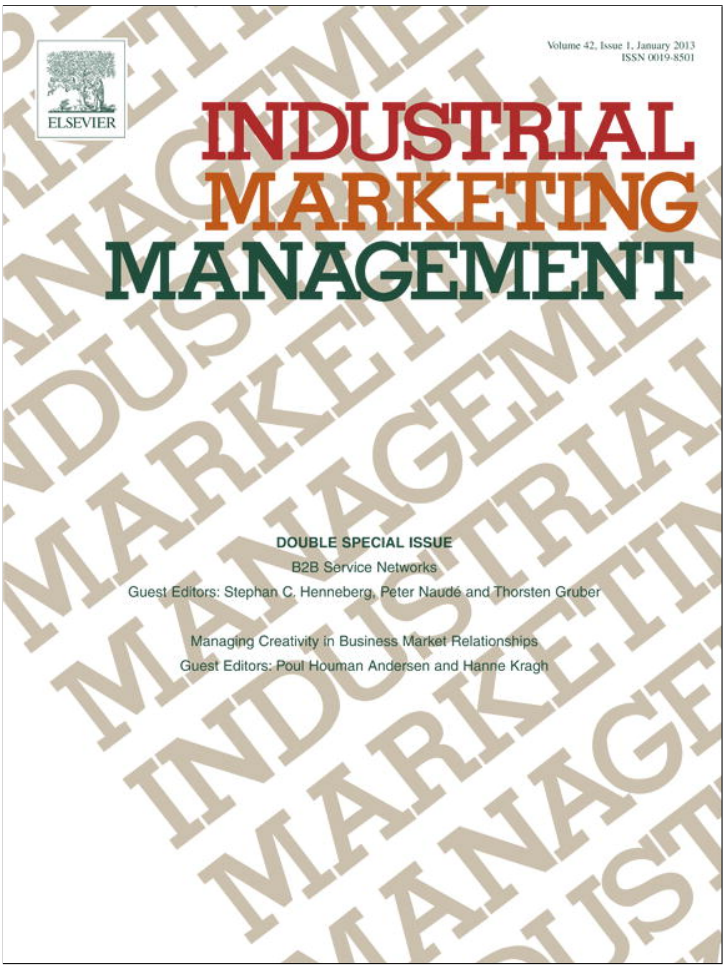

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Interpreting and envisioning — A hermeneutic framework to look at radical innovation of meanings

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ABSTRACT

The recent success of companies that compete through design has raised an interest on how to innovate the customer experience of a product or service. Even in industrial markets firms are increasingly moving beyond the improvement of functional performance, to address a deeper redefinition of the reason why their clients buy and use a product, what we call a "radical innovation of product meanings". Whereas there is a wide body of literature about technological innovation, we still lack robust theoretical frameworks that explain how companies can successfully propose new experiences and new interpretations of what a product is meant for. The purpose of this article is to stimulate and support the development of studies on radical innovation of meaning by providing a new theoretical lens. We propose hermeneutics as a valuable perspective to investigate the radical innovation of product meanings. Differently than classic innovation theories, where innovation tends to be considered either as a process of problem solving or as a process of ideation, hermeneutics provides a framework to look at innovation as a process of *interpreting* (of developing meaningful scenarios rather than finding an optimal solution) and *envisioning* (of imagining experiences that are still not asked for, rather than answering to existing needs). We illustrate that, in this process, external networks have a central role as they feed a continuous debate about what is or is not meaningful. Hermeneutics, therefore, is useful to shed light on how external players may significantly affect the way a firm reframes its interpretation of the competitive context and gives meaning to things. The article is conceptual in nature, since it aims at providing a theoretical platform which other scholars may build on: the purpose is to provide an indication of a possible direction to spur a cumulative process of knowledge development, rather than a conclusion. Yet, we support our arguments for the use of hermeneutics in exploring the radical innovation of meaning with examples and cases from our preliminary analyses, mostly in the fields of robotics and healthcare.

1. Introduction

Executives in the sector of industrial robotics share two assumptions. The first one is that their firms are in the business of efficiency. Robots are serious stuff, meant to increase productivity, not to amuse people. The second one is that robots need to keep distance from humans, due to their potential to severely harm people. Yet, in 2003 the German company KUKA Roboter Gmbh, a major player in the robotic industry, released the Robocoaster — a revolutionary application of industrial robots that challenged those assumptions (see European Robotics Research Network, www.euron.org or Schaetzle, Preusche, & Hirzinger, 2009). This new product was not the result of pure internal strategic thinking; on the contrary, it took great inspiration from external influences. Namely, by the passion of a former, entrepreneurial employee, in love with roller coasters and their constructions. What KUKA managed to do is to change the meaning of how a robot "should" be used, by listening to a new, yet well-known, familiar but still different voice — immersed into an external network. For, the Robocoaster is namely a robot used in amusement parks to provide a totally new experience to people willing to enjoy the thrills of a breath-taking ride. It consists of a robotic arm with two seats at its end to host people. During the ride the robotic arm lifts the passengers in the air, swirls, stops suddenly, turns them upside down and in many directions, with different speeds and dynamics, thanks to a practically unrestricted freedom of motion granted by its six axis of rotation and six degrees of freedom. The peculiarity of the Robocoaster is not only the unique combination of movements it can allow, but also the possibility for passengers to program their 90 second ride themselves. Before sitting into the Robocoaster, the passengers go through a software application in which they can select from various motion profiles and speeds, depending on their age and how brave they want to be (more than 1.4 million combinations are possible). They can design a gentle, easy-going ride, or opting for a

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totally wild experience, whirling them up, down and sideways through the air. From the first ten robots delivered to the Legoland amusement park in 2003, to the recent adoption in the "Harry Potter and the Forbidden Journey" ride in Universal's Islands of Adventure theme park in Orlando, more than 200 Robocoasters have been sold, opening an unexpected application for an industry that has recently experienced a major turmoil due to the recession that hit major automotive clients (see Öberg & Verganti, forthcoming). The robotic application has been so successful that eventually it spanned off into a profitable company, the "Robocoaster Ltd", founded by the entrepreneurial employee. And, according to the Robocoaster management, the sales render significant margins, about ten times of the margin of a traditional manufacturing robot. At first, an external observer looking at people whirled into a Robocoaster, would think that this is a great idea, and also quite trivial. It does not require revolutionary technology. Indeed, the Robocoaster is based on an adaptation of a standard heavy-duty robot of KUKA, the KR 500, which has the peculiarity of being capable of lifting 350 kg (two people plus the seat) and simultaneously having a long arm. The technology is therefore accessible to any manufacturer of industrial robots. Yet, after almost ten years, KUKA is still the only competitor in the field. Why did not other companies recognize (and still not recognize) this opportunity? The point is that even if the Robocoaster uses existing technology, it challenges the existing paradigmatic interpretation of what an industrial robot is. It is not used for improving efficiency, but for entertainment. It does not keep distance from humans, but, instead, it is the first passenger-carrying industrial robot (see for example International Association of Amusement Parks and Attractions, 2003). In other words, the Robocoaster is not just a creative idea that fits perfectly within what is meant as "business as usual". It is a revolutionary change in what industrial robots are meant for. In other words, it is a "radical change in meaning". This new meaning was not within the dominant assumptions of incumbents in the industry. It was only by listening to a different voice, playing in other fields totally external to the world of robotics, that KUKA grasped the value of this new meaning. Who could believe the love of amusement parks would lead Kuka in this direction?

