarded as having been fulfilled when a corresponding market success has been recorded (Rogers, 2003; Aderhold, 2005), we see that innovations also have a social dimension. So what, then, is innovation? A new product? A new process? The process of developing this new process? Or its circulation on the market? And, if innovations really do have a social dimension, is there a social dimension to social innovation, as well?

These questions and the confusion they both cause and express are not a purely academic problem: decision-makers and cluster managers ask for knowledge about 'elements of innovative cultures' (Dombrowski et al., 2007) and for adequate indicators for the measurement of (social) innovation (Moris et al., 2008) or simply a more systematic basis for decision-making (Soete, 2007). Against the background of the increasing impact of corporate social responsibility (Maciariello, 2008; Uslay et al., 2008) or stakeholder approaches (Troshani and Doolin, 2007), marketing experts are discussing, on an increasingly broader basis, the extended role of their discipline or business. After all, the focus is increasingly on the social aspects of innovation via

open innovation approaches (Chesbrough, 2003; OECD, 2008): in the meantime, the discussion has even moved to crowdsourcing (Agerfalg and Fitzgerald, 2008; Kleemann et al., 2008), namely the outsourcing of considerable parts of the innovation process to increasingly larger and increasingly more anonymous parts of society.

Accordingly, Mulgan (2006, p.145) could well be exactly right when he conjectures 'that the pace of social innovation will, if anything, accelerate in the coming century'. At least this assessment corresponds to the increasing focus on non-technical innovations, even though or precisely because the two concepts do not mean the same thing. In any case, slowly but surely, the conjecture or even the certainty is prevailing that the actual potential of innovation lies in its social dimension.[2] The insufficient interaction between innovation research and social theory is said to be a major explanation for the simultaneousness of both the perceived relevance and the considerable confusion that exists in corresponding discourse (Aderhold, 2005, p.15).

Hence, in the following section, the paper stimulates interaction between innovation research and the theory of social systems (Luhmann, 1987; Luhmann, 1997) while focussing on both selective and universal terms that facilitate a more holistic and systematic approach to the concept of 'innovation as newness' (Johannessen et al., 2001, p.20). The paper will attempt to unfold two intertwined innovation biases: Challenging the economy- and technology-bias of innovation, as a first step, the paper presents the 'innovation triangle', a system-theoretical concept of innovation differentiating between an object-related dimension, a temporal dimension and a social dimension of newness. Based on this triangle, and set against the background of the already mentioned biased focus on the object and the temporal dimension of innovation, the paper argues that, if we want to get the whole picture of innovation, then an exclusive focus on its social dimension is imperative. Hence, in the subsequent section of the paper, the idea of a three-pronged approach of innovation is transformed into an analytical tool for taking initial images from the social dimension of innovation. While getting the social picture of innovation we find that innovation can also be defined as new, i.e. socially exclusive forms of relations to (a) oneself (b) to others and (c) to the relationships among others. In the social dimension, the difference these relations make is the distinction between social entities, or, in other terms, the differentiation of social systems. Social differentiation can take three different forms: (a) segmentary differentiation (b) stratified differentiation and (c) functional differentiation. We hence relate three types of relations with three types of social entities and receive nine discrete dimensions of social sustainable innovation management. Using the example of a Swiss crowdsourcing service provider, the paper finally shows not only what a hard and rewarding task it is to balance all the nine sustainability dimensions but also that too strong a focus on an innovation's economic dimension may result in lower economic and non-economic profit.

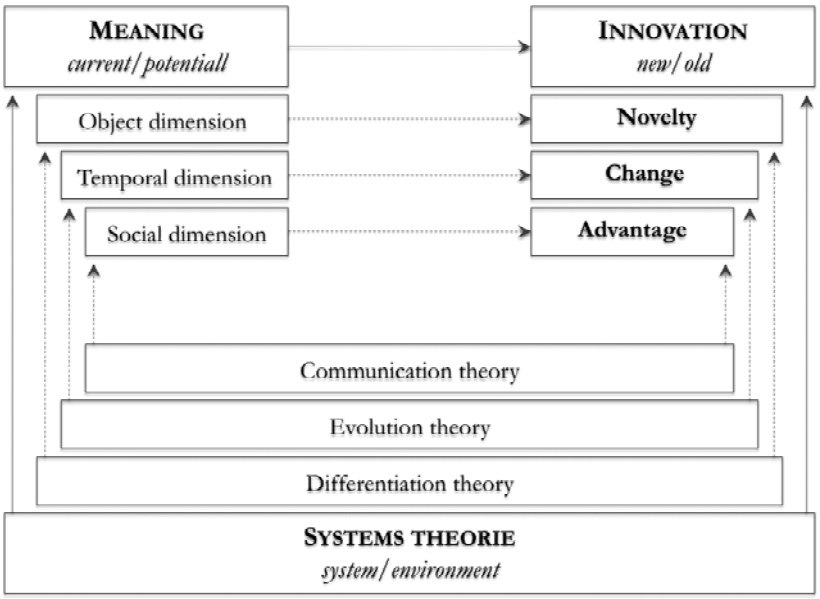
2 What is meant by 'new'? About the sense of innovation

We regard innovation as something that has sense.[3] As with every type of meaning, innovation is thus caught between a current/potential difference, i.e. between the current status and potential alternatives. When talking about innovation, the new is picked out in contrast to the old (Johannessen et al., 2001; John, 2005).

We are accustomed to thinking of the difference between the new and the old in terms of time, i.e. in accordance with a before/after difference (Luhmann, 1987, p.116). This makes sense but only on one level and, in the discussion with levels of meaning, leads to the assessment that the term innovation creates 'innovation paradoxes' (John, 2005, p.54): Does innovation refer to an innovation object or to the process of innovation?

