Service Design

On the Evolution of Design Expertise

Service Design: On the Evolution of Design Expertise

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The content of the publication reflects the authors' views and the Managing Authority cannot be held liable for the information published by the project partners.

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CENTRAL BALTIC
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Introduction

Foundations of Service Design

Service design is a relatively new field of expertise: it has mostly developed over the past 20 years. The deepest roots of both design and service design are in arts, crafts, and organised planning. Later the actual concept of design and many of its sub-areas, such as architecture and jewellery as well as textile, furniture, and graphic design, started to emerge. Then service business development, service marketing, industrial design, as well as ergonomics, interaction design, usability design, and information design grew out from the thick root of design.

Eventually service design was formalised alongside its two sibling concepts *design thinking* and *co-design*. These three key concepts got strong branches from concept design, ideation, design management and analytics, and participatory design. Generally speaking, these new fields of expertise brought a great influence on the whole design field, and especially on service design work and principles, as can be read from this research publication's first article, *Design Tree*.

ServiceD Project

This research publication bases on the results of the ServiceD project's three year study (2009–2012), funded by Central Baltic Interreg IV A Programme 2007–2013. The ServiceD project has been coordinated by Lahti School of Applied Sciences (LUAS), who has e.g. offered professional specialisation courses in service design and provided a service design consulting project for the City of Lahti. Both tasks were done together with the project contractor Dynamic Futures.

The research and analysis of the project has been carried out by the project's two main partner teams, one from Finland and the other from Estonia. In Estonia, research and analysis has been done by Andres Viia, Külliki Tafel-Viia, Silja Lassur and Erik Terk from Tallinn University's Estonian Institute for Futures Studies (EIFS). Research on the Finnish side as well as the two Service Design publications' editorial work has been done by a research team coordinated by Dynamic Futures. The interview research and analysis team has been Tuomo Kuosa, Jari Koskinen and Leo Westerlund. This publication's editorial team includes Koskinen, Westerlund, Kuosa, Elias Kapiainen, and Sam Inkinen.

Besides the interviews, the ServiceD team used literature review and expert email commenting rounds as methods for gathering relevant knowledge. The international service design conference held in Tallinn in 2011 may be considered a tool for gathering knowledge as well. The four major analysis methods used in the project were centres to peripheries analysis, social media discussion in blog and wiki environments, generation analysis, and extensive desk study.

Our social media discussion method refers to an approach in which we have put many research findings and discussions to our social media platform in the form of wiki articles and blog entries in order to discuss with the design community and other professionals related to service design practices. We believe that dialogue between

actors creates an increasingly intellectual atmosphere for the field. It might also generate new ideas and know-how for the whole design community. Basically, we describe this research publication as well as the Service Design Magazine as multimedia publications as further discussions regarding the issues are provided in our web platform www.servicedesign.tv.

Objectives

The main research objective of the ServiceD project has been to understand the complex evolution of service design and related expertise as a part of the evolution of design as a whole. For that purpose, we have mapped service design's historical roots and latest developments as well as futures possibilities and educational needs.

The motivation behind this study has been the research team's desire to showcase at least one approach of systematic research and related open discussion for the actors of the (service) design field, and therethrough increase the field's ability to strengthen its scientific foundations. The field of (service) design already has professorships, educational curricula, and a few PhD theses have been published; these are usually clear marks of a field's scientific foundations. It is self-evident that our research work and these two publications are not enough for establishing solid scientific foundation for service design. However, we think that showing some remarks of the right direction is a good start.

The concept 'discipline' usually refers in academic discussion to a "limited" field of science that has its gatekeepers of knowledge, well defined borders and principles, forums of open critical discussion, methods for cumulating knowledge, some form of philosophy of science, and quite transparent standards of good and bad work. Despite some clear scientific qualifications, it can be argued that several aspects that are usually needed for naming a field of expertise and knowledge as a discipline are mostly lacking from (service) design. Hence, (service) design should adopt at least design critique – the question of what is good or bad design – to its standard process and it should systematically define the history, concepts, methodology, ontology, and epistemology of (service) design in order to obtain the status of a discipline. This publication together with ServiceD project's other publication, Service Design Magazine, attempt to make a contribution to most of these objectives.