The industry of industrial robots is punctuated by recurrent changes in the meaning of what a robot is and what clients are really searching for when they buy a robot. In an empirical study in the industry we have created a map of revolutionary cases within the field of robotics, from the 70s and up to todays date (Öberg, 2012). This map was created through conducting workshops with managers within product management, innovation management, software engineering, corporate research and sales of companies in the industry and then verified through interviews with employees and external experts in the field. The map, for example, shows that in the early days of the industry, the main focus of manufacturers and clients was on the product (the hardware and its control system), and the purpose was to develop faster, more flexible and more precise robotic arms. In the early '80s ABB Robotics started to pioneer the development of "virtual robotics", simulators that enable clients to visualize the operations of a robot in their plant before they actually buy and use the product. Through ABB's "RobotStudio" simulator, clients may better predict how to effectively use a robot and design a better manufacturing process. The meaning therefore moved from selling an efficient robotic arm to selling knowledge on how to use it: even a slow robot may be more valuable than a faster one if it is used in an effective way. This type of innovation is so radical that even clients were not explicitly asking for it, and when it came out they were threatened instead of being thrilled. For example, car manufacturers have internal experts whose expertise is to understand how to use robots; these experts within the client organization interpreted the simulator as a threat to their expertise and therefore to their organizational power.

These kinds of breakthroughs in meanings occur in several markets, including business-to-business high-tech markets characterized by intense engineering and science. One example is innovation in imaging devices for the healthcare industry. Clients, and in particular radiologists, usually ask for increasingly powerful devices, assuming that these can deliver a better quality of image and make examination throughput faster. The healthcare division of Philips however, has developed a new system, called Ambient Experience that takes a totally different direction. Rather than focusing solely on power and speed of the imaging device, this system focuses on the psychological status of the patient, with the assumption that a better and faster image is achieved also if the patient undergoing an examination is more relaxed. Philips, therefore has created a solution based on lighting, sound technologies, video projection and more, aimed at immersing the patient in a more relaxed environment and therefore enhance her experience before and during the examination. Also in this case, the new meaning did not come from within the imaging industry (quality of images does not depend on the power of the imaging device, but on the hospital ambient): Philips received crucial insights by listening to architects, interior designers, and child psychologists, who are outside of the typical ecosystem of imaging companies (for a deeper analysis of this case see Verganti, 2011).

These observations lead to the question in focus for this article: how may companies successfully manage the radical innovation of product meanings? Why are some companies effective in understanding the value of opportunities only when they are within the scope of the existing dominant meaning in an industry, whereas others manage to challenge the dominant assumptions and are capable to seize opportunities that are beyond the scope of what currently make sense? What is the role of external networks in this process of envisioning new meanings?

To clarify, when we mention "product meaning", we relate to the purpose of a product or service as perceived by the *user*. It is about the purpose for *why* a product is used, not how it is used (the user interface), nor what the product consists of (its features).

Unfortunately, the subject of innovation of product meanings has largely been neglected in management studies. Whereas literature on management of innovation has deeply explored the antecedents of radical change of technologies, we still miss a deep investigation of the dynamics of radical change in meaning. A cause for this lack of investigation is that the nature of innovation of meaning is peculiar: it involves symbolic, emotional and intangible factors. Classical theories of innovation, conceived mainly for innovation of tangible factors, such as technology, utility, performance, and function, therefore wobble when used to investigate this type of innovation. New approaches and frameworks seem to be needed.

The purpose of this article is to support the development of studies on radical innovation of meaning by providing a new theoretical lens. Given the current state of development of the field, especially as far as industrial technology-intensive markets are concerned, our aim is not to deliver answers or empirical analysis, but rather, to propose a theoretical platform that can disentangle the basic complexities of the topic, and enable scholars to develop further research; an indication of a possible direction to spur a cumulative process of knowledge development, rather than a conclusion. In particular, we propose to use the theoretical lens of hermeneutics as a valuable approach to investigate the radical innovation of product meanings. Differently than established theories that often consider innovation as stemming from a process of *problem solving*, or from a process of *ideation*, hermeneutics provides a framework to look at innovation as a process of *interpreting and envisioning* (or generative interpretation). It therefore better suits the investigation of change in meaning, and has the potential to lead to complimentary explanations of why some companies are more effective in managing the radical innovation of meanings. In addition, hermeneutics offers an important angle to investigate the role of *networks* in the process of making sense of things, since external players may significantly affect the way firms reframe their interpretation of the meaning of products and services.

The article is structured as follows: Section 2 defines the field of investigation, namely the radical innovation of product's meanings. Section 3 shows why existing theories of management of innovation crackle when used to investigate the radical innovation of meaning. Section 4 introduces our hypothesis, by proposing hermeneutics as a suitable approach to investigate this peculiar type of innovation. Section 5 illustrates the overall reasoning of our proposal and Section 6 elaborates our thoughts with the help of examples. In particular, we discuss how hermeneutics allows to better capture the role of external networks.

2. Defining the scope: the nature of radical innovation of meanings

Studies of innovation management have often focused their investigations on two domains: technologies and markets (for an extensive review see Calantone, Harmancioglu, & Dröge, 2010; Garcia & Calantone, 2002). *Technological* innovation has been capturing most attention, especially as far as *radical* technological change is concerned. Indeed, in the past decades a rich stream of studies has explored the antecedents of technological breakthrough (Abernathy & Clark, 1985; Christensen, 1997; Christensen & Bower, 1996; Henderson & Clark, 1990; Utterback, 1994). Later, investigations have focused more on the applications of existing or new technologies/products to penetrate into new *market* domains (Chan & Mauborgne, 2005; McGrath & MacMillan, 2009). A still rather unexplored area however is the innovation of product and service *meanings* (see Fig. 1). This type of innovation aims at introducing new meaningful experiences to the user; it's a change in the purpose for which the product is used, in the "why" rather than in the "what" and "how".

The space of innovation therefore becomes a three-dimensional construct. This partially mirrors Abell's model for business definition (Abell, 1980). However, while Abell's third dimension points to the "what" of a product by discussing different "functions" to fulfill customer needs, our proposal stresses the "why" by discussing the "meaning" searched for by users. This meaning, when translated into solutions ("what") may include both utilitarian and functional needs, but also emotional and symbolic needs. In other words, the question "why" brings products into a wider perspective, beyond visible and tangible functions.

