Designers as Innovators in Organizational Contexts: A Proposal for a Typology

SVENGREN HOLM Lisbetha; AINAMO Antti and VILDINGE Christina

a University of Gothenburg, Sweden
b Aalto University, Finland
c University of Gothenburg and White Architects, Gothenburg
* Corresponding author: lisbeth.svengren.holm@gu.se
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This paper proposes a typology for the different roles and drivers present-day designers may fulfil, which may depend on the kind of organisational context involved and the type of innovation. The interest in the potential of designers contributing to business and management innovation and the economy as a whole has grown, with the premise being that companies modelling innovation processes on the design process are more innovative and more successful than others. Design has become represented almost as a synonym to innovation and a legitimate response to criticisms of management training for being too scientific and detached from real-world complexities and problems. This raises a need to understand and clarify the roles designers can have or take, in companies but also in the public sector, where design is increasingly commissions contribute to innovation. Based on a multi-case study approach we propose a typology based on three different types related to the outcome of designers acting as innovators: product, process and service innovation. With these types of innovations we propose a typology for the different roles designers can have and take based on a hierarchical model related to the Double Diamond model for the design process. Radical innovations are related to strategic level and benefit from the potential of designers with an artistic and aesthetic approach.

keywords: business management innovation; designers as innovators; organisational context
**Introduction**

Design has become known almost as a synonym to innovation (e.g. Boland & Collopy 2004; von Stamm, 2008, 2013; Dunne and Martin, 2006; Verganti, 2009). This paper proposes a typology of the different roles present-day designers may fulfil in innovation, which may depend on the kind of organisational context involved and the type of innovation. The interest in the potential of designers contributing to business and management innovation and innovation in the economy as a whole has grown, with the premise being that companies modelling innovation processes on the design process are more innovative and more successful than others (e.g. Roy & Riedel, 1997; Gemser & Leenders, 2001; Irish Centre for Design Innovation 2007; SVID 2008; Bason, 2014; DeEP, 2015).

"We need to capitalise on Europe’s creative potential. This increases dramatically the role of designers, because, if we have a broader understanding of innovation, we need more power for design and design thinking in companies as much as in the public sector", as expressed in a public presentation in 2011 by the Head of EU Innovation Policy development, Peter Dröll.

Despite this we know there are still tensions between designers’ and managers’ perspectives, objectives, and ways of approaching problems and challenges (e.g Beverland, 2005; Johansson & Svegren Holm, 2008; Micheli et al, 2012). Design has thus become represented as a legitimate response to criticisms of management training for being too scientific and detached from real-world complexities and problems (Mintzberg, 2004; Boland & Collopy, 2004; Bennis & O’Toole, 2005; Augier & March, 2007; Holland, 2009; Glen, Suci & Baugn 2014). The need to give evidence that design, as an aesthetic based process, indeed contributes to successful new product development (NPD) has moved on to a need of understanding what kind of roles designers have in NPD (Perks, et al, 2005; Dong, 2014; Roper et al, 2016), and what impact the involvement of design can have on the organization (Oke et al, 2009; Martin, 2010; Micheli et al., 2012).

In this paper we argue why and how it matters that few managers and policy makers truly understand that design has its roots in artistic and aesthetic practices. One consequence of these roots is a necessity to embrace ambiguity and the trying out of new methods – instead of imagining a world where designers have good competence that just needs to be discovered and then success can be repeated. The desire to repeat successful practice in terms of “best practice” is often a disappointment as most markets, not the least consumer markets, are complex, which means that it is mostly in hindsight one can see cause and effect, if at all (Kurtz & Snowden, 2003). Designers are comfortable with such conditions, embracing ambivalence and insecurity, and accept this, or even encourage this as a learning process (Cross, 2007; Brown, 2008; Liedtka, 2010).

Designers are hence not the ones to operate in a steady-state oriented environment and quantitative, efficient and optimization-oriented thinking; they belong to dynamic environments and qualitative, adaptive and satisficing oriented thinking. Problems addressed by designers, just like those addressed by artists, tend to be wicked, so complex that with any design solution it is impossible to know the effect a new product or service will have (Buchanan, 1992; Cross, 2007; Soila Wadman & Svegren Holm, 2016). In turn,
that is precisely why some designers resort to problem-solving very small steps: trial and error contributes to acquiring more knowledge that can give experience for future decisions (Perks et al, 2005).

