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Communities of Innovation

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Communities of Innovation
A theoretical framework for technical and cultural co-creations by end-consumers

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Abstract

This article investigates why and how consumers are innovative. Therefore, it is building a theoretical framework of innovation by communities of end-consumers for future research. The study comes up with a model of a co-creation process and characteristics of innovative end-consumers.

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Introduction

Experts estimate that up to 90 per cent of all new products vanish from the market within three years (Hellmann, 2003; Raabe, 1993). This alarming failure rate can be reduced to 30 to 40 per cent if customers participate in the innovation process, because they know best what they need (Lüthje, Herstatt, & von Hippel, 2002). Many business opportunities lay in customer innovations. In the knowledge based economy no company can afford to lose this knowledge and fall behind the competitors (see Dodgson, Gann, & Salter, 2005, historically Toffler, 1981 and from a broader sociological view Latour, 2002).

Whereas participation of customers in business-to-business markets is fairly researched, this is not the case with business-to-customer markets. Actualy only a few studies dealt with this phenomenon (Lüthje, 2003; Franke & Shah, 2003; Lüthje et al., 2002; Hienerth, 2006, Raabe, 1993). And even these studies do not concentrate on mass products but deal with exotic hobby

sports. This lack of research requires further investigation and a theoretical framework. Like recent examples of magazine and newspaper articles (Anderson, 2004; Howe, 2006; Rohwetter; 2006; Seiwert et al. 2006) and various online blogs (innovation.net; ideaflow.corante.com; johnwinsor.com; technorati.com; businessinovationinsider.com; experiential.com/blog/) show, customers do not only innovate in hobby related fields, but also in other areas of mass consumption. But when does a consumer innovation start and when can it be seen as a new labelling for an already known phenomenon? Often authors only try to introduce a new buzzword. All around the customer innovation phenomenon, terms like "consumer-generated advertising", "user generated content", "massively multiplayer innovation" and various others occur. Three broader terms, that try to map the phenomenon, stand out. "Open Innovation" (Chesbrough, 2003), referring to companies opening the innovation process and working together with all kinds of stakeholders. "Customer Innovation" (von Hippel, 2005) refers to the fact that customers innovate products. Von Hippels term includes both professional and private customers. "User Innovation" (Piller, 2006), as the next already existing term, concentrates only on software-users. According to Piller (2006) companies can react to the innovative potential of customers in two ways. The conventional way is to search for innovations consumers already have developed, the more progressive way is an active cooperation with consumers, initiated by the company. This article will focus on the co-creation innovation process. Whereas in this study innovation is confined as a product innovation and not a social or process innovation (Wecht, 2006). Moreover, this article does not take into account consumers in business-to-business markets, its topic is end-consumers.

The aim of this article is to build a theoretical framework, because the up to now published studies have different understandings of key terms such as what 'new' or 'innovation' means. The analytical focus of this framework will be on the circumstances under which end-consumers become innovative. This article uses an approach as described by Kellner (1995). This study scrutinises the field of consumer innovations with theories, which are understood as lenses or different tools in a toolkit that can be combined. A lot of more or less closely related studies and theories are consulted and integrated. "Theories are thus ways of seeing that provide understanding and modes of interpretation which focus attention on specific phenomena, linkages, or the social system as a whole." (Kellner, 1995, 24)

What innovation in the 'customer as source' view means

Usually customers are regarded as a dip for products to sell. However, customers must be viewed differently, if they are regarded as a source for new product innovations. One has not only to look at customers' needs but at the whole product life cycle and all uses people make of products and all individual changes they do to them. Changes and unconventional uses are essential, if consumers exchange ideas about their varying utilizations. This view reaches as far back as Wittgenstein and is by now very prominent in Cultural Studies.

To reduce customers to people who buy one's products is too narrow a view. Marx classic production-consumption-cycle has to be extended with a dimension of reproduction in the users contexts' (Winter, 2003). The difference between production only done by professional producers and another side of society that only consists of consumers cannot be maintained, as Toffler (1981) described. Therefore, he created the term "prosumer", which is a combination of producer and consumer. Prosumers do not solely rely on the market sector, they also produce for their own needs and wants.