Another difference with Abell's model is that our perspective is dynamic (on innovation) rather than static (on business definition). In this article, in particular, we focus on the *radical* change of products' *meanings*. We could also name this innovation "Design-Driven Innovation" (Verganti, 2009) as the word design (from the Latin de-signare) is etymologically related to "making sense of things"

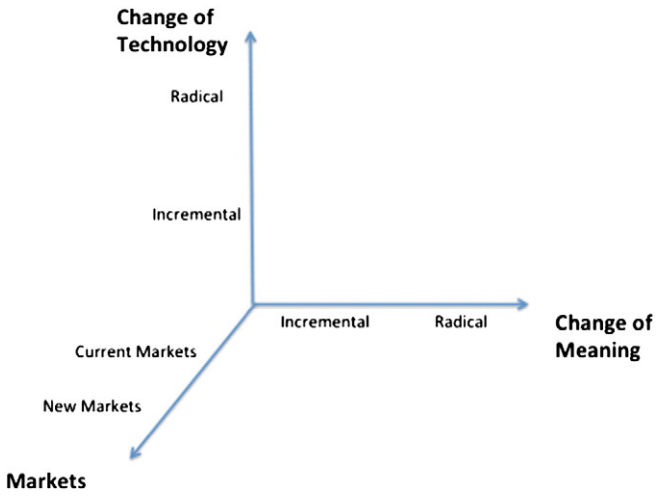

Fig. 1. The dimensions of innovation.

(Heskett, 1985; Krippendorff, 1989). Design, by definition, includes to bring meaning.

Note that innovation of meanings can be based on existing or new technologies. For example, the Robocoaster launched by KUKA, is based on available robotic technology (indeed it's an adaptation of an existing product), whereas the RobotStudio simulator introduced by ABB Robotics has required the development of new software applications. Studies on radical technological change, especially in the field of socio-technical change and Actor Network Theory, have deeply explored these interactions between meaning and technologies (Bijker & Law, 1994; Latour, 1987). However, the direction of these investigations is the opposite than our purpose: they consider innovation as driven by technology and change in meaning is then an enabler or as a consequence. Here instead we focus on innovation driven by the search for a new meaning, with technology being an enabler.

Similarly innovation of meanings concerns both existing or new markets. The RobotStudio is targeted to traditional robotic clients, such us industrial manufacturers, but still it implies a radical change in the reason they buy robots: from searching for speed and efficiency, to searching for knowledge about how to use robots. The Robocoaster instead brings robotics into a totally new arena, transforming roller coasting from a ride that is predictable and standard to an experience that is unpredictable and customizable by passengers. The park's visitors do not merely get in the ride and sit there, but instead take an active, creative role in the experience.

Whichever the case (either an existing or new technology is applied or an existing or new market is targeted) we focus here on an innovation process where new meanings are searched for and designed, as a way to provide more value to customers and compete better, or different (Moon, 2010; Verganti, 2009).

As previously mentioned (and despite the existence of related areas of research), radical innovation of meanings has been relatively neglected in innovation studies, especially because of its peculiar nature. It involves symbolic, emotional and intangible factors, and these hardly fit within the realm of existing theoretical paradigms of innovation management.

First of all, differently than technologies, meanings are significantly *context-dependent*. What is meaningful for users depends on the socio-cultural context in which a product is used, something that may vary considerably over time and space. And, differently than technologies, product meanings *can hardly be optimized*. They can only be made sense of. The RobotStudio simulator of ABB is not a faster, more precise or more controllable robot; it's a different experience, based on learning rather than speed, which makes more sense in the current context of robotics markets where there are many small industrial clients who do not know how to use robots. Second, we focus here on the *radical* innovation of meanings. And these new radical meanings are *outlandish*: they are considerably different than the dominant meaning in an industry. They look as aliens. Incumbents can hardly recognize the value of these outlandish meanings unless they question their own dominant assumptions about what makes sense. The Robocoaster is an application that brings robots in close contact with humans and it offers amusement and entertainment. Other competitors in the context of traditional industrial robotics banned (and still ban) this application as crazy, against any logic, and valueless. In other words, a radical change in meaning is often coupled with a redefinition of the socio-cultural paradigm in the market, the redefinition of the accepted interpretations of what a product is, what is meant for (Geels, 2004). Finally, a radical change of meaning is generated, or better *co-generated*. It is not an improvement of something already existing, but something that still does not exist and need to be created. It is a vision that does not become real until someone (for example a company) proposes it to the market and until users give meaning to it. We use the word "co"-generated to specify that meanings cannot be defined by businesses, but are given by users immersed into a socio-cultural context. Businesses

can only propose to customers a platform of possible meaning for interpretation.

3. The limit of existing innovation theories and the need for a new perspective

3.1. Innovation as a process of problem solving

The most established stream of studies on innovation is developed within the field of problem solving. Its cognitive perspective, where innovation comes from a combination of an individual's knowledge, skills, behaviors and processes, is rooted in the influential theory of decision-making by Herbert Simon (Simon, 1982). Although Simon's framework encompasses both problem-setting and problem-solving activities, this stream of studies, which has mainly dealt with technical innovation, has increasingly focused on the latter. Innovation is therefore often considered as the search for a new, optimal solution to a given problem. This perspective has been inspiring decades of research in management of innovation (see for example the model of design hierarchy of Clark, 1985, or the problem solving cycles in Clark & Fujimoto, 1991, in system engineering design by Pahl & Beitz, 1988 and in innovation strategy with reference for example to the resource-based view of corporations by Wernerfelt, 1984 and their dynamic capabilities, see Teece, Pisano, & Shuen, 1997). In these approaches, innovating implies "finding" a solution, with the implicit assumption that the problem is well defined and that actually an optimal solution to a problem does exist out there: it's just a matter of finding it, on the basis of information and capabilities. Indeed these theories have played a central role especially in the 90s in the extensive investigations about product development management (Krishnan & Ulrich, 2001). Similarly, the entire body of literature on concurrent engineering is based in this paradigm (Krishnan, Eppinger, & Whitney, 1997), where the core factor to be innovative was to rapidly and effectively find optimal solutions to given technical problems. When innovation of meaning is concerned however, the problem solving perspective starts to creak. Meanings, as described above, are context dependent and culturally embedded. There is no optimal meaning, but different interpretations of what a robot or a CT scan can be, all of which are reasonable in their proper socio-cultural context. For this reason, innovation of meaning cannot be described as a process of problem solving since there is no optimal solution out there to be found.