Part I

This publication is divided into three parts, each carrying a unique approach to the theme. *Part I: Evolution of expertise* presents the project's main research outcomes that mostly originate from an interview study conducted during the project. Each article concludes the results of the interview study via one particular analysis method. In *Design Tree*, Tuomo Kuosa and Jari Koskinen discuss four historical and societal phases, i.e. agrarian, industrial, service, and ubiquitous societies and the role of (service) design in these eras. It also discusses how the conceptual development of service design has been asynchronous with historical development.

In *Evolution of Expertise in Service Design – Comparison between Finland and Estonia,* Tuomo Kuosa, Andres Viia, and Külliki Tafel-Viia discuss what kind of trig-

gering functions and turning points have eventually led to the current form of practices and concepts of service design in Finland and Estonia. Further, in *Content analysis – Centres and peripheries in service design,* Külliki Tafel-Viia, Andres Viia, Silja Lassur, and Tuomo Kuosa present a definition for the concept of service design based on the results of a quantitative content analysis. In the last article of Part I, *Generational analysis in service design*, Tuomo Kuosa and Leo Westerlund provide a summary of the differences between three generations involved in service design in Finland and Estonia.

Interview Study

The research outcomes of Part I are mostly based on 23 expert interviews done in Finland and 21 similar interviews done in Estonia in 2010. Our 44 interviewees were not selected merely from a pool of service design experts as we considered that we need to look at the domain of service design from a broader angle.

As well known to professionals of the field, service design is intertwined and grown out of many branches of art, crafts, design, marketing communication, psychology, architecture, service and hospitality industry, and so forth. Many of these linkages could be lost without using a diverse group of respondents. Hence, we took representatives of different fields of design that have interfaces with the history or possible future of service design.

All the interviewees are well-selected experts of a particular branch of design or they are generalists and they represent all three generations that are studied in this research. As we have agreed not to name the interviewees in direct quotes, we use numbers in square brackets to differentiate between respondents in this publication. Quotations 1 to 21 are from Estonia and 30 to 52 from Finland. The interviews contained 25 open questions, one closed question matrix, and three interview platforms.

The open questions asked e.g. about each interviewee's education, curricula, first requirements to enter a similar job, and how the education should be developed. The three interview platforms focused on solving out 1) design areas that were in forefront in different decades, 2) turning points in design, and 3) origins of service design. The information that was gathered from the platforms was later on aggregated into four forms that map the evolution of design and service design from different angles. Then all information from the forms was gathered into a draft roadmap figure showcasing service design's overall evolution. Next, the roadmap was sent for comments to various service design experts. Finally, the *Design Tree – Prologue to the Evolution of Expertise in Service Design* was drawn.

The Design Tree can be found folded between the Service Design Magazine. Another research dimension that is presented in the magazine includes eight interviews regarding the international aspects on service design, done at the Service Design Network's conference in San Francisco in 2011.

Parts II and III

The second and third parts of this publication are less closely tied to the interview study. Instead, they are outcomes of extensive desk study on a wide range of issues

related to service development and design. However, the articles present themes that were discussed during the interviews.

Part II: Theory and Practice of Service Innovation explains the principles of service innovation and co-design from three perspectives. Jari Kaivo-oja focuses on business viewpoints in *Service Science, Service Architectures, Service Designs, and Dynamic Service Business Development*, Sam Inkinen discusses three key issues of service development in *Designing Services: Challenges of Creativity, Serendipity, and Open Innovation*, and Alastair Fuad-Luke showcases the practices of co-designing services in *Co-designing Services in the Co-futured City*.

Part III: Futures of Service Design discusses important emerging phenomena and existing trends affecting the futures of the design field. In *Trends and Drivers Affecting Service Design,* Andres Viia, Erik Terk, Silja Lassur, Jari Kaivo-oja, and Tuomo Kuosa underline essential issues forcing the domain of service design into change. Leo Westerlund and Jari Kaivo-oja concentrate on how design and designers are affected by digital evolution and the emergence of the ubiquitous society, and vice versa, in *Digital evolution – From Information Society to Ubiquitous Society*. In *Ambience Design Notes*, Jari Koskinen presents his conceptual innovation, ambience design. Finally, Koskinen binds the historical roots and the future together into a discussion that revolves around the differences between art and design in *Art and Design in Dialogue*.

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We wish to express our warmest thanks to the Finnish and Estonian research teams, all authors of the project's publications, and the project management team in LUAS: Sami Makkula, Hannu Kaikonen, and Taru Oravala as well as the project steering group, in particular Jukka Oresto; and to all other contributors of the project.