How these prosumers interact with products can only be understood, if one regards mass-produced products for end-consumer markets as significance-transporting media (Gries, 2003). This very broad cultural media definition incorporates not only mass media, but also all kinds of cultural artefacts. As Cultural Studies emphasize (Hall, 2000; Kellner, 1995; Winter, 2003; Gripsrud, 2002), the layer of investigation does not have to be what media do to a passive audience, but what recipients, or in this case prosumers, do with the media. The analysis has to focus on actions, uses, experiences, and use contexts. Hence, it is a pragmatics approach and stands in line with semiotics and symbolic interactionism (Krotz, 2003; Schulte-Sasse & Werner, 1997).

When analysing the relationship between prosumers and products, brands become important. Branded products can be seen as media with compressed significance compared to non-branded products (Hellmann, 2003; Ullrich, 2006). To use a metaphor, they are like lighthouses, guiding consumer's ways through a jungle of products. They create and are used to express lifestyles, thus constituting milieus while they are also in a floating state with no fixed significance. Prosumers interpret and create the significance of a brand at least partially. Not only producers give intended messages and meanings to a ready-made product, equally important is the

sampling of brand significance in the market place (Hellmann, 2003). Social significance is produced in between innovation and diffusion.

Following Groys (1999) argumentation, innovation can be understood as an innovative exchange at the border or friction point of two cultural groups, milieus, scenes, etc. A new, until now as worthless regarded, cultural practice or artefact is brought inside the old cultural value system and becomes a new significance. Innovation is an exchange because values are exchanged at a cultural border and it is innovative because values are exchanged and alternated. An old value is depreciated and a new one appreciated, this is why new things are not created, they are combined from things already existing. This understanding stands contrary to the idea of an artist as a creator and most technically understandings of innovation. Innovation in a technological context is usually understood technology driven only (Braun-Thürmann, 2005). In spite of being a technical, the above-formulated understanding of innovation is a cultural innovation.
One has to keep in mind, that an innovation differs from something new in the aspect that an innovation is introduced in the market or a use context, if it is an innovation from prosumers for prosumers. As defined here, a product innovation has not necessarily to be a product for sale.

From the closed to an opened innovation process

"The user-centred innovation process […] is in sharp contrast to the traditional model, in which products and services are developed by manufacturers in a closed way, the manufacturer using patents, copyrights, and other protections to prevent imitators from free riding on their innovation investments. In this traditional model, a user's only role is to have needs, which manufacturers then identify and fill by designing and producing new products." (von Hippel, 2005, 2) This classical model is conceptualized as an innovation-funnel (Thom, 1996; 2003). In the first phase lots of ideas are gathered and then selected and sorted out step-by-step via specified criteria. The idea behind this process is that only the best suggestions survive. These are the ones, which fit the market needs and can be successfully implemented. Here a company relies on the in-house expertise of the research and development department. Accordingly, companies need consumers only as sources from the outside to specify their needs.

Going further into integrating customers in the innovation process is von Hippels "Lead User Method" (1988; 2005; Herstatt, 2002). Here, expert-users are used to get impressions of needs that will be the needs of a majority of the consumers in the future but not yet are. Chesbrough (2003) argues for an even more extensive model of open innovation, including different

stakeholders such as suppliers. The company is not the centre of its own value network any more. Prahalad and Ramaswamy (2004) name this open innovation process “co-creation”. This level of co-operation is reached, if the company actively works together with its customers or groups of customers over different stages of the innovation process (Wecht, 2006). Still, one can go further in analysing innovations by communities of end-consumers (Piller, 2003, 2006; Piller, Schaller, & Walcher, 2006; for a critical sociology analysis see Voß & Rieder, 2005), or as this term has been changed here, prosumers. This kind of more or less company independent prosumer innovations is the next chapters’ topic.