3.2. Innovation as a process of ideation

More recently, innovation studies have taken a less analytical and more emotional stance, by focusing on how a creative person thinks. Leveraging on established theories on abductive reasoning (Peirce, 1903) and observing how professionals work (Schön, 1983), a new stream of investigation has emerged that describes innovation as the result of a more intuitive process. This stream of study has been developed especially by scholars working on design thinking (Boland & Collopy, 2004; Brown, 2008; Martin, 2009) or integrative thinking (Martin, 2007). Although abduction, pragmatism and intuition fit better with the intangible nature of meanings, this stream, and especially its recent developments on design thinking, still do not cover up for the intrinsic dynamics of the innovation of meanings. First, because of its tendency to still apply a focus on problem *solving* rather than problem *setting* (design thinking is often seen as a way to find great solutions to known problems more than a way to redefine the problem itself). Second, and as a consequence of the above, because it assumes *ideas* as the core element in innovation. The major challenge is to generate (several) ideas: once "the" idea is found it can be easily recognized, valued, and implemented. Indeed, most of these studies move in the realm of creativity. And indeed, the focus on ideas and creative thinking has permeated the innovation literature of the last decade (Eng, Ledwith, & Bessant, 2010). However, as the example of KUKA and the Robocoaster clearly show, radical innovation of meaning is not simply an idea, but a change in the interpretative paradigm about what makes sense, both in the perspective of the innovating company (a change of strategic vision) and of the customer (a change of purpose). Without this change of paradigm, an outlandish idea would never be recognized (definitely not an idea of a roller coaster robot!), regardless to its potential value. An additional limit of these studies is that they focus on the creative process in the mind of people and therefore struggle to capture the dynamics of meanings that are interactively co-generated out there in society. In other words, new meanings cannot be captured by only "thinking" creatively, but also by "interacting" with others in society. Here, we imply to open up doors to new avenues by listening to new and external interpreters, outside the typical dominant networks (not simply being immersed into a group of experts, as in communities of practice, Wenger, 1999). Meanings are co-generated — in between *different* minds that interact with each other. They come when companies interact with the surrounding world in new and unexpected ways.

4. Proposing a new lens: hermeneutics

4.1. Innovation as a process of interpreting and envisioning

So far, we have described two approaches to innovation management (innovation as problem solving and innovation as ideation). If the first approach relates to object, facts, (bounded)-rationality and optimization, the second perspective represents much more of a subjective, intuitive and emotional stance. Both the objectivist and subjectivist perspectives provide some useful insights to investigate the dynamics of innovation of meanings. But they do not capture the nature of radical innovation of meaning in its entirety. We therefore feel the need for a richer perspective to fully grasp the real dynamics of this type of innovation. Our hypothesis, which we will discuss in the sections below, is that to understand the dynamics of the radical innovation of meanings in a profound way, a new, additional, lens may be adopted: looking at innovation as a process of "interpreting and envisioning".

"Interpretation", because we are dealing with *meanings*, that, by definition, is the result of an interpretative process. The Robocoaster is a new interpretation of what a robot is meant for; the Ambient Experience for Healthcare system is a reinterpretation of what is meaningful for patients and clinicians in examination procedures. They are not an improvement in performance, but a new, more meaningful, experience. The solution is somewhat secondary (it comes as a natural consequence), once a new interpretative paradigm is generated. "Envisioning", because we are focusing on the *radical* innovation of meanings. Interpretation therefore does not merely follow a linear process in which opportunities and ideas are assessed in the light of the existing context. It is not only a process of interpretation of an existing reality. The exploration of radically new meanings instead implies to envision a new scenario that does not exist yet. It implies to picture an idea into a context to be designed. It is therefore a process of *generative* interpretation.

A major implication of considering innovation as a process of interpreting and envisioning is that it allows capturing the socio-cultural dimension of innovation of meanings. As we have previously discussed, meanings are co-generated: interpretations of the meaning of a product occur through continuous interactions among firms, designers, users, and several stakeholders, both inside and outside a corporation. It implies to develop arguments rather than finding optimal solutions. Innovation of meaning is in other words a process of generative interpretation *through debates*. This perspective allows therefore to bring in the spotlight a major factor: the role of *networks* (especially of external players). Rather than focusing on solving (on the role of knowledge and methods), or on thinking (on the

role of reflective approaches and emotional insight), this allows focusing on *interacting* (on the role of networks and the social dimension of innovation).

4.2. Hermeneutics and the radical innovation of meanings

We are not alone in our attempt to investigate innovation as a process of interpreting and envisioning. A well-developed stream of studies comes from scholars in organization theories, who have explored how organization makes sense of their environment (Weick, 1995) or of their identity (Tripsas, 2009). Our investigation brings a similar perspective to a different arena: the object of interpretation is a user experience and the subjects of interpretation go beyond the organizational boundaries to embrace users and other external stakeholders.

Other studies that are close to our perspective are those developed by scholars of Actor Network Theory — ANT (Bijker & Law, 1994; Latour, 1987), and on the diffusion of innovation (Rogers, 1996). They provide a useful reference to our purpose, by introducing a sociological dimension. This supports our discussion of the nature of radical innovation of meaning as being co-generated: meanings are not something to be found on a given market (such as in the structural view of for example Porter 1980). Instead, meanings are constructed and re-constructed in an ever ongoing process in society and within companies (Brown & Duguid, 1991; Tsoukas, 1996). The innovation of meaning, therefore, could be linked to a social-constructionist (Burr, 2010; Landry, 1995), or even re-constructionist (Chan & Mauborgne, 2005; Chan & Mauborgne, 2004) approach, where the interaction of objects and subjects ("actants" in ANT) mutually shapes, or "construct", representations of reality in a continuous process.

These theories provide a solid background for our discussion. Still, the creation of meaning is not only a collective act but also a personal one. In the attempt to better capture the nature of innovation of meaning we therefore want to add two perspectives. First, the above studies consider meaning as a contextual factor of innovation: something that explains how innovation (in technology or strategy) occurs, through interactions in society, markets and within organizations. However, when we consider innovation of meaning, new meanings are the *output* of the innovation process: the *target* that a company wants to achieve. They are the result of an envisioning process and not only a contextual variable to be interpreted.

Second, given that innovation of meaning is the result of a design act, we want to couple the sociological perspective with a better understanding of how people develop new interpretations. Behind, or rather, parallel to construction comes personal thought. As Cunliffe (2010) explains, individuals "create meanings through language, routines and symbols to understand how social reality is created".

This indicates that the innovation of meaning also touches upon subjectivist, or rather intersubjectivist values (see Cunliffe, 2010, for an extensive discussion of the three knowledge problematics of intersubjectivism, subjectivism and objectivism). Individuals give meaning to things, not only through social interaction, but also through individual reflections about the purpose of life. Think about the novelist Daniel Defoe. In his description of the extreme situation of Robinson Crusoe's wreckage in a desert island, where most social structures are missing, he reports how the character spends most of his time searching for the meaning of that situation and his fate (Defoe, 2011). Therefore, innovation of meaning does not *only* build on sociological dimensions but also on philosophical ones, as in the meaning of life.