The purpose of this paper is to specify and develop a typology for the diversity roles of designers can have in innovation in companies and organizational contexts, based on the expansive roles designers as in-house innovators, external consultants have received when working on product or service design or on organizational processes in commercial or public contexts. Designers – traditionally working with commercial organizations and material based projects – now frequently also work within the public sector (Bason, 2014; Emilson et al., 2011; Pacenti & Sangiorgi, 2010). Designers increasingly work in multi-disciplinary teams within the organization (e.g. Ainamo, 2007; Johansson & Svengren Holm, 2008). More recently, more than one kind of roles for designers has emerged in, for example, the dynamic process of the four phases of innovation: “discover, define, develop, deliver” as illustrated by the so called Double Diamond model developed by Design Council (2005/2017 – Figure 1 below). We have used this model to identify the phases where designers have entered the processes also in our case studies on which we base our analysis.

![Figure 1 The Double Diamond developed by Design Council to illustrate the design process](image)

**What designers do: Designers as innovators**

Every profession and competence changes over time according to the changes and demands of its context, and tools/technologies to work with (Perks et al., 2005; Valtonen, 2007). The emergence of designers as a profession is in large a result of industrialization (Heskett, 1980). Logically the design profession and the roles change when industries change. But even if service became a large – and dominant – sector already in the 1980s, this did not affect industrial design in NPD to any great extent. It was not until well into the 2000s as service design emerged as a specific expertise among designers (Brown, 2008; Kimbell, 2011). Furthermore, Ropert et al. (2016) find that the roles of designers have not changed the last decades. However, we believe that the emergence of service design has led to a larger focus on the design process as such, even if the physical outcome is still important, and this has been one reason for expanding the roles of
designers also to that of process innovation. That was also one argument for initiating this project.

Reflecting the above first layer of what designers do, designers are in design literature traditionally described as problem-solvers (e.g. Rittel & Webber, 1973). More recently, the past ten to fifteen years have been marked by a shift in the view of their contribution to innovation. Adding layers, designers have emerged as professionals who solve problems in ways where they are capable of thinking out of the box (e.g. Buchanan, 1992; Kelley, 2001). Buchanan (2001) defines the expansion of designers’ roles as four orders of design practice; i.e. from working with 1) signs and symbols that are artistic or aesthetic, for example, to working on 2) industrial goods, 3) on services/experiences/interactions (e.g. Holmlid, 2009; Kimbell, 2011) and, finally, on 4) systems and organizations (see e.g. Emilson, 2015). The fourth order of practice is relevant to discuss today. However, as seen previously, designers won’t leave the other orders of practice. Designers have remained specialists in creativity and problem solving. At the same time, they have been lumped together with other creative practitioners, in the meaning of them being representatives of the creative class, in the widest possible sense.

Many studies have tried to identify various roles designers on the basis of the type of innovation, production and contextual factors (Perks, et al., 2005; Valtonen, 2007; Tan, 2009; Dong, 2014; Wilson & Zamberlan, 2015). In her research Valtonen (2007) illustrated how the roles of Finnish industrial designers developed and changed from 1950s – where Finish industrial designers had an important national role of building a new national identity after the war – until 2005, when the designers took – or at least aspired for – more strategic roles, not the least encouraged by the success of Nokia. Perks et al. (2005) differentiated the roles of design as functional specialism, as part of multifunctional team, and as NPD process leader. This taxonomy was based on an analysis of the actions, skills and contextual factors within which the designers acted. The study focuses on NPD with companies in different industries but still designing physical products. In the UK, Tan (2009), focusing on the roles of designers in the public sector, proposes that designers have a role as communicators who enable conversations around difficult issues, and being capability builders who enable non-designers to use design tools. In the study of Wilson and Zamberlan (2015) designers, acting as co-creators, concluded that designers are new-knowledge creators, facilitators, and participants in cultures of creative collaboration and inter-disciplinary teamwork. Based on a recent study Ropert et al. (2016) claim that the roles of the designers, at least in Irish manufacturing industries, have not changed during the last decades, and to some degree it is probably correct, especially when looking at NPD and product design. But the scope of what designers do have expanded, not the least due to the digitalization of products, and with service and the public sector as new markets for designers with a stronger emphasis on design as a process.