Having in mind that prosumers innovate independently from companies, one question remains. Is there a rivalry between corporate innovations and prosumer innovations and does a company therefore have to fear prosumer innovation as a potential competition? “First, one or more users recognize a new set of design possibilities and begin to innovate. They then join into communities, motivated by the increased efficiency of collective innovation. User-manufacturers then emerge, using high variable cost / low-capital production methods. Finally, user innovation slows, the market stabilizes enough for high-capital, low variable cost manufacturing to enter.” (Baldwin, Hienerth, & von Hippel, 2006) “User-manufacturers” are small companies founded by innovative prosumers. They do produce specialized products for niche markets. As the market grows, it becomes attractive for bigger companies with larger production facilities who produce much cheaper and sell their products to an evolving mass market (Shah & Tripsas, 2004). Larger companies enter the market when they experience economies of scale, “user-manufacturers” produce for the “long tail”, that is individualized products for special needs (Anderson, 2004).
Generelly spoken, prosumers develop for special need-niches, not yet experienced by the majority of consumers and corporations try to develop products that fit the needs of the majority. Communities of prosumers will develop innovations step-by-step until they are major disruptive innovations (Hienerth, 2006). This becomes even more likely, if a company supports the prosumers with various resources. Altogether, prosumer innovations can be seen as complementary and not substitutes to a company’s in-house innovations. Therefore, prosumer innovations might even, but do not need to, be tomorrows breakthrough innovations.

Steps towards a single prosumer’s innovation

The next question to ask is why and how it comes that a single prosumer innovates. To keep it simple in this first analysis we do not take into account the community. In a second analysis in

the next chapter, the emphasis will be on connected prosumers working together on innovations. This artificial separation helps to clarify the single steps of prosumer innovation.

As claimed before, the prosumer innovation process is not empirically clarified and proven. The model suggested in this article relies on theoretical assumptions, following and extending Raabe (1993). First prosumers experience a problem, need, or want. Than the second step is to buy a product, if there were no appropriate product available one would continue with step three, but beforehand there are two possible results of step two. The first one is that the prosumers' needs are filled, the other one that they are not. If they are filled no problem occurs and the process is of no more interest to this study. The further investigated case is that, in which the needs are not filled. This leads to step three, where four different options are possible. For this Raabe provides the concepts of "contra-articulation" and "pro-articulation". To complete step three, I suggest two more options for prosumers when they are unsatisfied: buying a different product or search for an already existing solution for the problem elsewhere. Buying a different product seems to be the easiest option if there is another product available on the market, which fits the needs better. If a prosumer is unsatisfied, he also might tend to contra-articulation, meaning he complains or gives simple ideas to a company's hotline. In contra-articulation a prosumer is active, he articulates his needs, but does not change anything by himself. Even if a prosumer is creative and gives ideas to a company and these ideas are implemented inside the company, he is not at all innovative. The functional source of the innovation remains within the company, the consumer is only the source of an idea. The third alternative is searching for an already existing problem solution, e.g. in an online discussion forum or getting in contact to special interest groups with lots of experience in the field. As in contra-articulation, maybe an innovative idea is needed, but not the prosumer who experienced the problem comes up with the solution. If the prosumer does not find any solution, he or she might fall back on one of the other three alternatives. The fourth and last alternative is pro-articulation. It describes an active behaviour of the prosumer. He or she at least tries to alternate the product him- or herself or to come up with a completely new solution for it. If this is successful, one can speak of a prosumer innovation.

Such a prosumer innovation can be done in two different ways. The innovation either modifies the material, tangible product attributes or the symbolic, intangible attributes. Modifying the physical product components is a technical innovation. It changes what a product can do. Modifying the symbolic components of a product is a cultural innovation. It changes what is, and can be done, with the product. It can be assumed that, in most cases, a technical innovation leads

to a cultural and the other way round. Altogether, a distinction is made between technical and cultural innovation and a focus can be put on the by business studies often-ignored cultural ones. These cultural can completely change the significance of a product (for examples see Düllo & Liebl, 2005).

Whether pro-articulation is choose out of the four alternatives can be made dependent on rational choice. A utility function can weigh costs and benefits. It seems reasonable not to think that prosumers react with a pro-articulation in every case, but only in rare occasions. Often costs are too high or outcomes are doubtful. Benefits are not outcomes or problem solutions alone. In addition the experienced frustration with the product in the use contexts, fun creating new products and social appreciation for having done innovative work, have to be calculated on this side of the equation (Csikszentmihalyi, 1991; Lüthje, 2004).