To explore the philosophical dimension, we leverage on the theory of hermeneutics. Fundamental to hermeneutics is in fact its interpretative nature. Traditionally this interpretation has been focused on written text connected to literature, law and even religious works. But, from the focus on sections of texts the hermeneutic approach has come to be used also for the spoken word and further to be useful also for interpreting actions in general (Alvesson & Sköldberg, 2008). One of the main characters within the field, the German philosopher Hans-Georg Gadamer even stated that the truth of a situation can only be reached by understanding, as in interpreting (Gadamer, 1996) not by established methods of modern science, as in objective measuring. We especially tap on the branch of hermeneutics that explores the generative interpretation of things, whose application to innovation of meaning and design is currently emerging. For example, some of our reflections have been inspired by the seminal research of Marcus Jahnke on hermeneutics and the work of designers (Jahnke, 2012).

Below we introduce an overview of the basic concepts on hermeneutics that are relevant for our investigation; then we discuss how these concepts support our hypotheses that radical innovation of meanings is a process of interpreting and envisioning and that hermeneutics may provide a useful lens to explore this process.

4.3. The hermeneutics framework

Three concepts are central in the framework of hermeneutics: interpretation and reflection, the importance of embracing new perspectives in the process of interpretation, and the role of the interpreter. A main concept within hermeneutics is that the parts of an action or situation can only be understood if placed in a context. And vice versa, the context can only be understood if one understands the parts. This duality is represented by the "reflective circle", consisting of an understanding of both the details of a situation and the overall picture. Reflection implies to move iteratively between the two.

In addition to the reflective act of the interpreter herself the French Philosopher Paul Ricouer has proposed an additional reflective turn that brings a critical air to the interpretative process (Kaplan, 2003; Ricoeur, 1984). It includes an *active* search for a diversity of interpretations, stemming both from the interpreter herself but also from the external world. Ricouer wants us to *actively* bring in new channels of information, and take different perspectives. He calls for a continuous "detour", to lose oneself in an action of "distancing" from the problem and to "rediscover oneself as another by multiple appropriations" (Kristensson Uggla, 2011). This suggests that the reflective process requires to be *critically creative*. Also other views stress the need of looking outside yourself to create new interpretation, for example the Theory-U by Sharmer (2008) that starts off in listening to others with "your mind and heart wide open". By deliberately seeking to find new, alternative ways to understand a situation the interpreter can propose several interpretations. Reflection therefore occurs through a process of "creative reconstruction". But, the value of Ricoeurs' proposal is not only this. What Ricoeur clearly underlines is not only the value of many perspectives, but also the importance to let these different perspectives collide and confront each other (Kristensson Uggla, 2002; Ricoeur, 2010). In summary, Ricouer not only stresses the importance of bringing in new perspectives, but also by offering an *active distancing* to the situation.

Lastly, the interpreter and her intuition plays an important role. By trying to put oneself into the situation at hand, to feel and to live it, new understanding can be created. Even more, the combination of the underlying knowledge of the interpreter and the ability to use intuition could make it possible for the interpreter to understand the situation even better than the actors within it. This centrality of the interpreter again indicates that a situation can be interpreted in many different ways. Hermeneutics, therefore, assumes that there is no definite solution, but instead a temporary understanding, which is continuously evolving and enriching. The purpose, ideally, is not to deliver an answer, but to open up for a discussion.

5. Applying hermeneutics to explore the radical innovation of meanings

The framework of hermeneutics introduced above seems to resonate with the nature of innovation of meanings earlier discussed.

Hermeneutics may provide an interesting lens to improve our understanding of how radical innovation of meanings occurs and to guide future explorations in this field. In particular, when it comes to the role of external networks, the hermeneutic approach allows to appreciate their value in the process of interpretation by suggesting to actively bring in new perspectives. The emphasis lies in the *presence* and *inclusion* of an external and sometimes unknown network. The more novel an external actor and therefore beyond the usual connections with clients and suppliers that any company has, the more novel the stance taken in. Consequently, the more novel the interpretation.

To strengthen our proposal, we will now discuss in more detail how hermeneutics connects with the nature of innovation of meanings and how it provides additional explanations compared to when existing innovation theories.

The conceptual approach we use in our discussion is schematized in Table 1. We start from the nature of the radical innovation of meanings (see column two of the table), and in particular from four characteristics: 1) meanings are *context* dependent, 2) meanings *cannot be optimized*, 3) radical meanings are *outlandish* compared to what currently make sense and 4) radical change of meaning is *co-generated*. The first two characteristics come from the nature of "meanings", and innovation as a process of *interpreting*; the third and fourth characteristics are a consequence of focusing on "radical" innovation of meanings, and therefore on innovation as a process of *envisioning* new possibilities. Following our previous discussion in Section 3, the table then shows how the dominant theories of innovation struggle to explain these four characteristics, especially the first and second one.

Next, we focus on the fundaments of hermeneutics that connect to these four characteristics (see column four of the table). In particular we leverage four themes of hermeneutics. *i*) the parts and the whole, *ii*) the iterative mode of interpretation, *iii*) the action of taking a critical stance and *iv*) the creation of a new understanding. We then discuss how these four themes better capture the nature of radical innovation of meanings. They therefore allow to propose a new theory of innovation (column five). In particular we discuss in further details the role of networks, by comparing how external players are considered in dominant innovation theories and within the framework of hermeneutics.

Note that the scope of this article is theoretical in nature, aiming at proposing a new lens for investigating the radical innovation of meaning, and therefore support and stimulate further research. Yet, we provide in the discussion examples from innovation processes of companies involved in radical innovation of meanings. These findings come from our preliminary explorations. Their purpose however is not to provide empirical evidence to our discussion, but to provide exemplifications that may further clarify the concepts. In the following section we develop our discussion according to the four characteristics of radical innovation of meanings.

6. Towards a new theory of innovation

6.1. Designing scenarios of meaning

In Section 2 we illustrated how a major feature of the innovation of meanings is its *context-dependency*. Meanings cannot be innovated by focusing on the details of a product or technical problem. Customers make sense of a product or service according to their psychological profile, and of the cultural and social context in which they are immersed. We also showed that classic innovation theories, focused on *problem solving* and *idea generation* as well as a more constructionist view, fail or only partly manage to capture this nature of the innovation of meanings. Indeed they work well when innovation concerns the improvement of a utility function for users, typically a technical feature or performance, which is given and independent from the socio-cultural context. Developing a computer with a larger memory, a more powerful CT scan or a faster robot, implies to search for solutions that can (almost exclusively) be technically described. The winner in the competition game is the one who realizes the solution with a better performance. But the innovation of meanings works on a higher level and with a broader scope: it redefines the purpose and the utility of a product, by reinterpreting its relationship with the

Table 1
A theoretical framework for discussing the role of hermeneutics in capturing the nature of radical innovation of meanings.