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In Helsinki, August 2012,
Tuomo Kuosa & Leo Westerlund

PART I:
Evolution of Expertise

1

Design Tree

Tuomo Kuosa
Jari Koskinen

These petty teasings are as if a man wanted to engage in a great work, a great enterprise on which his own life and the lives of many others depended – and then a gadfly settled on his nose.
– Søren Kierkegaard (1960, 14)

Prologue

The goal of this article is to explain the overall historical and societal frame in which the ServiceD project's *Design Tree: Evolution of Service Design Expertise* (Design Tree 2012) operates. Secondly, this paper aims to discuss the process by which the tree has been formed. Thirdly, we want to further explain the issues named in the tree's trunk and its roots, branches, and parts as well as the linkages between them.

The Design Tree is a visualisation carrying all the elements required to form a holistic view of the evolution of (service) design. On the other hand, many phases, processes, and reasons behind the formulation of the tree are not explained in the limited space of the poster. Therefore the task of this paper is to explain the argumentation the tree is based on.

This article is divided into four main chapters. Each one discusses a particular societal phase and the role of (service) design in it. These societal phases are 'prehistory and agrarian society,' 'industrial society,' 'service society,' and 'ubiquitous society.' It should be noted that sociologists and historians are usually quite unanimous regarding the naming of historical societal phases. 'Prehistory,' 'antiquity,' 'agrarian society,' and 'industrial economy' (or society) are widely used but there are many rivalling theories and conceptualisations regarding the current and forthcoming ones (Kuosa 2005).

To give a few examples of the possible ways to name current and forthcoming societies, we can start with the most commonly used terms, i.e. 'information society,' 'knowledge society' (e.g. Feather 2002), 'network society,' 'dream society' (Jensen 2001), 'post-industrialisation,' or 'deindustrialisation.' However, the use of these concepts is not self-evident as can be read from the following examples. According to modernity theorists (see Giddens 1990; 1991; Habermas 1987; Berger et al. 1974), there is no modern society; only societies more or less advanced in the continuum of modernisation. Thus, modernisation is a process which has a beginning and criteria for its advancement but no predictable end. Advancement is seen as being driven by formative forces, as a process of rationalisation where technology drives economic growth and development. (Berger et al. 1974, 9.)

Another popular sociological theory for describing the current transformation logic is that of postmodernity or post-modernisation. Its key idea lies in the discontinuity between the eras of modernity (the past) and postmodernity (the future). There is no linear development or general expansion of modern goods and ideas, but increased relativism, ambivalence, contingency, and qualitative diversity in all spheres of society. (Scott 1997, 3–6; Bauman 1998.) Ultimately, the process can be described through the fragmentation of ideas into smaller units (for instance female emancipation and specified environmental issues) that have little in common.

A third description – reflexive modernisation – should not be understood as the same thing as post-modernisation, since post-modernists insist that all the structures of modern society will collapse as the modern era ends. Contrary to this, reflexive modernism raises questions. What is about to begin? What kinds of new institutions and social categories will replace the old ones? (Beck et al. 1994, 178–179.)

The fourth way of describing this transformation logic is the 'economic cycles theory' coined by Nikolai D. Kondratiev (1892–1931) in his dissertation (1922) on long term economic cycles. A general approach in cycle analysis is belief in linear economic development where intervals between cycles can be predicted from the available knowledge of past economic periods.

Furthermore, Manuel Castells emphasises a break between the modern era and the forthcoming new era. He argues that modern production modes, structures, and social classes will fade because, in the information age, people will not be divided into social classes according to their relationships to modes of production, but according to their relationship to the Net. This relationship is created by new global technology and the global economy. Thus, the new social groupings are networkers, flexi-timers, and the jobless (also called the fourth world). (Castells 1996, 216–96; 1998, 68–82.)

Pentti Malaska's (1991, 148–150) line of thinking follows another kind of logic. Malaska accepts the idea that the current catalyst for the economy and industry includes information, scientific knowledge, and the development of human relations. Information and information technology are just as important for the satisfaction of intangible needs as power engines were for the satisfaction of tangible needs. In his opinion, however, there is not enough justification for calling the next development phase of society 'information society' – just as it would be incorrect to call the present phase of societal development the 'automobile or jet engine society'.