According to the different studies, the number of innovative prosumers in different fields of activity varies from nearly none at all up to around 40 per cent (Raabe, 1993; Lüthje, 2004; Lüthje et al. 2002; Franke & Shah, 2003). Raabes study with an experimental design only finds 0.1 per cent of innovative prosumers, whereas the other three studies are conducted as field research designs and use surveys. They come up with results from 9.8 and 37.8 per cent, again depending on what one counts as innovation. If these results were representative, they would indicate that prosumers show a higher degree of innovativeness in a natural setting than they do under artificial circumstances. Another possible explanation is that contrary to Raabe the three other studies investigated communities of prosumers and not individual prosumers. Further research should consider this and try to falsify one of the possibilities.

Communities and networks of prosumer innovation

Assuming that communities are the most important influence for enhancing prosumers innovativeness, this article will focus on groups of prosumers and their cooperation. Solely if enough prosumers come together, there can be a cooperation and thus building one step on the other. Small, incremental innovations then become major ones. The insular working genuine can be left unattended – history only knows a hand full of these (Franke & Shah, 2003).

The prosumer innovation phenomenon becomes increasingly interesting because of new connections prosumers can make nowadays (Dodgson, Gann, & Salter, 2005; Evers, 2006). Information- and communication technologies enable customers to communicate directly with

very few transaction costs. Such technologies serve as amplifying platforms for consumer-consumer interactions on the one hand, and consumer-company interactions on the other hand. Contrary to the old mass media, new media permit replies and real communication, which is reciprocal. Only when used in a dialogical way, new media will unfold its true potential. The platform can be established in various forms, e.g. as "information commons" (Grassmuck, 2004) as in open innovation or "brand communities" (Algesheimer, 2004) as in up-to-date marketing. Such platforms concentrate prosumer interactions and therefore make it easier to access their innovative potential (Jeppesen & Frederiksen, 2005; O'Reilly, 2005). This does not necessarily have to be online-communication. Far more important is that interactions of the prosumers lead to networks with information- and knowledge sharing (Wilms, 2005; Nonaka & Takeuchi, 1995; Schüppel, 1996).

Communities of innovative prosumers can also be seen as networks. Whereas the term 'community' stresses social relations, asymmetrical power relations and emotions based on experiences (Schulze, 1993), especially the actor-network-theory (Latour, 2002; Degele & Simms, 2004; Couldry, 2006) provides a powerful tool to analyse hybrid structures and interactions of people and artefacts or 'entities'. In the actor-network-theory artefacts, such as products, are conceptualized as actors. These actors influence social relations because power and significance are embedded in them. They represent different forms of capital (Bourdieu, 1983; Oelgart, 2006), which can be used to influence one's own social ties (Lin, 1999; 2001). As Couldry (2006) argues, for a comprehensive investigation both analytical strategies – communities and actor-networks – have to be combined.

As structures show the role of artefacts and fixed social relations, communities add understanding to social motivational factors. Prosumers not only have to have fun innovating, they are also social beings, integrated in communities. These communities function based on social capital. Social capital can be defined as "investment in social relations with expected returns in the marketplace" (Lin, 2001, 19), and works with 'reputation'. Therefore, interactions are reciprocal. They rely on a creditor-debtor-relationship. Being innovative creates reputation for the innovative prosumer. This means, that there is a reward for innovations, because in prosumer communities innovation is highly appreciated. As social capital weaves social networks, other prosumers can assess this reputation by the network. The individual reputation gain through innovation therefore also enhances the overall reputation of the community. Hence, this leads to a strong motivation for participation in prosumer communities.

By consulting three different examples of innovative practice-communities, the above-mentioned motivational facts become clearer and some further aspects are focused. These examples are by no means a complete or systematic comparison and are only able to give some suggestions. All of them can be briefly summarized.

The first example is open source communities. Open source communities are groups of software engineers working together on program codes they need themselves and without financial rewards. They are usually regarded as working on the basis of trust (Putnam, 2001; Stolle, 2001). Trust can be seen as a competing concept to that of Lin's creditor-debtor-relationship and is working the same way. As innovative programmers share ideas freely, open source communities are suffering from "free-riding" (Harhoff, Henkel, & von Hippel, 2003; Franke & Shah, 2003). Not only can this problem be reduced or even eliminated by modularisation of the software code, modularisation also enhances the productivity (Baldwin & Clark, 2005). Thus, taken as a model for prosumer innovations, product modularisation would make prosumer innovations easier and more likely.