		Innovation					Networks	
		Characteristics of the nature of radical innovation of meanings	Dominant theories of innovation	Hermeneutics	New theory of innovation		Role of networks in the dominant theories	Role of networks in the hermeneutics perspective
Process of innovation of meaning	Interpreting	Meanings are context dependent	Problem solving (ideas and solutions)	The parts and whole	Designing scenarios of meaning		Solvers	Interpreters of the context
		Meanings can not be optimized	Optimizing and reducing uncertainty	The iterative hermeneutic circle	Debating		Bring new knowledge	Bring new arguments in the discourse
	Envisioning	Radical innovation of meanings is outlandish	Develop new capabilities	Taking a critical stance	Building critical capabilities		Experts	Critics
		Radical innovation of meanings is co – generated	Answering a need	Generating a new interpretation	Envisioning new meanings		Driven by users	Driven by interpreters "outside of the usual networks"

context. The conceptual framework of hermeneutics captures this feature, as it describes interpretation as a process of moving between the parts (the product and its interaction with the customer) and the whole (the context). It indicates that novel interpretations only occur by expanding the scope of investigation. This imply to step back from a close focus on the problem at hand, and instead consider the overall user experience beyond the specific interaction with a product. Hermeneutics therefore suggests that innovation of meanings entails a double level of design: the whole user experience, and the product. These two levels of design need to be embraced coherently and simultaneously.

The implications for the theory of innovation are significant: the output of the process here is not an idea or a solution, but, rather, a scenario; more precisely, a *scenario of meanings*. In fact, scenarios are "a sequence of events, especially when imagined" (Merriam Webster, 2011). They bring together the part (the individual events, one of which is the product at hand) and the whole (the overall user experience, which is the envisioned course of action).

A scenario of meaning is therefore something that expresses a new meaning on both a detailed but also a comprehensive level. It can be a report, but most often it takes the form of a mood board or a story board, tools widely used by designers. And it can also be a physical realization, such as a concept project, shown in public by a company to indicate future aspirations. Common for all these scenarios of meaning are that they show a blend of impressions, interpreted in a special direction. It is the identification of many different signals (the parts), melted down into one coherent message (the whole).

Consider for example the German company Bayer MaterialScience. In order to drive the development of new materials and product, they regularly build scenarios of meanings. The company has a unit, the Creative Center, specifically devoted to the systematic analysis of evolutions of society and culture that could impact its current and prospective client markets, and therefore lead to new applications of polymers. In 2005, for example, the Center launched the "Future Living 2020" project, where, together with 13 other external partners (research institutions, universities, other companies and clients), it investigated how trends such as dramatic urbanization and nomadism of workers would affect the lives of people. Out of this scenario they then discovered a niche opportunity where they wanted to put extra focus. This was in the field of transportation of individuals connected to physical exercise. They wanted to explore how people could move from A to B while doing recreational sports. And they launched the campaign "People In Motion", which was a competition for design students. Out of the 100 insights and proposals, Bayer found one interesting case that they developed further. It was the idea of an interactive living landscape, articulating the need of a soft floor that could be turned into a sitting sculpture digitally. Although the digital landscape concept was far ahead and not direct viable because of its complexity, the main driver "generate a floor cover that not only looks soft but that is soft to live on" was distilled. The concept went through trials into different directions together with design students and professionals until finally a carpet was developed. It consisted of a multi-material interrelationship that generated the experience and comfort of "being in a dream while hanging out on the floor". After great customer feedback at different fairs the product was further developed by the designer network Create Berlin who made it even more delicious. Even if it was visually just a flat piece, the new product made customers see that the carpet was actually a big step in comfort and not only styling. The carpet firm Kymo then transferred the carpet from prototype stage to production and then named it Pure Moss.

In the case of Bayer MaterialScience we can clearly see how the strategy of stepping back to see the whole picture enabled a new product. The step from the first original scenario of future living, via the focus on people and motion and then finally to the interactive living landscape and a soft, hi-tech material carpet would have been hard to predict. But, the approach to combine the big picture (like in megatrends, bringing in the network and iteratively refine the product) with the details (the knowledge of the materials and their capacity) proved successful. Stepping away from the core assets of the company could not be seen as waste of time. It came to be a fruitful solution.

Note that the strategy of Bayer is not simply to search for market applications, but for meanings. They do not investigate socio-cultural scenarios with MBAs, but with design schools. They do not look for figures of market sizes and linear projections, but for new meaningful proposals.

Central to the process of Bayer MaterialScience is the role of external *networks*. Bayer involved in the development of its scenarios several players such as research institutions, clients, companies in other complementary industries (such as construction and logistics). In addition they worked with design schools, design studios and design students (see also Verganti, 2009). A similar approach is adopted by Electrolux, which has established a Design Lab (see www.electroluxdesignlab.com) as a yearly competition for industrial design students on future issues connected to white goods in our homes. The competition has been focusing on issues as healthy eating, green thinking and design for the Internet generation and the results show cases as different as a mobile washing machine or a façade refrigerator. Connected to the competition is a network of design partners, a website and other social media supports. These build a platform to propose, discuss and share ideas. Doing this, Electrolux is not purely hunting for new ideas. Instead, the Design Lab competition also captures the hopes, dreams and aspirations of the coming generation. The proposals are pieces of a puzzle to gain new understanding. It makes the company in touch with new perspectives and it opens up for new interpretations. By having these signals from the network Electrolux aims indeed at creating scenarios of meaning rather than finding solutions.

Therefore differently than in classic models of innovation, where actors in a network are considered as providers of ideas or solutions to a specific problem, in both the Bayer and Electrolux cases they provide new, different understandings of the context. They bring possible *interpretations* of what could be meaningful to users.

As a summary both cases show that the approach taken gives a notion of both the whole and the parts. It shows that radical innovations of meaning are context dependent. It is not about designing a product, but about designing a scenario of meaning. And that this scenario is developed through interactions with an external network of interpreters.

6.2. Debating

Another major characteristic of meanings is that they *cannot be optimized*. They belong to an ever shifting sphere of knowledge, opinions, news and proposals. And because of this, a meaning can never be constant. As discussed previously, their nature do not fit with the dominant theories that see problem solving as a process of progressive *reduction of uncertainty* (the earlier in the process the better, Clark & Fujimoto, 1991), and that assume that there is an *optimal* solution out there, you just need to find it (Terwiesch & Ulrich, 2009). Instead, the hermeneutic approach, and in particular the iterative hermeneutic circle, opens up for a constant reinterpretation of the surrounding world. Rather than detecting new or uncertain information as early as possible in the process, it points to repeatedly bringing in new insights. Instead of keeping one constant perspective it is about bringing in several perspectives. Instead of deciding the course once and for all, the focus lies within the continuous turns within. In short, this suggests a new theory of innovation that instead of focusing on convergence towards an optimal solution, is based on a continuous and iterative *debate*, which firms take an active part in.