The term 'information society' is apt for the intensive growth period of the industrial society. According to Malaska (2003), the forthcoming society should rather be called 'service society' (if we focus on its dominant production mode) or 'interaction society' (if we focus on needs). However, if we focus on the needs that are societally focal, the society should be called 'the society of intangible needs.' On the other hand, the information society could be seen as an interim period (a 20–30 year transition period) until the new phase of development stabilises.

Despite the many interpretations and stands that can be taken in the matter, we have selected to divide the evolutionary phases into the following four: prehistory and agrarian society, industrial society, service society, and ubiquitous society combined with participatory economy. The reason for this division is the fact that we believe that these four have the most solid grounding in the actual societal needs combined to the technological mode of each age, which suits our purpose of describing the Design Tree.

Prehistory and Agrarian Society

Service design is an outcome of a long evolution with deep roots in prehistorical arts, crafts, and some forms of organised tribal planning. If we consider that the word 'service' refers to the idea that specially skilled people dedicate themselves to help other people for economic incentives in tasks in which the clients are not as skilled or in

tasks the clients are not willing to do themselves, the long history of services may be traced to the emergence of the agrarian age, ca. 12.000 B.C. Quite naturally, there have been many forms of more or less "professional" service producers e.g. shamans, fletchers, babysitters, or storytellers on barter economy basis prior to that. In practical terms, however, as the first big nomad tribes settled down for farming and "city life," money, division of labour, professions, culture, and civilisations were born. That was the time when "true" services and clients emerged.

As soon as efficient agriculture and city administration liberated a part of the population from daily hunting, gathering, and farming, craftsmanship started to flourish in various forms. People who didn't need to carry all their items all the time started to demand skilfully produced tools, pots, jewels, cloths, and other items more than ever before. When cities' upper classes were created and many people started to have more wealth and leisure time, art attained a bigger role in city life.

Art became an important socio-cultural phenomenon that assisted the rulers and religious figures in expressing their might and wealth. Paintings, drawings, masking, carving, statues, acting, theatre, music, and poetry became esteemed competences — even professions. In addition, the establishment of cities required planning, engineering, and design. Thus the new professions in design and organised planning, i.e. architects, city planners, engineers, mathematicians, and administrators emerged.

Not so surprisingly, these three ancient domains of expertise — craftsmanship, art, and design — have prevailed throughout history. Some of their parts have remained intact, but many have evolved through centuries and decades into new forms of professions and competences. Some of these require versatile combinations of skills and expertise that can only be adopted and merged from the three large, ancient domains. Contemporary service design has turned out to be increasingly complex and immaterial by nature and it is probably one of the best examples of such cross-disciplinary mix of these three expertise areas.

Industrial Society

One way to look at the structure of an economy or society is to compare the shares of its three main sectors output and employment: agriculture, industry, and services. The economic sector that is dominant in a particular age names not only the economic mode, but the entire society. Initially, agriculture is a developing economy's most important sector. As income per capita rises, agriculture loses its dominance and gives way to a rise in the industrial sector and later in the service sector. (Soubbotina 2009, 50.) The first consecutive shift from the society of hunters and gatherers to an agrarian one could be called "agrarisation" and the shift from the agrarian society to the industrial society is usually called industrialisation. Both shifts can be understood as more or less equally significant leaps for the whole human race.

The first innovation that can be linked to the emergence of the industrial revolution was Thomas Savery's low-lift pressure water pump from 1698, later refined into the first steam power plant for pumping water by Thomas Newcomen in 1710. Eventually, in 1778, James Watt produced the first efficient steam engine that could be utilised in multiple tasks. This is usually regarded as the start of the industrial age. In early 19th Century, the world's first area that got industrialised due to the new steam

power and its ideal location for textile industry was Manchester. Later, industrialisation spread across the UK and then all over most of what we now know as the global West.

The industrial revolution has utterly changed our societies. Prior to it, 70–90 % of the working power came from human labour – and the rest from animals. Since, hardest work has been done by machines operated by humans. Food and energy production multiplied thanks to inventions that made all phases of work more efficient. Suddenly the populations of industrialised nations started to increase in enormous speed, which led to a process of self-catalysing urbanisation, a cascade of inventions (c.f. Malaska 1991, 141), and faster cultural evolution in general. This also led to rapidly increasing domestic production in industrialised nations.