The roles identified in these studies range from being collaborators and creative actors in product or process development projects, where the designers create concepts and fine-tuning it in team-work, to acting as mediators converting and using cultural traits and language, transforming cultural realities into forms and shapes and colours to make the product appealing for the consumers or the processes and organization more innovative.
Methodology: a Case Study approach

This study aims to explore and identify a typology for the character of the current roles designers have, or receive, in organizations as drivers for innovation. We decided upon a multi case study approach and collected 20 case studies with different kinds of organizational contexts. Case study research is considered a suitable method when searching for qualitative data of phenomenon and events (Tsang, 20014), as case studies are rich of empirical evidence (Yin, 1994). Eleven of these cases were conducted in 2015 to have a larger and up-dated database. These eleven case studies were conducted by researchers from University of Gothenburg and Corvinius University of Budapest in a EU-financed project on the subject of design as driver for innovation111. For the new case studies we therefore got access to companies in Finland, Hungary, Ireland, Italy and Sweden. The other nine cases were done in previous research projects by researchers at University of Gothenburg and also authors of this paper or part of the Cre8tv.EU project.

Choice of cases

We sought to have cases where designers worked on innovations of products, services, and processes in different contexts, in commercial and public organizations, in large and small companies. The designers were in-house as well as external, often working with clients in multi-disciplinary teams. In some cases the designers have been the entrepreneur, or have been part of the start-up teams. We were not looking in particular for success stories but rather for companies where design was used at least as a process according to the design ladder developed by Danish Design Council (Danish Design Council, 2001/2017).

Table 1  Overview of the case studies

<table>
<thead>
<tr>
<th>Type of context</th>
<th>Small</th>
<th>Large</th>
<th>External</th>
<th>In-house</th>
</tr>
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<tbody>
<tr>
<td>High-tech products</td>
<td>2</td>
<td>1</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Digital services</td>
<td>2</td>
<td>2</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Furniture and interior</td>
<td>2</td>
<td>3</td>
<td>X</td>
<td>X</td>
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<td>Packaging</td>
<td>2</td>
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<td>X</td>
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<tr>
<td>Consumer goods</td>
<td>2</td>
<td>2</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Public sector</td>
<td>-</td>
<td>2</td>
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<tr>
<td>Summary</td>
<td>10</td>
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High-tech and digital service companies: We selected nine companies from high tech companies in different sectors: medical technology (1); subcontractor to the transportation industry (1); mobile sector (2); games (1), and Internet based digitally based services (4). The companies are large and small, and the designers are external and in-house.

111 These case studies were conducted within the Creative EU project: Cr8tv.EU
**Consumer goods contexts:** We choose nine companies in more traditional design related industries, like interior, furniture and home appliances (6); apparel (workwear and sportswear) (2); and packaging (1). The designers were both external and in-house. Some of the companies are large and global; others are smaller but exporting. Two of the furniture companies cater mainly for public sector, the others mainly for consumer markets.

**Public-sector contexts:** We wanted to investigate design in the public sector where designers have begun to find new customers, and where designers have worked with a new approach for meeting and learning; a trade union (1), and a city council (1).

**Methods for collecting and analysing data**
The methods for collecting primary data in all of the cases have been interviews of designers, product developers, owners and managers in the companies; secondary data from different sources, for instance newspaper articles about the companies, and web pages of the companies. The interviews were transcribed, and together with the other data we wrote a case stories for each company/organization, describing facts about the company/organization, the history of its development, position of the designers, and activities designers had for a certain outcome: a new product or process or organization.