In the following, it is thus important to take a step back and to view the 'paradox' from a suitable distance (Figure 1):

Figure 1 The three dimensions of innovation



In addition to the temporal dimension, Luhmann's system theory also distinguishes between an object dimension and a social dimension (Luhmann, 1987, p.112). According to this, we do not just ask 'new with respect to when?' but also 'new in comparison with what?' and 'new for whom?'[4] Thus, time alone does not decide what is new: there is no doubt that innovation is more than just a question of change (after, not before) but also a question of objective uniqueness (this/not that, ibid, p.114) and the social exclusivity of the new (ego/not alter ego, ibid, p.119).

Accordingly, it is also possible to differentiate between an object, a temporal and a social dimension of innovation (Figure 1). Talking about innovations as new artefacts,[5] namely about products, ideas or methods, this refers to the newness, i.e. the object dimension of innovation. Whoever critically remarks that "here, innovations are predominantly of a technical nature",[6] has this dimension in mind.

The object dimension of innovation can, for example, be differentiated from the temporal dimension by looking at the etymology of the term innovation:

> "In the word innovation, we find the Latin stem *novus*, whereas in the word invention, we find the stem (…) *venire*. It is evident that the first relates to the meaning of something new, whereas the second, as venire is a verb that implies an action of moving, brings to mind the meaning of looking for something and finding something" (Cavalli, 2007, p.958f).

In accordance with this, the term invention would refer to the temporally conceived process of the tangibly conceived object, innovation. Unfortunately, Georg Krücken (2005, p.65) is not the only one to invert both terms by describing innovation as the process of the diffusion of inventions.

Against this background, it is thus no bad thing to keep things simple and, in the sense of a minimum consensus between the two approaches, to refer, for the present, to René John (2005), who distinguishes between an object and a process dimension of innovation.

When examining the process dimension, we are no longer interested in the purely tangibly conceived new but in the temporally conceived process that leads to the new (ibid, pp.55ff; Kaudela-Baum et al., 2008, p.34f), the organisational change, including the corresponding competence, i.e. changeability (Moldaschl, 2006; Baitsch and Wetzel, 2008), or, quite generally, organisational time management (Simsa, 2001). In this context, innovation ultimately always means change.

However, if we recall the above quoted definition of Georg Krücken (2005), as well as other approaches following Rogers' (2003) work on the diffusion of innovation, then we have another puzzle to solve. On the one hand, we can easily understand diffusion as being the temporal process of the increasing dissemination of something new. On the other hand, this temporally conceived process takes place along communicative channels and social interdependencies, i.e. in the social sphere. Bröring and Herzog (2008, p.332) have a similar problem in mind when they differentiate between an explorative and an exploitative dimension of innovation and company units that are specialised accordingly.

Innovations are regarded as phenomena that are strongly shaped by social externalities: "the road towards innovation leads through the jungle of social attribution" (Pohlmann, 2005, pp.10; Beckert, 1998, p.51). Thus, in the meantime, knowing the laws of this jungle is regarded as a just as central success criterion as the production of both exclusive (Schumpeter, 1954) and inclusive (Chesbrough, 2003) competitive advantages.

According to this, it is the advantage that is the distinguishing aspect of the social dimension: this means that innovation refers to a strategic difference in a social relationship that is to the advantage of one and to the disadvantage of another.

By suppressing this third dimension of innovation in favour of a dedicated time focus, innovation sociologists such as John (2005, p.49f, p.55f, p.61) do not get to the heart of the innovation paradox: there is no doubt that it is a clever idea to apply the three-fold concept of variation, selection and stabilisation derived from evolutionary theory to the temporal dimension. But, in doing so, two of the three dimensions of innovation are more or less deliberately but, in any case, systematically, suppressed. In this way, one also automatically blocks one's own access to two out of three theory offers of the super-theory system theory (Schimank, 2003): the object-dimensional differentiation theory and the social-dimensional communication theory. In this spirit, most innovation researchers use only one lens of the 'socioscope' (Figure 3), although the instrument actually allows three different magnifications.

There is no doubt that, in view of the complexity of the object, limiting the variety of the lenses is not a bad strategy. However, it is precisely then that insight into the normative power of the strategic is crucial. In this particular case, this insight forces the realisation that there is no exclusive affinity between innovation research, the temporal dimension and evolutionary theory. Thus, focussing on the temporal dimension has something to do with a specific conceptual interest and nothing to do with the object: innovation is three-dimensional.

Against this background, it is again astonishing that (particularly system-theoretical) articles on innovation sociology insist so strongly on the temporal dimension of innovation. There is no doubt that the analysis of the temporal dimension is a very worthwhile approach. However, this is only of secondary relevance to innovation sociology, let alone to a solution of the innovation paradox. The latter could only be achieved by an integrative approach that, if it does not moderate, at least considers all three dimensions of innovation, as well as the corresponding theory offers.

3 Objects, time, society: the innovation triangle

The main objection that could be raised against an analytical separation of the three dimensions of innovation is that it is just this, an analytical separation. Empirically, it is said that 'innovation ranges across a single continuum that encompasses all three aspects' (Johannessen et al., 2001, p.27). We can only underline this statement. However, it is equally true that it is not possible to refer simultaneously to all three dimensions. In this spirit, the theory and practice of innovation always start with the initial impression and thus with the question of where to first enter the continuum of innovation.