As incomes increased, the demand for food, the main product of agriculture, reached its natural limit and demand shifted towards mass produced and refined industrial goods. At the same time, due to new farming techniques and machinery, labour productivity increased faster in agriculture than in industry. This made agricultural products relatively less expensive and therefore diminished their share in national gross domestic product (GDP). (Soubbotina 2009, 50–53.)

Changes in relative labour productivity diminished the need for agricultural workers while employment opportunities in industry grew. As a result, industrial output took over a larger share of GDP than agriculture. Thus, industrial employment became predominant in the society. According to World Bank (Soubbotina 2009, 50–53), all growing economies are likely to go through these stages which can be explained by structural changes in consumer demand and in the relative labour productivity of the three main economic sectors. The auto-catalytic nature of the clustering and self-reinforcing feedback loops behind this development are further explained e.g. by Malaska (1991) and Brian W. Arthur (1990; 2002).

For design, industrialisation meant the rise of many new competence needs, followed by the emergence of various new design fields, such as industrial, graphic, and product design. Once industrialisation started to turn towards service society, the objectives related to business development and innovation started to merge with designing. Due to this, for example interaction design, usability design, and design management emerged. Wikipedia states that design management has a close relationship with business development: "Design management is the business side of design. Design managers need to speak the language of the business and the language of design."[1] Our study verifies that conclusion and that is why design management and business development are connected in the Design Tree.

Timing a Structural Transformation in Economy

It is not always easy to pinpoint the shifts from one phase of economic dominance to another. The graphs describing the U.S. economy's structural transformation between the three sectors of agriculture, industry, and services are quite often used for this purpose. The main reason for this is that the U.S. rose quite fast after WWII to a leading role among world's service economies.

[1] en.wikipedia.org/wiki/Design_management

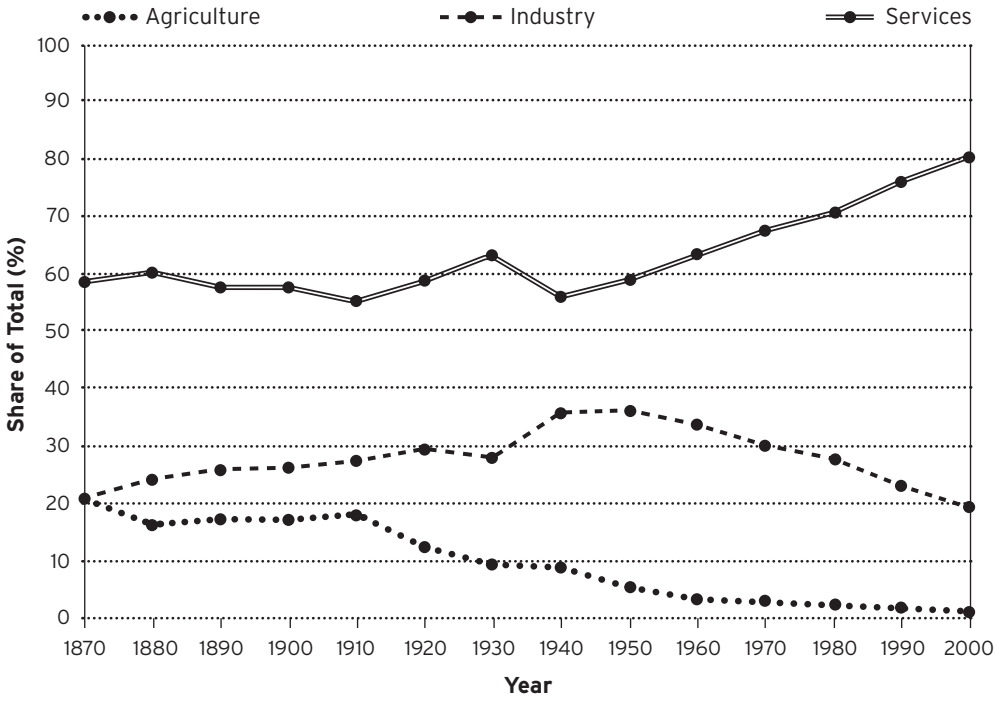

Figure 1: Share of agriculture, industry, and services in U.S. (Buera & Kaboski 2006, 8)