In this debate, external networks, again, play a central role. However, differently than established theories of innovation, where external players act as *suppliers of knowledge* to fill existing competence gaps, therefore contributing to reduce uncertainty of problem solving, hermeneutics suggests that external actors may be considered as an important source of new *arguments*. They express different ideas, use different voices and create different perspectives. Interpretations

therefore are combined, lead to new ones, by stressing some of them and abandoning others.

Let us go back to the case of KUKA. They started their work with the Robocoaster by listening to a proposal from an entrepreneur related to the amusement park business. The first product presented on the market was a standard product, adapted to the use of private persons with the help of suitable software. During the years the company carefully listened to what the network looked for and constantly refined their offer. Among other things the seat was extended to include also a top cover, equipment for laser guns (to fire at themed targets) and other special effects. Recently the Robocoaster has been developed to include also a 3D solution, providing the experience of a virtual roller coaster. This feature makes the product a cost saver, because suddenly a theme park can offer the thrills of a roller coaster on a much more limited land space. Also, the 3D solution provides experiences of avalanches, bobsleds and jet planes. Further, the concept has been incorporated to be a part of interactive exhibits that combine math and science with sport activities for children. What we see is a continuous progress, starting from an adapted assembly robot, ending up in offering a total experience. The product nowadays includes not only precise movements, but also user control functions as well as visual and audio effects. The Robocoaster is the result of an iterative development process. It includes actors that, along the way, added new knowledge and proposals and by this helped KUKA to reinterpret the meaning of the product. The strategy has been to listen and adapt the product continuously. Similarly, in order to develop the Ambient Experience for Healthcare solution, Philips has conducted several projects for building scenarios of meanings, spanning eight years from 1995 to 2003. These projects act as iterations in the hermeneutic cycle, each of which with a different perspective. From the early project "Vision of the Future" focusing on new domestic scenarios to "Noah's Ark" focusing on the transition between sleeping and awakening, Philips involved a large number of different interpreters, with a progressive enrichment of its understanding of the opportunities offered by ambient technologies (like LEDs and video projection). Application to healthcare actually came late in the projects, once the company understood the power of ambient technologies to relax people and patients and the healthcare division made sense of the need to move from selling imaging devices to selling healthcare solutions. Projects for building new scenarios of meanings are still going on in the healthcare business of Philips, as an acknowledgement of the need to continuously enrich the firm understanding of how patients and clinicians make sense of their healthcare experience.

So far, we have elaborated the two themes of "designing scenarios of meanings" and "debating". These two themes are giving new implications to the theories of innovation as a consequence of our focus on meanings and therefore on interpretation. Our discussion however considers a specific type of innovation of meanings: a radical change. The next two sections will illustrate how hermeneutics provides a useful lens also to capture the nature of radical change.

6.3. Building critical capabilities

Recent studies on innovation have deeply analyzed the dynamics of radical change, with a focus on a major challenge: the need to develop the *new capabilities* required to achieve a breakthrough. External networks are therefore considered crucial to provide access to new competencies (Chesbrough, 2003). While this perspective fits perfectly with the radical innovation of meanings, hermeneutics provides us also with an interesting complementary view: developing a radical change in meaning implies to overcome dominant assumptions about what a product is meant for. Radical new meanings often look as *outlandish* from within an existing business. Hence, the act of searching for radical new meanings is necessarily coupled with a criticism on the existing dominant socio-cultural paradigm. In other worlds, firms that want to create breakthrough in meanings have to take a critical stance on what a product is currently meant for.

The importance of questioning the current picture therefore links us to the ability of building *critical capabilities*. Which again lead us to the crucial role of networks, but with a new perspective: instead of using external resources only as a source of complementary capabilities that have been identified and that are currently missing, the external views could be used as a source of criticizing the current situation and endorsing what seems to be outlandish. Following for example the suggestions of Paul Ricouer, external interpreters may help in finding the underlying messages and go "behind" the immediate interpretation of the markets dynamics. Therefore, external partners can act not only as *experts* in new domains, but also, and even preliminarily, as *critics* of the current domain (where being critic does not mean to be negative but to be "able to discern" because of looking at things from different perspectives). Networks are not there only to build new knowledge but also to criticize the existing norm. Which often occur by bringing in interpreters from outside of the "usual" networks. The interpreters who enable to develop outlandish interpretations are not customers or suppliers, who belong to the same ecosystem of a company and often share its same frame of making sense of things, but rather those players who are alien to its environment. They enable a firm to make "detours" from the current dominant interpretation, lose themselves to find themselves as another, with a new perspective.

For example, the Ambient Experience for Healthcare solution realized by Philips required a significant shift in the core values and identity for a manufacturer of imaging products: from selling a device to selling ambient solutions, which is something that firms in this industry would not recognize themselves into (Verganti, 2011). What lead Philips into this paradigmatic shift was the involvement, in its projects of scenario building, of interpreters who were totally new for the imaging industry, such as pediatric psychologists, experience designers, architects and interior designers. Through several projects (and therefore through several iterations of the hermeneutic circle), these outlandish interpreters "outside of the network" showed how the quality of an examination experience of patients and clinicians was only minimally affected by the power and performance of the imaging device. Rather, it was significantly dependent on preparation to the exam and the memories that a patient had after the exam, which could be significantly influenced by the design of the hospital environment. Note that a radical change in meaning implies that not only the innovator, but also the *customer* has to reframe how a product is conceived and defined. Radiologists that use the Ambient Experience for Healthcare system of Philips had to reframe their assumptions on how quality in radiological images is achieved: not through a good powerful device, but through a better experience of the patients. Early skepticism by Philips clients was overcome only when a pioneering radiologist showed that indeed the new system allowed reducing the throughput time of examinations, thanks to patients being more relaxed.

Similarly, both the development of the RobotStudio application by ABB and of the Robocoaster by KUKA have benefited by the contribution of executives who originally came from other industries than industrial robotics (indeed, the entrance of KUKA in new markets has been anticipated by a significant influx of an entire team of new young executives who *were not* experts of the industry). These executives could take a critical stance on the shared assumptions on the industry and pave the way to the development of breakthrough meanings.

6.4. Envisioning new meaning

The fourth and last theme describes that radical innovation of meaning implies an act of *proposing*. A radical change in the meaning of things hardly emerges as an *answer* to a clear market need. In contrast to most theories of innovation that advocate a closer look to users in order to realize innovation (especially within the realm of studies on user-centered innovation, design thinking and crowdsourcing), a radical

change in meaning implies to step back from current needs and propose a new vision that is still not existing in the market (Verganti, 2009). Again, hermeneutics captures this dynamics: the act of interpretation is not based on the discovery of what is already there, but on a deliberate *creation* of new interpretations that are still not existing. It is not an act of seeing better, but of envisioning, of conceiving a new possibility. Hermeneutics therefore suggests a theory of innovation as the act of *envisioning new meanings*. It is not simply about generating ideas and solutions, but to create a whole new vision.