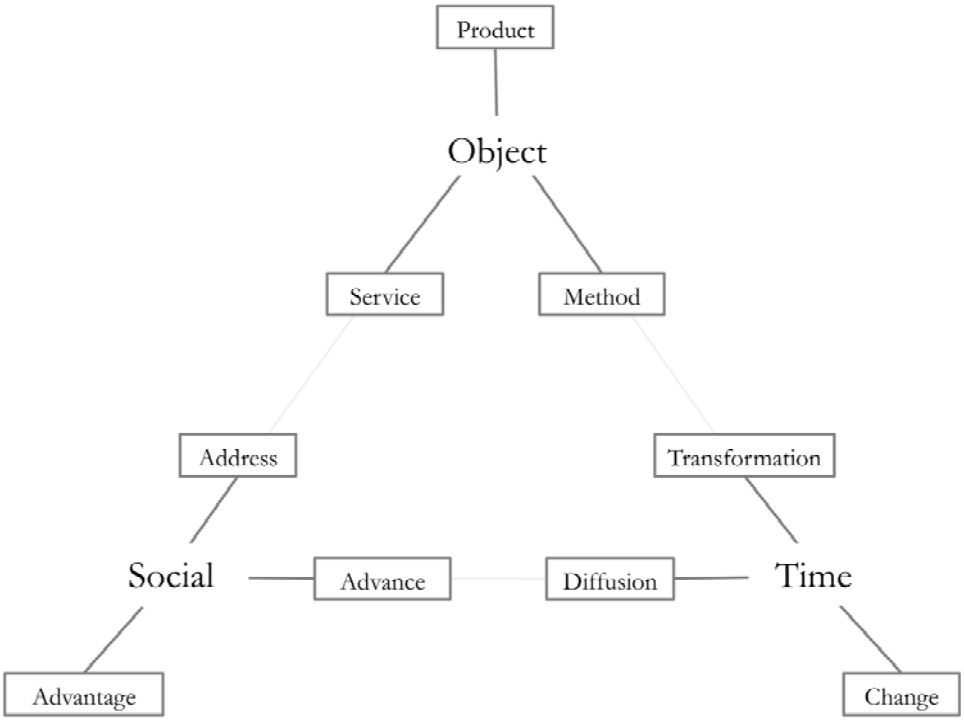
If we approach the continuum from the viewpoint of the object dimension of innovation, we see that we have three possibilities (Figure 2): we can dwell on the object dimension (namely attempt to extract its hardcore) or we can move in the direction of the temporal or the social dimension.

Accordingly, it can be said that we come closest to the hardcore of the object dimension of innovation if the term refers to new, tangible goods and products. In addition, in the relevant innovation discourse, temporal processes and social relationships are increasingly of interest; these are then treated very objectively and can be held in the form of patents on processes and methods or treated as services on economic markets.

If, on the other hand, we choose the temporal dimension for our initial contact with the innovation continuum, then we get a completely different picture. The hardcore of the temporal dimension is change, while its object-related reference can be described with transformation. Sooner or later, whoever then moves away from the temporal direction towards the social dimension generally comes across the concept of the diffusion of innovation, the temporally conceived process of the successful circulation of new products, methods and services in the social sphere. Last but not least, the innovation continuum can also be accessed via the social dimension. As already shown, the difference that an innovation makes in this dimension can essentially be described as an advantage whose temporal aspect represents advance and whose object-related reference represents the address.[7]

Thus, the result is now an already relatively high-magnification model with the potential to integrate the very different aspects of innovation. If we briefly consider current innovation discourses against the background of this model, in addition to the bias already discussed in the above towards the object-related and temporal dimensions of innovation, it is particularly noticeable that there is hardly a single author who investigates just one of the three dimensions of innovations. This means that the following section is of two-fold interest.

Figure 2 Dimensions of innovation and their interrelations: the innovation triangle



4 Reflection, service, function: the algorithm of the social dimension

If we are interested in the social dimension (eye-piece, Figure 3) of innovation, then we need to select a suitable lens for viewing the object, i.e. we need exclusively social lenses that also provide similarly high magnifications as the differentiation theoretical triad of the object dimension (element, structure and system) or the algorithm of the temporal evolution theory (variation, selection and stabilisation) in the temporal dimension.

We thus have some work ahead of us: "the social dimension refers to that which one embraces as being similar to oneself, as 'alter ego', and articulates the relevance of this assumption for every experience of the world".[8] According to this, the main difference of the social dimension is ego/alter ego. To be precise, this differentiation is actually two differentiations in one (Figure 4): we here recognise a reference system (ego) and its environment (alter).[9] Sociality assumes that ego has the ability to structure its own environment in accordance with the differentiation ego/alter, i.e. to differentiate between those systems that are similar to itself (alter ego) and those for which this is not true (alter).

Figure 3 Innovation under the 'socioscope'