We did a content analysis of the cases, within and cross the cases, according to what type of actions the designers were conducting in the cases. This is similar to Perks et al. (2005) but we also categorized the outcome in terms of degree and type of innovation, i.e. incremental, radical, product, new market or segments, new process, or organization. We noted how the different functions and the designers themselves defined their roles in the company or in the organizations and compared this with activities and the process of innovation. We have a fair number of cases but very few in each industry, especially the public sector. It would require a larger number in each industry and sector to make generalized conclusions possible. Hence, we can only propose a typology that indeed needs to be further investigated.

**Findings and discussion**
In many of the companies design was described as being equal to innovation and hence designers as innovators. Based on the analysis we found it therefore useful to start the discussion of the roles based on three main types of designers as innovators: product innovators, process innovators and socially driven innovators. The roles within all types differ between being strategically and tactically oriented, which to some degree is related to the taxonomy formulated by Perks et al (2005). However, we could not find the pure functional roles, i.e. sticking to the traditional design skills, aesthetics, visualization and technical skills, which was one of the roles defined by Perks et al (2005). It could of course be a result of the selection of companies with certain maturity on the design ladder, but we could also relate this to a general claim that in the last decade design has received more strategic roles. This claim was for instance made by the Swedish Industrial Design Foundation who commissioned a study of Swedish companies’ use of design; one in 2004 and then repeated in 2008 (SVID 2008). The study in 2008 showed that the number of companies having a higher maturity regarding the strategic use of design had indeed increased (SVID 2008).
However we could also see that the roles designers have for innovation is not so different based on country specific factors. We saw no difference between the roles of the designers in our cases in the different countries and therefore we disregard from discussing this as any contextual factor.

**Designers as product Innovators**

“In the beginning you are Sherlock Holmes, in the middle Picasso and in the end you are some kind of an engineer. The designer has many different caps and roles, depending on the different phases of the design process”

*(the external designer at the large, global furniture company)*

A core industry for industrial and product designers is interior and furniture, a mature industry, which spans between being conservative and radical. Designers have a traditional role as creator of new aesthetic expressions, new forms and mostly work according to a brief. Technical development can lead to radical new forms. However, in several of the cases requirements for sustainable solutions in material and inclusiveness were part of the discussions between the designers and the client besides the requirements for high quality regarding aesthetics and brand related issues. The initiative for sustainable solutions in some of the cases came from the designer, in some cases from the client, especially in those cases where the mission of the company was strongly related to sustainability, including its social aspects. Some of the cases were thus strongly purpose driven to contribute to a better and more including society.

This interest for sustainability encouraged the designers to take an active role in searching for instance for result of research of new materials, to consider longer usage and also engaging in the development of circular business models. In this sense the designers got a new strategic and research oriented role added to the old ones as functional designer and form giver when researching for sustainable solutions and is illustrating a purpose driven role for the designer in the discovery phase of the design process.

The technically based companies are highly technical driven in the first place and also needs to integrate new technologies at a high speed to keep up with the market development. We saw a difference between high tech companies manufacturing technical devices compared to those in the digital service context. In the digital companies designers were more integrated with the engineers for innovation and with leadership for the creation of creative cultures. We therefore come back to this when discussing designers as process innovators.

As Valtonen (2007) and Perks et al. (2005) noted, throughout the years designers have added new roles, like for instance that of being strategists and working with multi-disciplinary teams, consisting of engineering and marketing functions. The fundamental role for this kind of a designer is indeed that of giving form to a concept, but beyond that is the aesthetic notion of gestalt or embodiment or the brand. The designer’s role can on one hand be to create a design language that communicate the product in line with the communication of the brand, on the other hand to challenge the prevailing understanding of the business. The role in the first case is to interpret and visualize the intention of the company’s vision and mission, the other to challenge it based on both current content, context and also future.
When giving space for more radical approach the designer uses its artistic, aesthetic and design knowledge. It is the designer’s artistic and aesthetic knowledge and methods that leads to radical innovations, either for the company or for both the company and the market, which we could see in the cases in the technical contexts. Here the designers’ sense of critical mode of current states, fantasy and imagination of different futures, is what distinguish them from the conventional modes in innovation processes. The role is to be the provocateur, to challenge the obvious, common knowledge and expand what is thought of as possible. When the provocation leads to reflection and inspires also the others involved in the process it can lead to transformation, which can be a radical innovation for the market and/or the company.