Whereas the decline of agriculture is present even at the beginning of Figure 1, the share of output in services is nearly constant between 1870 and 1950, rising only during the last fifty years (Buera & Kaboski 2006, 8). Soubbotina (2009, 50–53) explains this process:

> *As incomes continue to rise, people's needs become less "material" and they begin to demand more services in health, education, entertainment, and many other areas. Meanwhile, labour productivity in services does not grow as fast as it does in agriculture and industry because most service jobs cannot be filled by machines. This makes services more expensive relative to agricultural and industrial goods, further increasing the share of services in GDP. The lower mechanization of services also explains why employment in the service sector continues to grow while employment in agriculture and industry declines because of technological progress that increases labour productivity and eliminates jobs.*

Matsuyama's (2002, 1035) explanation for the market transformation process towards service society is similar in many ways. It explains the birth of the mass consumption society in which not only a few individuals or a thin upper class, but the majority of families enjoy the benefits of increased productivity and mass markets of various types of affordable goods:

> *This development process follows the Flying Geese pattern, in which a series of industries take off one after another. As productivity improves in these industries, each consumer good becomes affordable to an increasingly large number of households, which*

constantly expand the range of goods they consume. This in turn generates larger markets for consumer goods, which leads to further improvement in productivity. For such virtuous cycles of productivity gains and expanding markets to occur, income distribution should be neither too equal nor too unequal. With too much equality, the development stops prematurely.

However, Buera & Kaboski (2006), who have concentrated merely on the statistics of this development, point out that this rise of service society is mainly due to increasing demand for health care and high-skill services, including education, legal services, banking, real estate, accounting, broadcasting and television, air transportation, etc. In part, the increase in the service sector is due to the reducing amount of work done in domestic households. Although healthcare and hospitals account for an increase of almost 8 percentage points in the graph, or nearly 40 percent of the overall increase in services, they still constitute less than one fourth of the total rise in high-skill services. Therefore, the rise in the U.S. service industry is not simply a story of increasing demand for health care as the statistics seem to imply. Indeed, even within the category of health care, there has been a rise in the quantity of services in the output. (Buera & Kaboski 2006, 9–10.)

In Europe, the growth of the service sector has been fast in recent years. In 2007, 19 % of total world trade, which corresponds to 3290 billion U.S. Dollars, was undertaken by the European service industries alone. The total value of these goods and services having been traded accounted for 16 909 billion dollars that year. Overall, the service sector's share of Europe's total GDP rose to 70,7 % in 2007. This is slightly higher than the average share of 65 % in developed countries, but still over 10 % lower than the share of the service sector in the U.S. Among developing countries, China is still the only great economy where the service sector is less important than the industry. (WTO 2008.)

Service Society

The next shift in the socio-economic development was the process of post-industrialisation or "deindustrialisation" which led to the current form of service society as indicated above. The reason why we call this phase 'service society' is that we think that this era carries lots of fundamental socio-cultural and technological impacts and implications that go beyond the economic domain, rendering the expression 'service economy' too narrow.

The major driver of this shift was information technology, already sketched on paper into "the universal machine" by Alan Turing in 1936, but which was completed into a real programmable computer in Manchester right after the WWII. The power of IT is not only in computing power itself, but in its ability to enormously improve the efficiency of almost all other sectors. The other key driver of the shift was the development of science in general, which drove technology and mechanics, product manufacturing, human wellbeing, and general accumulation of wealth into a new renaissance.

Angus Maddison reports (1982; 1987; 1995) that the world GDP, measured in 1990 U.S. dollars, rose from $565 per person in 1500 to $651 per person in 1820 – an increase

of only 27c per year. By contrast, output per person increased already 26 full dollars per year from 1820 to 1994, which is 96 times as much per year as in the earlier period. Note that WWI, WWII, and the 1930s Great Depression took place during this enormous growth period.

Based on Maddison's long perspective study of economic dynamics, we may say that, due to ICT, technological development, and other large drivers, the trend of economic growth is going to continue despite the emergence of a few short term recessions, such as the sub-prime or Euro crises. The main reasons for this are the constantly increasing efficiency of labour force as already explained and the constant accumulation process of capital goods, consumer goods, and social capital.

This means that each new generation starts with more capital goods and wealth and better health and infrastructure, making it ever easier to produce even more. Even zero growth (stagnation or recession) in GDP means that the overall human assets and goods that can be shared between people increase year by year. Zero growth only means that we don't make more surplus than we made last year.