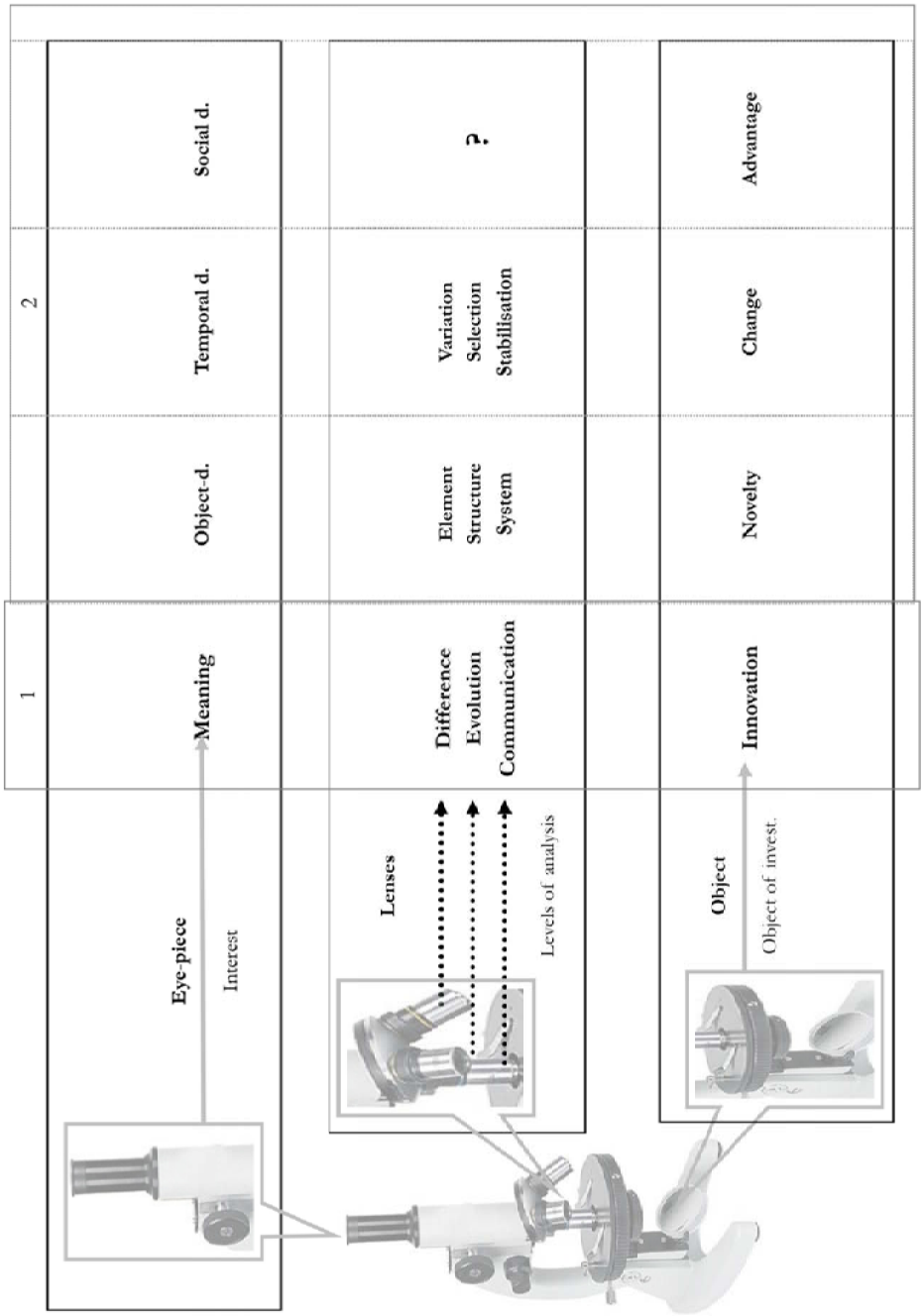
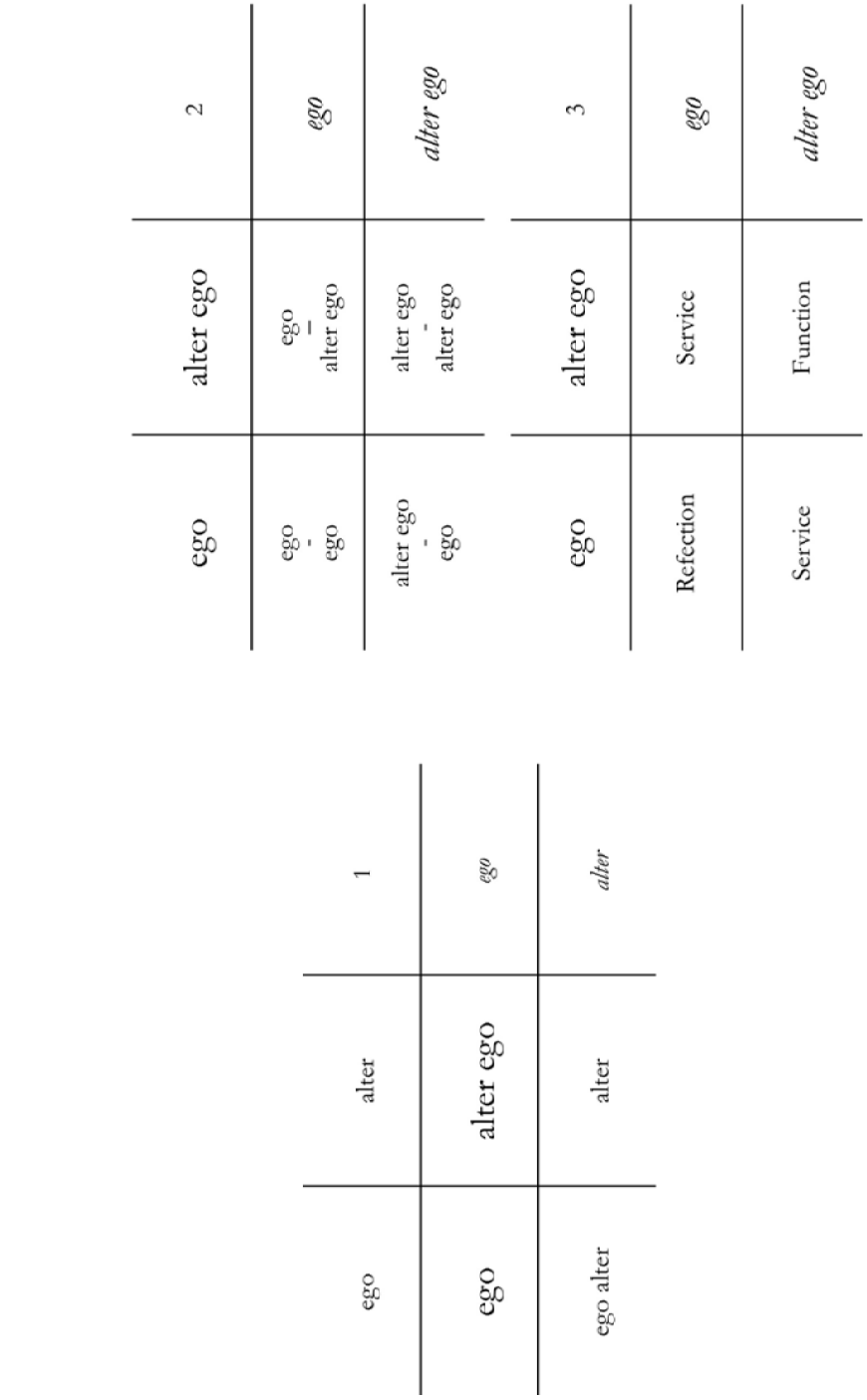