Communities of practice are used as a second example. These communities are expert communities for innovation projects, which develop around practices and not as project teams. What makes them interesting is their high degree of knowledge exchange. Taking these communities as an example it can be learned, how knowledge exchange processes can be managed and how a company can work together with prosumer communities. Another important aspect is highlighted by Braun-Thürmann (2005): objects serve as knowledge storage in the sense of the actor-network-theory and mobilize further resources for the community. In the case of prosumer communities these objects are the innovations and their shared knowledge assets.

The third example given here are brand communities. Leading brands or brands with a very narrow focus often have groups of admirers. Marketers who manage those groups call them "brand communities" (Algesheimer, 2004). Such communities evolve around brands because of shared interests and experiences. By far not every brand has the potential for a community to sprout around it. The product needs to be appropriate for distinction. Accordingly, not every mass product can be expected to be a focus of innovative behaviour. Products do not only have to cause problems, they also have to stand for and express a lifestyle. In contrast to open source communities, brand communities do not put a spot on technological innovations but on cultural.

Summarizing, out of these examples one can learn four things for prosumer communities: Products need to be modularised, they need to be socially appealing, there have to be forms of

knowledge sharing and objects have an important role to mobilize resources and store knowledge.

In the last two chapters it became explicit, that there are not only single consumers and manufacturers, but in fact a triad of company, prosumer and community (Algesheimer, 2004; Kahney, 2002). Prosumer innovations can only be completely understood in this connection.

What an innovative prosumer is like

Like marked above, "fun solving problems" (Lüthje, 2004; Csikszentmihalyi, 1991) is one characteristic of innovative prosumers. Innovativeness goes beyond pure ideas, it includes implementation. Prosumers are not financially rewarded for their work unless a company decides to buy copyrights or integrate them in an innovation process. Hobby users do not innovate for financial rewards. If financial rewards were offered, they might even 'crowd-out' the intrinsic motivation. A second precondition is a certain degree of dissatisfaction with existing products. Only if prosumers feel a need to change, pro-articulation can be expected to occur. But this is still not enough to be an innovative prosumer, because innovativeness presupposes "new needs" of the prosumer. Like von Hippel (2005) puts it, the needs must be ahead of the market. This condition is not easily to fill, because how can one tell that a new need is a need other customers will also have? Therefore, this is a condition that can't be judged until one looks back. At this point, conventional market research comes into play. Related to the above-mentioned characteristics prosumers need to have "use experience" on the one hand and "product related knowledge" on the other (Lüthje, 2004). To say it with different words: "Craft will need to guide the use of code." (Dodgson, Gann, & Salter, 2005, 138) Prosumers have to be able to implement their ideas. This becomes a central category. According to the differentiation between technical and cultural innovations, both categories – "use experience" and "product related knowledge" – have to be sub-divided. For innovation task related to the cultural aspects of a product adequate knowledge is required, as technical knowledge and experience are required for technical innovation. Alternations of products on either the technical or the cultural level are only derivates without real knowledge. Imitation of an already existing solution is not innovative (Thomas, 2002; Levy, 1984). Not every prosumer needs technical knowledge and not every one cultural, which one is needed, clearly depends on the task.

Conclusion

Two kinds of innovation, technical and cultural, have been identified and both are expected to be implemented by prosumers. Therefore an alternative definition of innovation has been suggested. If prosumers come up with a new solution they do not introduce them in the market, they share their ideas and these ideas are introduced in use contexts. To investigate this process until market introduction of a mass-produced product the triad of prosumer, community and manufacturer needs to be observed. In this triangle, individual and social motivational factors have to be considered. When working, members of a prosumer community should share knowledge freely and each build upon the ideas of the others to reach goals one alone would never be able to.
The products as media or artefacts have an important role. Firstly, they have it in mobilising resources. With them a community can gather and embed social capital. Secondly, to support innovative activities, manufacturers might want to modularise their products. This would make it easier for prosumers to find individually challenging tasks and to co-operate. Thirdly, products need to be socially appealing. Only if so, prosumers are attracted to innovate.

Thus, further research should be designed to match the within this study identified circumstances of innovation by prosumers. This would help to avoid including behaviour of prosumers that is not at all innovative. In conclusion, this article added to a theoretical review innovation by communities of prosumers with a sociocultural definition of key terms and widened the perspective on the topic.

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