Service Design: Emergence of Concept and Discipline

If over 70 % of the economical activities are done around services and less than 30 % around industry, one could claim that it is natural that service design passes industrial design in societal importance in some time frame. After all, designers must follow the needs of the markets. However, the conceptual formulation of the term "service design" isn't that easy. It is not self-evident what belongs to the domain of service design and what doesn't. There are many different paths, historical strings, and linkages reaching towards service design, but there is no clear ignition point or "owner" of the concept. Furthermore, the current evolution of service design is quite rapid.

One possible ignition point of service design took place in 1982 as G. Lynn Shostack proposed design that integrates material components (products) and immaterial components (services). As Shostack (1982) put it, this design process can be documented and codified using a "service blueprint" to map the sequence of events in a service and its essential functions in an objective and explicit manner. Furthermore, modelling and blueprinting offer marketers a system that can lead to the kind of experimentation and management necessary to service innovation and development.[2] In other words, designing services was understood back then as a part of the marketing and management disciplines. Therefore one strong root of service design in the Design Tree comes from marketing research.

Another early introduction of service design was done by Schneider and Bowen (1984), just two years after Shostack. Their take on the issue was more directly linked to the reality of service design processes, but it was still almost as strongly oriented to marketing, management, and service business development as Shostack's presentation.

Basically it wasn't until early 1990s that the discussion around service design started to spread outside the domain of marketing. Bill Hollins[3] was one of the forerunners of the theme.

[2] http://en.wikipedia.org/wiki/Service_design
[3] http://www.youtube.com/watch?v=_L7XVwDjfL8

IBM has been an active actor in the field. "Service Science, Management, and Engineering (SSME) is a term introduced by IBM to describe service science, an interdisciplinary approach to the study, design, and implementation of services systems – complex systems in which specific arrangements of people and technologies take actions that provide value for others."[4]

Digitalisation and ubiquitous technology have usually been considered as the main current change factors of service design. They have created new service-oriented work for many people: "A service system (or customer service system, CSS) is a configuration of technology and organisational networks designed to deliver services that satisfy the needs, wants, or aspirations of customers. [...] Service system is a term very frequently used in the service management, service operations, services marketing, service engineering, and service design literature."[5]

Service design is also rooted in interaction design and *usability design*. Users' interaction with spaces and products has interested designers for a long time: "The term *interaction design* was first proposed by Bill Moggridge and Bill Verplank in the late 1980s. To Verplank, it was an adaptation of the computer science term 'user interface design' to the industrial design profession. To Moggridge, it was an improvement over *soft-face*, which he had coined in 1984 to refer to the application of industrial design to products containing software."[6] However, Richard Buchanan noted in an interview conducted by the ServiceD team that "Interaction design is a concept of the twentieth century that crosses many, many disciplines, but for us in many ways it began with John Dewey who wrote about interaction back in the 1930s in his book *Art as Experience* (Makkula & Kaikonen 2012, 22)

We should underline that many designers and other professionals have been doing service design without knowing it by that name. For example, industrial designers have been working with service development as part of product design processes.

Service design was first introduced as a "disciplinary" field of design by Professor Dr. Michael Erlhoff at Köln International School of Design (KISD) in 1991. Professor Birgit Mager has played an integral role in developing service design especially at KISD (e.g. Mager & Gais 2009). The first service design consultancy, live|work, opened for business in London in 2001. "In 2004, the Service Design Network was launched by Köln International School of Design, Carnegie Mellon University, Linköpings Universitet, Politecnico di Milano, and Domus Academy in order to create an international network for Service Design academics and professionals. Nowadays the network extends to service design professionals worldwide as well as design consultancies who have started offering service design."[7]

Service design has been greatly affected by *design thinking*. David Kelley and Tim Brown of *IDEO* have been the loudest voices supporting the idea of design thinking. In *d.school, Stanford University California*, design thinking means a practical approach to understanding the processes that can be linked to the development of any organisation, product, or service (Kelley 2001; Kelley & Littman 2001). In d.school, design

[4] see http://en.wikipedia.org/wiki/Service_Science,_Management_and_Engineering
[5] see http://en.wikipedia.org/wiki/Service_system
[6] see http://en.wikipedia.org/wiki/Interaction_design
[7] see http://en.wikipedia.org/wiki/Service_design

thinking is a process rehearsed in collaboration with students and customers. At its core are doing, radical collaboration, and empathy towards the end-user — prototyping and testing having important roles as well. Students are taught to come up with ideas quickly. Sometimes they are only given a few minutes for creative concept development.