Figure 4 The spectrum of Ego's relations



Similarity in this context of a reference system (ego) that works on the basis of an ego/alter difference implies an alter that applies an ego/alter difference, as well, Social relationships thus assume the crossover of two 'ego/alter ego' differences, on the basis of which it is possible to distinguish between basic types of social relationships (Figure 4):

- Ego's self-relationship (ego/ego).
- Ego's relationship with others (ego/alter ego) as well as their relationship with ego (alter ego/ego).
- All relationships of others that are not directly related to ego, i.e. both their relationships with others and their self-relationships.

Ego's self-relationships can now be referred to comprehensively as reflections (Luhmann, 1997, p.757). The two forms of relationship between ego and alter ego form the 'input and output side' of what Luhmann (1997, p.759) calls service[10]: the relationship between similar systems. Finally, we refer to the relationship with the relationships of others as a functional relationship.[11]

Accordingly, the algorithm of the social dimension is: reflection/service/function. In the next section, we shall show which different perspectives of the social dimension of innovation show up through each one of these three lenses.

5 Exclusive relationships: innovation as dis-/advantage

If the general idea of a social dimension refers to specific forms of relations, then case of the social dimension of innovation refers to the difference drawn by *new* relationships. Socially new relationships are relationships that not everybody has. Accordingly, in its social dimension, innovation denotes dis-/advantages[12] that result from *exclusive* relationships

- With the self (new self-concept).
- With others (new services).
- With the relationships of others (new function).

In the context of organisational systems, we then speak of the advantages of (a) new self-images, internal structures or decision-making systems (b) of new partnerships or customer relationships and (c) of new markets.

From a more general point of view we may say, that the social differences innovations make are the distinctions they draw within or between social systems, i.e. between and within those that have it and those that do not. The strange thing about this idea is that most sociologists would argue that these 'Distinctions' (Bourdieu, 1984) emerge *automatically* and connote these with social dis-/advantages for the ones who draw them.[13] Mainstream innovation management in contrast *actively* aims at the generation of advantages for the target group of the respective innovation. This, conversely, also means that the bigger part of innovation management is about the production of disadvantages for the bigger part of society. In this very sense, the question of 'new for whom?' is not just of theoretical relevance for scholars in and practitioners of sustainable innovation management. Along this question, sustainable innovation management could draw a distinction itself by standing out from the crowd of the

partisan advantage-designing mainstream of *exclusive* innovation management. But, of course, the starting point of a more inclusive concept of innovation management on its part should not be the exclusion of the exclusive concepts. Thus, again, a more holistic and more neutral approach to innovation is the order of the day.

Following Niklas Luhmann (1997), the drawing of new distinctions within or between social systems[14] is be nothing else but the production of new forms of the differentiation of social systems that can be noticed in terms of

- Segmented differentiation (distinction between basically similar entities, e.g. families, organisations, nations).
- Stratified differentiation (distinction between heterogeneous but scalable entities, e.g. classes, milieus).
- Functional differentiation (distinction between heterogeneous and incommensurable entities, e.g. economy versus politics versus religion).

As an example for the difference that the question of 'new to whom?' makes when applied to a segmented concept of the society we should here like to refer to Drori et al. (2008): In their publication '*Globalization and Organization*' they show empirically that the principle of rational organisation is currently spreading rapidly throughout the world.[15] On closer inspection, what initially appears to be a scientific anachronism turns out to be a real find: what is now regarded as becoming obsolete in the metropolises of the world market is actually successful at their peripheries. So, is the principle of rational organisation still an innovation? In Great Britain? In Switzerland? In Brazil? In Armenia? In Ethiopia? Against this background, sustainable innovation management meant to balance the dis-/advantages related with the possession of or the access to core innovations.

The same applies to the idea that sustainable innovation management should keep an eye on the impact innovations have on the reproduction of social inequalities between classes or milieus. In this context we may think of Norbert Elias' (2007) example of the handkerchief that, in his early days, was not only used to clean the noses of the nobles but also to distinguish the latter from lower ranks of the society and that was passed down the social hierarchy until the triumph of the tissue (which, today, does not make any social difference at all anymore).

But, what do we finally know about sustainability aspects concerning an innovation's impact on the balance between the functional systems of our society? What advantage and for whom does it have when something that is an old hat in the economy is newly implemented in politics and then called New Public Management? What if an innovation in the health system helped to show that Christianity makes sick? Has not Christianity itself once been an innovation with a tremendous impact on science and arts?

Against the background of the questions raised in the last paragraph, the paper states that the mainstream of innovation management and even its critiques do not systematically focus on the idea of an innovation's trans-functional impact. In other words, again, we have to state that the bigger part of sustainable innovation management literature focuses, besides ecological issues, primarily the global and social strata balance of economic innovations (Church and Lorek, 2007; Webster, 2007; Busolt and Kuegele, 2009; Isenhour and Ardenfors, 2009; Lemke et al., 2009) while giving little account of the functional system of reference its concept of sustainability is measured against. Most often, sustainability is simply about 'Linking Economy, Society and Environment'

(Strange and Bayley, 2008; Turnpenny, 2008, p.34). This, however, not only disregards that economy is a dimension of society but also that there are sound concepts of economic sustainability (which just have little in common with political or religious concepts of sustainability).[16] All this tempts to unsystematic and therefore rather ineffective critique: If not economic advantage, then what kind of advantage shall we measure innovation management against? Should we talk about advantages in terms of religion, of legal justice or about advantages for the powerful? Or, asked from a cross-social point of view: Is an innovation that is blessed by god or the government really more sustainable than one that produces long-term economic profit?