The artistic driven process use the aesthetic tools for visualizing but is also imaginative of the future needs going beyond the user needs that are expressed and observed on current markets. It is using the role of being a strategic visionary without being locked by the current products or services or way of working at the company or organization. The artistic driven process will have consequences for the company and organization, probably requiring a re-thinking of how they operate at present state, which we could see in two of the cases, one in the public sector.

As this artistic and aesthetic driven role has an impact on the positioning of the company and the brand on the market, it is of strategic importance for the company. The role is further strengthened by designers’ knowledge of trends on the market, social cultural tendencies and sub cultures in society at large. Designers, through education, design history, relation to the material world of design icons, are closely linked to the cultural aspects of society. Designers are more or less consciously contributing to the material world – and thereby also the taste cultures (Bourdieu, 1984). Designers become brokers of knowledge as interpreter but also mediator, what also could be discussed as the taste of the design community (Bourdieu, 1984; Christoforidou, 2013). The form giver develops business on an incremental level of innovation and the aesthetic driver challenges how we understand the material symbols, which in turn brings opportunities for new interpretation and radical innovation (Verganti, 2008).

The role as technology knowledge broker for radical innovations has been recognized in earlier studies (Hargadon & Sutton, 1997). The contribution of designers in this perspective has been highlighted by for instance Leonard and Rayport (1997), Kelley & Littman (2001) and Brown (2008). The role of being a broker for new technology and market trends is an argument for commissioning consultancies in general. Balsamo (2011) means that technology and culture are inseparable, as those who are involved in technological innovation are also designing the cultures of the future, which emphasize the close relation between designers and engineers (Johansson & Sven gren Holm, 2008).

In several of the cases, especially in furniture and home products, the commission for the designer was business motivated and expectations were incremental innovations. These innovations occur on a tactical level and the designer’s role is then partly as what we would refer to as aesthetic developer. The interesting finding in some of these cases is that the designers were given space, or created the space, to challenge the brief which in turn lead to more radical innovations for the company in particular but to some extent also for the market.
In summary: The design knowledge of trends and social cultural tendencies in society at large, of technologies and solutions from different industries enables designers to take a strategic position in product innovation. The design knowledge on strategic level of innovation is connecting to the aesthetic and artistic educated knowledge or mind-set driven by the search for new understandings that challenge prevailing ways of perceiving the world, including the interest for sustainability. The designer ask artistic-driven questions to find the common denominator and then abstract the understanding to recreate new ways of seeing what is happening in the on-going conversations and people’s visions of the future. The roles we identified in the context of designers as product innovators are therefore ranging between being strategic communicator and purpose driven researcher where artistic methods, knowledge brokering and traditional design skills are crucial for the development.

**Designers as process innovators**

Once a radical innovation has been introduced and become a success on the market, various incremental innovations occur, based on this once radical innovation (Rothwell, 1992). This is seen as the normal development, but the speed of radical innovations, especially in the digital context has increased. Digital companies are hence trying to shrink the periods of incremental innovations, which leads to an expectation for companies in the digital context to remain creative and innovative. Google has become well known for its creative environment and is to some extent a role model for other companies in the digital context (Economist, 2009; Schmidt & Rosenberg, 2014). We can also see in our digital case studies that these companies are trying to foster a culture not only with constant incremental innovations but also with more radical innovations.

The innovations are often technical and engineering driven, but there is a tendency that engineers, and designers – e.g. graphic designers, interaction designers, and web designers – are working very closely together and seeing themselves as designers! Design in these companies has become part of the culture: “everything we do is design”. In some cases the roles of designers were rather to create a broader spectrum of developing a creative and innovative environment and culture than the products per se. When more radical innovations were sought for, the tools of design, referred to as design thinking, were seen as fruitful to achieve this. Designers then have the role to educate others to learn design tools and to “think” like designers. Without doubt the value of the designers’ competence is highly respected as the driver for innovation, but it is more the role of a pedagogue that is increasingly of interest as part of the technical innovation.