In fact, the Robocoaster is not an idea created and kept in a vacuum. It has become the locus of a clear and forward looking strategy of KUKA: searching for new applications by redefining what a robot is. Perhaps the most evident proof of how KUKA is holistically redefining the meaning of robots, is given by looking at the visual and experiential language of their website (www.kuka-robotics.com/en/) especially as far as the new applications in the field of entertainment are concerned (www.kuka-entertainment.com). The websites show catalogues of ideas about new applications; the images are playful combinations of products creating complex shapes in the style of Arcimboldo's vegetable portraits. In addition, KUKA has collaborated with digital designers Clemens Weisshaar and Reed Kram to create an artistic installation in Trafalgar Square during the 2010 London Design Festival, where the festival visitors and the global Internet community could take control over eight robots via a website by sending short text messages that were then "painted" in the air by the robots using LED lights. KUKA's robots have also appeared in Hollywood movies such as James Bond's "Die another day" or "Tomb Raider" and the company has been honored a number of design awards. There is an entire radically new strategic vision behind the idea of the Robocoaster.

Consider also the sports gear company POC. This is a company that is most famous for their ski helmets, combining new technology with a strong visual appearance. Through our field work we realized that POC is another example of a company that, by reflecting and understanding on several signals, developed a new meaning, in this case for downhill ski helmets. Instead of just offering supportive gear to avoid injuries the company has added a playful, seductive touch to this life-saving equipment. Instead of dealing only with reason they also play on emotions. When visiting the POC head quarters in Stockholm and also the website the visitor dive into a world of protection, where helmets can be personally designed in colors, sizes and connected to ski goggles. Helmets can be combined with body armors, gloves and clothes. On the web, the visitor can virtually meet the team of athletes behind the products and check the latest news. If having medical concerns, the visitor can meet the special lab behind the new semi-hard shell technology and learn that the company works within biomimetics (the science of adapting biological structures and functions to the purposes of engineering). Visitors are also offered tips on movies, competitions and links to the partners of the company. For the most extreme users there is also a local talent program, both within ski and bicycling. The website is a source of inspiration, inviting interaction and giving a deeper meaning to the idea of protection. POC is clearly not offering just a product, they propose a scenario of meaning in a market that did not ask for the use of helmets (the meaning associated with ski helmets was indeed that of a device for fearful inexperienced skiers). Yet the firms worked on four different contextual signals that contributed to proposing a new scenario of meaning. First, new technology in the industry, namely of carving skis, has come to encourage higher speed of both ski amateurs and professionals. This, in turn, has resulted in an increased amount of severe accidents. Secondly, new materials connected to the equipment for professional skiers have resulted in more advanced and dangerous tricks, again signaling an increased rate of injuries. A third signal is connected to the fact that the general lifestyle is constantly changing. Skiers at resorts tend to ski at higher age and therefore become more exposed to accidents. Fourth, the interest for fashion connected to sport has risen significantly. The founder of POC worked together with sports medicine experts (back specialists) and brain scientists, neurologists, material specialists, experts in social media and graphic design, industrial designers, professional athletes and top gravity athletes to elaborate on these signals and create a new scenario. The result is that POC now have changed what personal protection is all about from being "a boring must" to a fashionable and attractive feature. POC is using a broad network of interpreters to create this atmosphere of protection as "cool stuff". They are not relying on users only (who, as said, were actually avoiding the use of helmets). Whereas therefore recent theories of innovation place a major focus on the role of users to create new solutions, the radical innovation of meanings implies to involve a broader range of interpreters, as many of the examples discussed here show.

7. Conclusions

As technological opportunities and ideas become widely accessible, a major challenge for companies is how to make sense of this wealth of opportunities. Innovation therefore increasingly concerns not only the improvement of a given performance, but also a redefinition of what is relevant and meaningful for customers. One example is the German company KUKA and their roller coaster application, in which they have used existing technology to transform robots from powerful and reliable machines into surprisingly fun and unpredictable entertainment devices. Another example is Philips Healthcare who changed the assumptions of what a good CT scanner at hospitals is meant for, from a high quality image device to a system of Ambient Experience. By describing and analyzing these and other cases we have shed some light on *how* companies *may* successfully *manage* the radical innovation of product meanings.

The conclusions from our understanding have generated a theoretical framework to explore why certain companies manage to challenge dominant assumptions and seize opportunities (beyond the scope of what currently make sense) in the search for new meanings. By presenting four characteristics we have shown that the nature of radical innovation of meanings does not totally fit with the perspective of dominant innovation theories. We put forward that meanings are *context dependent* and *cannot be optimized*. And when they are radically new, they are *outlandish* to dominant assumptions in an industry and have to be *co-generated* through a design action. This peculiar nature is not satisfactorily matched by theoretical frameworks that assume that innovation comes from a process of problem solving in the search of an optimal solution, or that consider innovation as a process of ideation. Neither can this type of innovation be explained in its entirety by taking a pure constructionist, and less interpretative, approach. By leveraging the theoretical framework of hermeneutics, we have proposed an alternative perspective to explore the radical innovation of meaning: by looking at innovation as a process of interpreting and envisioning.

The first implication (in our framework related to the role of innovation) is that when it comes to the radical innovation of product meanings the crucial element of the innovation process is not product development, nor idea generation but the process of vision creation. In other words, the center of attention should not be on implementation nor on creativity, but on strategy. As a consequence, the key role therefore, is played not by scientists or creative employees — but by the top management. The leaders, together with a team of both internal and external interpreters, need to co-create proposals of new meanings in parallel to the strategic work of vision creation. Innovation of meaning does not come from users, but from interpretation. Therefore, leaders have to be a part of that process, as meanings are context dependent, iterated and quite often can look outlandish. If leaders are excluded, meanings become very hard to communicate. This insight invites to further explore what is the role of leaders in continuously redefining the framework of interpretation that is used to make sense of opportunities.

The second implication (related to the role of networks) is that in this act of redefining the framework of interpretation of a firm, external actors, especially those "outside of usual networks" in the industry, play a major role. They bring a critical stance to what is currently assumed to be meaningful by a company and add new perspectives in the search for new, profitable, meanings. The radical innovation of product meanings therefore requires to see external partners not only as providers of knowledge and solutions, but also and especially, as providers of arguments and novel interpretations, in a continuous iterative dialogue. This article is a first step, a suggestion for a direction of investigation. The aim has been to propose a framework, a lens for further research. On our side, the next step will be to feed this conceptual elaboration with new empirical analysis, using as an empirical ground the industry of industrial robotics and other high-tech industries. This article therefore has not a definitive conclusion. Rather we hope to open up for a debate, inspired by the hermeneutic tradition. We hope to hear many new, critical and different voices and learn to see other, complimentary pictures on the fascinating as well as fairly unexplored issue of radical innovation of meaning.

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