6 Dimensions of robust innovation management: the case of crowdsourcing

While the mission of mainstream innovation management is the production of the advantage of the smaller number, i.e. the innovation's shareholders, more sustainable concepts of innovation management are not willing to leave the happiness of the larger number up to the *invisible hand*. Accordingly, concepts of stakeholder integration in the innovation process can be discussed as one strategy of sustaining innovation in terms of the happiness of the larger number: The participation of users (Franke and Piller, 2004; Franke et al., 2006), communities (Bartl et al., 2004; Füller et al., 2006) or even crowds (Lobre, 2007; Howe, 2008) in the innovation processes is said to produce positive effects in all dimensions of innovation, i.e. novelties, change processes and competitive advantages that are accepted by bigger parts of costumers, members and the society (Roth, 2009). But, as they still produce or even increase economic profit, ironically, these strategies are also discussed as the exact opposite of sustainable innovation management strategies, i.e. in terms of the strategic outsourcing of parts of the innovation process (Agerfalk and Fitzgerald, 2008) to a mass of customers being made into poorly or even unpaid employees of a company, and, even worse, to pay for products that they themselves have helped to develop (Kleemann et al., 2008). Again, we find that it depends on what system of reference sustainability is measured against.

But, how can the present paper help with developing a more systematic approach to sustainable innovation management? The answer is that it can do so by presenting a framework for the systematic analysis of the question of what new forms of self-relationships, relationships with others and relationships with the other's relationships lead to what kind of advantage for specific segments, strata or functional systems of society. As a result, we can present nine both distinct and universal social dimensions of innovation, and, accordingly, nine different starting points for an innovation management aiming at social sustainability (Figure 5):

As Figure 5 shows we can easily identify configurations where new forms of (self-) relations indeed lead to more sustainability at the level of one specific form of social differentiation while still leaving unsolved or even worsening unsustainable constellations at the other levels: For example, when an organisation provides cheaper access to the internet it might contribute both to reduction of inequalities within the national economy it provides its services to (strata perspective) and to the extension of a prosperity gap between two national economies (segment perspective). Even inhabitants of poorer countries are provided with internet access, then, again, it might reduce inequality on the international level while increasing local inequalities. Similarly, a certain strategy might

be called both politically and economically sustainable, but only from the point of view of a specific class or country, whereas another strategy may increase both inter- and intra-national equality at the expense of economic sustainability.

Figure 5 The social dimensions of robust innovation management

New Self-Relations	1	2	3
New Relations to Others	4	5	6
New Relations to the Other's Relations	7	8	9
	Segments	**Strata**	**Functional Systems**

In other words, sustainable innovation management is less about compliance with specific definitions or indicators for sustainability than about transparency regarding the managements own system(s) of reference which sustainability is measured against. Of course, the ideal case of sustainability would be when the management established relationships to itself, to others and the relationships among others that balance all the mentioned dimensions. Complementary to current concept of social sustainability (Spangenberg and Omann, 2006), we can thus say that the more innovation management achieves a balance between the more dimensions of sustainability, the more socially robust[17] the respective innovations will be.

The following example of a Swiss crowdsourcing service provider shows that this ambition to produce socially robust innovations is arduous but lucrative, and sometimes inevitable for certain industries respectively.

Open Innovation GmbH is a specialist in crowdsourcing and IT-based open innovation management located in the Swiss capital Bern. The company runs the internet platform *atizo.com* that, at first sight, looks like just another Web 2.0 platform: After the login a start page informing the community members about the activities of other members shows up; each member can create a user profile; there is a messaging function, and a contact management area. But, unlike *facebook.com*, *xing.com* or *linked.in*, the Atizo community is not the client but the business partner of the platform provider. This is indicated by two further links called 'projects' and 'rewards'. Projects are announced when Atizo's clients, i.e. companies in search of new ideas, call for solutions for a given problem. For example, *DeLonghi* invited ideas that make domestic ironing easier while *BMW* looked for next trends in motorbikes. If a community member is interested in contribution an idea to a concrete project, then he or she fills in a form consisting of a

head-line of max 50 characters, an idea description of max 500 characters, at least three keywords, and an optional visualisation of the idea. All these data are then included in a public list of all ideas posted by the community members, a circumstance that clearly distinguishes atizo.com from the 'closed open innovation' concept of crowdsourcing world market leader innocentive.com where each of innocentive's 'solvers' works on their own. Another major difference is the reward structure: Whereas innocentive pursues a 'the winner takes it all' philosophy, normally at atizo.com the rewards of 1500–5000 Swiss Francs per project are distributed to 3–10 best ideas.

Besides the idea description, the list also includes information on the creative mind. Most important are the dots and the number next to the innovator's name indicating his activity level as well as the number of ideas that have been positively rated by further community members. Often rated or commented ideas are more likely to be perceived and therefore rewarded by the clients. Nonetheless, the client may also reward non-rated ideas when he considers them to be the best.

If we now measure the Open Innovation GmbH including the Atizo community against the sustainable innovation management matrix presented in Figure 5, then we come to the following conclusions:

Atizo.com is an internationally oriented project with still strong roots in the German-speaking part of Switzerland. Even though all projects are announced in German, French and English, the vast majority of ideas are posted in German. While this is no major barrier for Non-German-speaking members to win a prize, it lowers their chance to get inspired by the ideas of others. Due to the specifically Swiss multilingualism, communication between members with different mother tongue occurs quiet regularily (with each using his and her own language) but will be significantly lowered the more members from Germany, France or Austria join the community according to the present growth strategy. So far there has been a limited number of exclusively English-speaking projects which turned out to be a foreign language experience for most members but also attracted new members from English-speaking parts of the globe. Currently discussed expansions to further language areas are planned as entirely independant projects. While the tri-lingual approach pursued by the Open Innovation GmbH right from the start can be assessed as an indicator for the management's internationally sustainable orientation, the company seems rather uninterested in attracting members from emerging market countries (dimension 1, Figure 5).