The designers in these cases were almost all in-house and hence had a continuous and regular collaboration with other functions in the company. Many of the new digital companies have invested in active based office solutions, with areas for play and social interactions. But also some of the companies in more traditional industries, interior, apparel (sportswear and workwear) we identified that the designers were contributing to process innovations alongside the traditional task of new product development. One of the interior companies invested in a design studio, which enabled a different relationship between the engineers and the designers, and way of collaborating. Both the workwear company and the union used the designer and artist to intervene and disrupt the way they used to work. For the workwear company this led to a change of rooms for product
development to enable more creative and innovative processes and for the union it led to a new way of recruiting members. This latter case we noticed was more artistically driven. With artistic we here mean that it includes aesthetic dimensions and visualizations, but also interventions, inspirations, and performances.

“It was insanely amusing to do the graffiti, something I’d never done before. You feel the uncertainty when you stand in front of a wall and do something semi-permanent. The you have three people behind you who are shouting, ‘come on!’ and who want to push you further. That’s a feeling I’ve taken with me into other new and demanding situations later on.” From the union case.

The roles we identified in the context of designers as process innovators are therefore from being creative culture curators to artistic driven interventionists.

**Designers as social innovators**

A last aspect that we want to highlight is a trend that the designer acts as social entrepreneur and driver for social innovation. Designers are challenging the traditional way of understanding the role of designers, how to act and why and where. Whereas already Simon (1969/1996) defined that design is about creating something better, the recent challenges in society has led designers to questioning how they can contribute to a better and sustainable society with a focus on the social aspect of sustainability. The role of the designers is then not only to create an aesthetic experience but also a humanistic experience in relation to society. To contribute to a better society, designers engage in different kinds of contexts and work with different actors.

Designers, as social innovators, are visionaries of what goes on in extra-organizational social contexts. When exploring the role of design for innovation it is also necessary to bring up the social contexts in which the designers have taken an increasing and larger role the last decade. It started to take off when service design was highlighted as a concept by for instance IDEO (Brown, 2008) and hospitals were one of the first areas where the skills and ways of thinking proofed to be valuable for innovation in the health care sector. This was, however, just the start for new segments in which designers could work. In this research project about the roles of designers for innovation we therefore could not disregard this trend and wanted to learn more about what role the designers indeed have for innovation in the social oriented contexts, not only public organizations but also private driven non-profit organization. We wanted to explore some not so traditional service design contexts and therefore include two social enterprise cases in this study. The cases were initiated in one case by a designer working at an architectural firm, in the other case by architects at an architectural firm. They organized collaboration between different partners and government bodies, who could have an interest of a project with the purpose of children’s learning but also for the purpose of doing socially good. These projects were in both cases intended to be temporary projects and events. For the first architectural firm the project was however carried out once more in a social deprived area now in collaboration with the City Council and the schools in the area. The other architectural firm repeated the event for some years when seeing the value of the learning outcome.
“Design is at the service of local and social needs, while also serving as a community building and educative tool. Furthermore, it provides floor for multicultural, multidisciplinary experimentation bridging perspectives, knowledge and co-creative efforts.”

In both projects the artistic methods and process of the designers played a crucial role to engage the participants. The outcome was in both cases learning in the first place, although expressed and articulated with different design objects that were displayed at the end of the events. The objective was not to create any commercial objects but to illustrate what the participants had learnt and could achieve. The roles we identified in the context of designers as social innovators we define as social driven artistic curators and pedagogues.

**Summary of the roles**

We summarize the different roles we identified in the context of product, process and social innovation in the figure 1 below. Here we highlight the designers’ roles as linking the artistic method and process to the strategic level of the firm and the discovery phase of the Double Diamond model.

Designers integrate imagination – seemingly not totally realistically but still within the realm of what ought to be actually possible – in their visions. With such a synthetic schema of what ought to be possible, they are at odds with traditionally more scientific based practice. Therefore, involving designers in early phases of innovation processes, in the discovery phase, allowing them to be integrated into or even drive the strategic aspects of innovation work can therefore have significant impact on the organisation of innovation work as well as on the organization itself. This is stressed by earlier studies, but here we want also to stress the role that the artistic, aesthetic driven process has for strategic outcomes, regardless if it is a product or a process.