Of course, these country's still weak IT infrastructure is said to be the major reason for excluding them,[18] but the relatively exclusive focus on members from the s.c. developed nations not only prevents a large number of innovators with plenty of time to spend for a comparably low prize from taking part in the international innovation society[19] but also the Open Innovation GmbH from attracting of new businesses (dimension 7).

Given a furthermore positive development in the home market, Open Innovation GmbH should therefore not only actively attract members from the mentioned countries but also at least ideally support political movements for global justice regarding access to the www, not only for the sake of the respective countries but also for the sake of the quality of its own products. Furthermore, as provider of an increasingly fast-selling item, there is no reason why the company should stick to the developed markets; rather, it could understand crowdsourcing as a specific form of business process outsourcing, consider the global division of labour in the BPO markets and design its services accordingly (dimension 4).

With special regard to strata, the Atizo community suffers from a tremendous age and education bias: most members are young and well-educated (dimension 2) which raises questions on the representativeness and therefore on the product quality, at least when atizo.com is perceived as a low-cost means of market research especially interesting for SME (dimension 5). Regarding the quality of its core competence, i.e. the idea production, the education bias is less relevant (as we could assume that the better the education the better the ideas) than the age bias: Open Innovation GmbH is aware of the fact that atizo.com would benefit much from the knowledge and the experience of more mature members. Accordingly, the company is working on strategies of the inclusion of seniors (dimension 2), which, of course, also means to think about alternative, i.e. non-economic, incentive schemes (dimension 3).

Regarding the relations to its business partners and the corresponding markets the company behaves quiet sustainable from a strata perspective: Open Innovation GmbH has a gradual price system, i.e. it takes less money from smaller companies and offers specific services for start-ups (dimensions 5 and 6).

If it comes to the functional dimensions we find that the company is less sustainable on these dimensions than on those mentioned so far: Even tough Open Innovation GmbH is perfectly aware of the fact that its tool atizo.com is a piece of *social* software, the company primarily sees itself as an economic enterprise, i.e. not as a social movement or similar (dimension 3). In some way this also applies to the members of the Atizo-crowd: Often they do not comment existing ideas but rather post their comments as new ideas because if an idea is rewarded, then the prize is payed exclusively to the initial idea contributor and not to the commentators. The overall economic orientation is even clearer reflected by the fact that the company is almost exclusively oriented towards business costumers (dimension 6). Same for its market view (dimension 9): The company maintains extensive research partnerships with universities and consultancies that are focused on designing industry-specific sales channels for and services derived from atizo.com. But, it does not spend much time yet on carrying crowdsourcing to the non-economic spheres of society; which is quiet a pity because crowdsourcing would have what it takes to sustain political decision making processes and to revolutionise education or arts. In this sense, there is still the bigger (non-economic) part of the market to capture.

If we view at least some of the interactions between the mentioned dimensions, then we find, for example, that the necessary integration of seniors is not only a matter of barrier-free web programming and usability issue but also much about finding adequate, i.e. non-economic incentives for this group: The chance for a few hundred Swiss Francs per idea might motivate teenagers or students as well as members from emerging markets to contribute, but would not make senior citizens from Western countries register to atizo.com and feed in their knowledge. Thus, if we do not want to increase the price of crowdsourcing, then the question really is what could be alternative incentives? Relevant literature on crowdsourcing incentives commonly refers to fun, ideology, altruism or reputation (Antikainen and Väätäjä, 2008; Santonen et al., 2010) which all can work in the long run only if the company cultivates a trans-economic self-concept and thus sees itself as more than just a business: You cannot rely on the crowd's altruism when people know you earn money with it, you cannot call on ideals when your program is a mere business logic, and you cannot compensate work with immaterial values when you are only chasing after material ones. Otherwise, sooner or later the crowd will start to calculate and then find out that it is no fun to spend leisure time on being underpaid employees low in an innovation BPO value chain. Crowdsourcing service providers thus

need to know quiet well what intangible values their crowds are interested in, and therefore need not only a higher resolution view of its environment than so far provided by collective terms like *intangibles*, *immaterial resources* or *social capital* but also a certain understanding of the relative value of these intangibles, i.e. a knowledge of forms of exchange rates between the single (in)tangibles: If we assume that the crowd can be paid for its work in 'immaterial' currencies like reputation, then it would be good to at least approximately know how much reputation can compensate for what amount of time and non-received money. Furthermore, crowdsourcing service providers must be aware that they do not only act on economic markets but also in non-economic markets as well: Crowdsourcing depends on people spending some of their leisure time on innovation work, i.e. to invest time they could also invest in politicking, science, sports, praying, their health or doing nothing. In other words, companies like Open Innovation GmbH must not only compete with further providers in the industry but also with a countless number of organisations that are trying to attract the attention investment which crowdsourcing tries to draw on innovation projects.

If crowdsourcing service providers go on assuming their service to be just a business, then

- They fade out the biggest part of the market: crowdsourcing could, among others, easily become a new medium of political participation or a new scientific research method.
- They gamble away the chance of realising robust profit, i.e. of producing innovations that effect economic *and* political, scientific, etc advantages all at once.
- They obstruct crowdsourcing as a tool for the production of more robust innovations from becoming a robust innovation itself.

The example of crowdsourcing shows that sustainable innovation management is well advised to take not only problems related with geography or social stratification but also imbalances in an innovation's functional dimension into account. As shown, too strong a focus on the economic dimension of an innovation may result in lower profit, which means not only but also a waste of an innovation's economic potential.

7 Conclusions: the special case of economic innovation

It remains one of the major paradoxes of sustainable innovation management that innovation management needs to generate advantages for the few shareholders of their innovations. As one of our initial images from the social dimension of innovation we could show that this circumstance, in return, automatically means that innovation management produces disadvantages for the bigger part of the society, i.e. for everybody who cannot profit from the specific innovation as a customer, client or investor. Sustainable innovation management cannot overcome this basic dilemma but can deal with it in a more transparent and reflected way. In this paper we therefore presented nine discrete social dimensions that sustainable innovation management needs to keep in mind in order not to play off single aspects of social sustainability against each other. By using the example of a Swiss crowdsourcing service provider, the paper demonstrated how hard and how rewarding it can be to balance all the identified dimensions of sustainability. In doing so, we also found that the interactions between these dimensions

still need to be studied in order to provide sustainable innovation managers with solutions for the production of socially *robust innovations*, i.e. innovations that effect advantages in more than one region, social milieu or functional system of society. The latter idea of innovations that have impact not only on the economic sphere but also in politics, science, arts or further functional systems of society at the same time is thereby worth a second thought, especially regarding the question of how to achieve these kinds of robust innovations. In this sense we claim that the deliberate design of robust innovations will be the supreme discipline of *next innovation management*, which also means that the perfecting of an innovation's economic outcome will increasingly be perceived as what it actually always has been: just one special case of innovation among others.

Acknowledgements

Thanks to Simone Artho (Bern University of Applied Sciences), Lukas Scheiber (University of Stuttgart), PD Dr. Valentine Marcar (ETH Zürich) and Dr. Jari Kaivooja (Turku School of Economics and Academy of Finland) for a stimulating and still continuing discussion. Special thanks to Prof. Sandro Cattacin (Université de Genève) and Prof. Dirk Baecker (Zeppelin-University Friedrichshafen) for challenging comments on an earlier draft.

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Notes

1 Sects (Cornwell, 2007) just as much as eBooks (Cavalli, 2007) or scientific management (Mumford and Moertl, 2003).

2 So, too, Pot and Vaas (2008), whose definition of social innovation hardly differs from the definition of non-technological innovations by OECD (2007).

3 On the meaning of sense, 'Sinn' in German, see Luhmann (1987, p.44, 2008, p.12).

4 Here, we are inspired, on the one hand, by Johannessen et al. (2001, p.27) who, within the context of innovation, ask three questions: 'What is new?', 'How new?' and 'New to whom?'. On the other hand, we do not agree with the authors that (answers to) the what and how question can be selectively differentiated from the how question (ibid, p.23); also Loewe and Chen (2007, p.19), who adopt the question dimensions of Johannessen and colleagues without reference.

5 That can be of both a tangible and intangible nature (Rammert, 1993, p.11).

6 In the German original: "Innovationen sind hier vor allem technischer Natur" (Aderhold and John, 2005, p.7).

7 This means that innovation is a symbolic mark that enables a localisation in the social sphere. In this sense, innovation is also label, brand or status symbol.

8 In the German original: "Die Sozialdimension betrifft das, was man jeweils für seinesgleichen, als 'alter ego' annimmt, und artikuliert die Relevanz dieser Annahme für jede Welterfahrung" (Luhmann, 1987, p.119).

9 Namely everything that is not ego.

10 The German word 'Leistung' refers to achievement, output, outcome, or service. In this context, service would be the most appropriate translation (if we fade out the servile, hierarchical connotation).

11 We introduce the concepts of reflection, achievement and function in a different way to Luhmann (1997, p.757) without making an initial, logical reference to the differentiation of sub-system/overall system. In this respect, we do not (just) refer to the relationship between the sub-system and the overall system as function but we apply the term to every kind of third-person referential relationship that is observed between systems of different analysis levels. In the case of ego's relationship with the relationships of alter ego, i.e. not to alter ego, it is a functional relationship.

12 Saying this we do not claim that innovation is a positive thing *per se*; however, we claim that it is always a positive thing for *someone*.

13 Not only Bourdieu (1986) builds his social critique of the judgment of taste as well as his entire milieu theory on these distinctions: Elias (2007) presents the entire civilising process as a history of manners, i.e. a history of the knowledge of (cultural) innovations and the social difference they make.

14 Asking 'What is new for whom?' calls for a crossing of communication and differentiation theory (Section 2).

15 The authors here refer exclusively to the bureaucratic model, following Weber.

16 In other words, the point is precisely that sustainable economic organisations (Bonnedahl and Eriksson, 2007) must be geared to more than economic sustainability.

17 From our point of view it is perfectly all right to comprehend even the most economic innovations as the result of the efforts of the whole of society (Barré, 2001; Nowotny et al., 2001) or as the result of the co-evolution of society's economic, political and scientific sub-systems (Etzkowitz and Leydesdorff, 2000; Leydesdorff, 2005; Leydesdorff, 2006). Thus, we think that it is useful to apply the concept of robustness proposed by Nowotny et al. (2001) in the context of innovation, as well. We thus argue that those innovations that are successful on more than one of the mentioned are more robust innovations. Such, robust innovations can

be defined as products, processes or simply as advantages that produce (further) advantages on more than only one of these dimension (Roth, 2009). On this note, it can also, justifiably, be assumed that robust innovations represent both more sustainable and more profitable innovations. Against the background of geographic segments or social strata, this idea stands to reason: if products, methods or services capture either new world regions or new target groups on the domestic market, then it is highly likely that they will produce more (competitive) advantages. However, it will still take some time to get us used to the idea that products, methods, services are also spread in and between non-economic markets. Last but not least, there is also the question of the corresponding costs and rates of exchange between the (non-economic) markets of society.

18 Indeed, some weeks after the respective business lunch with the CEO of Open Innovation GmbH the author had the opportunity to access atizo.com in Armenia, and lost his patience.

19 And, correspondingly, prevents the Atizo community from inflow of unconventional knowledge.