Tactical level is related to incremental innovations where designers are part of business development, which is also related to the early phases of innovation, discovery but especially the defining phase. The roles are similar to the roles on strategic level, but docking into the organizational planning and ways of doing business, not necessarily as provocateur. The role of the designer can be understood as the intrapreneur connecting the inner organizational functions and outer market challenges. The importance of being a listener, both to the market, users and the producers are equally important.

We therefore propose a simple typology based on the degree of innovation, radical or incremental – see Figure 2 below. Relating this typology to the design process as described in the Double Diamond model, we propose to look at this model from a hierarchical perspective rather than a linear one. In this perspective the discovery phase is related to the strategies of the company and radical innovation as these have strategic implications. Incremental innovation is about defining the task and is more on a tactical level. The latter phase of the design process is about the delivery and here the role of the designer is to produce visual documentations (see Figure 2 below).
Figure 2: Designers’ roles in relation to innovations on strategic and tactical level. There can be said to be three streams of research on design as innovation in organizational contexts, focusing: (1) on decision making, (2) on planning, or on (3) communication. The three streams of research can each be said to adhere to a specific focus of interest and not only a level of analysis. The levels of analysis with respect to the research streams can be said to be the strategic level of decision-making, the tactical level of planning, and the operational level of communication, respectively.

Conclusion

We have analysed twenty cases to illustrate the roles designers and designers’ competence can have and can take in innovations, both in product and service innovations as well as in process innovations. The latter context is a growing field for design but also the traditional role in product and service innovation is essential for the growth of an economy as it strengthen companies’ competitiveness globally. A radical brief to designers call out to the traditional imprint of designer as artist and an aesthetic. We therefore conclude:

Radical innovations are related to strategic level where designers are artistic and aesthetic drivers. The condition for designer with an artistic approach is to give space for designer in the early phases of development, i.e. the discovery phase. The potential of design is here understood also in the sense of performance, in addition to styling, form and appearance, also adding researching for the purpose of achieving sustainable solutions, i.e. that design is also purpose driven.

A designer turns the questions given and argues, “why” thinking in additional abstract dimensions departing from the aesthetic experience. Here the roles of being imaginers with future sense or provocateurs, challenging existing systems and prevailing knowledge are most importantly creating space for new fresh understandings of being. But also the capability to listen to the market, the users as well as the producer in order to understand what trends and socio-cultural tendencies are relevant and possible to utilize. The designer is not first Sherlock Holmes and then Picasso, but both at the same time. ...
pedagogical and communicative skills become important to make people understand the raison d’etre behind the innovation.

**Future research**
The last decade, with the development and expansion of new technologies in a speed not seen before, industries, public sector and society are changing. Klaus Schwab (2016) means that the changes are historic in terms of their size, speed and scope. This has an impact on the demands of design, alongside with designers’ skills and competences. The roles of designers have expanded and the boarders of what is design are increasingly blurred. An interesting question for future research is not only more research of the roles of educated designers in different contexts, but also the consequences this has on the education of designers, not the least those with roots in product and industrial design. The cores of the designers’ skills and competences, visualization, aesthetics, forms etc., will these still be part of the education or is digitalization taking over the traditional way of learning through prototypes and models by the hand? What impact will this have on our visual, aesthetic understanding of three-dimensional products that indeed still exist?

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About the Authors

Lisbeth Svengren Holm is professor in Design Management at Gothenburg University, Director of Business & Design Lab. Her research interests include design management, design & strategy, design & innovation, and the interaction between design and other functions.

Antti Ainamo is Adjunct Professor at Aalto University, both School of Business and School of Arts, Design and Architecture. His specialties include new and temporary forms of organizing, design, fashion, creative and cultural industries, consulting, strategy.

Christina Vildinge is designer and lecturer at HDK, Business & Design. Christina Vildinge, holds a master in design from HDK, Academy of Design & Crafts, Business & Design, and a bachelor in management from School of Business, Economics and Law