The core of design thinking, co-design, and service design is in *ideation* and *concept design*. Maybe a bit surprisingly, the image of Father Christmas we are familiar with was invented by an illustrator. *D'Arcy*, an agency that had already managed to make Coca-Cola a year-round success, developed a specific winter campaign that relied on the character embodying the whole season. Haddon Sundblom, a painter and illustrator, was commissioned to create a distinguishable character. Knowing the brand well, he gave Father Christmas a jovial image, dressed in Coca-Cola's colours of red and white. Since this all took place quite soon after the stock exchange crash of 1929, the advertisements also bore glad tidings of recovery. (Pincas & Loiseu 2008.) Of course we should understand that ideation is not for designers only. A good idea can be originate anywhere, even in the least expected sources.

There is an interesting design area related to service design; *information design*. One great example is the London Underground Map, designed by Henry C. Beck in 1933:

> *The lines of diagram do not describe a three-dimensional object but, together with other lines, they aim to convey relationships and show connection in a system. The London underground map [...] is one of the best known. It uses colour symbolically, as kind of identifying label.* (Hollins 2005, 18).

Information design has been also developed from a systemic perspective:

> *In the 1920s and 1930s, the Viennese Method, or Isotype, was pioneered by Otto Neurath. Isotype (International System of Typographic Pictorial Education) is a convention of signs and their use.* (ibid.)

Service design uses infographics where the results are called *blueprints*, as presented in the Design Tree (2012). Service design has its own language game. *Service moments*, *touchpoints*, and other concepts are marking the new discipline. Information visualisation is a major part of work:

> *In a complex world, clear and accessible communication, across a broad range of media, has become essential. Information design addresses this need by blending typography, illustration, communication studies, ergonomics, psychology, sociology, linguistics, computer science, and a variety of other fields to create concise and unambiguous messages. While virtually all forms of design are human-centered, information design focuses on accurate representation of specific knowledge sets and the unique needs of the end user receiving that content. (Visocky O'Grady & Visocky O'Grady 2008)*

Visual language game is needed in the midst of an era of fast communication: "Knowledge makes everything simpler", as John Maeda (2007, 33) puts it.

What Is Service Design?

Discussion around service design and its definition(s) has become increasingly intense in recent years. However, design professionals sometimes seem to lack theoretical education and the interest to clarify key concepts to themselves. This easily leads to a lack of structure in the overall discussion. That is quite natural in a practically oriented domain, but it should still be acknowledged that the meaning of concepts changes over time, and the meaning of concepts depends on the context they are used in. This means that purely academic terminological definitions are not good enough, as we need to bind the practical aspects to the definitions that we give to the things in this domain.

Ockham's razor can be helpful here. It is a principle attributed to the fourteenth-century English logician and Franciscan friar, William of Ockham. It forms the basis of methodological reductionism. The principle states that the elements that are not really needed should be pared back to produce something simpler, and in doing so, the risk of introducing inconsistencies, ambiguities, and redundancies will be reduced. Ockham's razor is also referred to as the principle of parsimony or law of economy. (Ambrose & Harris 2010.)

We should have a practical approach when talking about service design. It's more useful to describe what service designers are doing:

- creation of new service ideas and concepts
- design of service processes
- multisensory design of service environments

and:

- analysis and cross-disciplinary research related to service development
- foresight and strategy work related to service development
- planning and design of service related marketing and communication
- guidance related to the development of service processes and environments
- coaching or training related to service development (e.g. tuning, editing, or changing service attitudes)

In addition, *service design should be done in close interaction with other development work*. Service design tied to brand management, and therefore all marketing and public relations material related to a service should be done synchronously with service design processes.

The authors of this article have a vision of the type of service design expertise worth developing. We want to combine the fresh development paths of mobile technology, multi-channeling, geoinformation, prosumerism, and crowdsourcing. Our thinking involves the shift from information society to ubiquitous society where our built environment turns intelligent and mediated. This development is also related to the increasingly multisensory nature of service environments (c.f. Koskinen 2012).

The situation is very interesting: internationally there are many different definitions of service design. At the same time new competence areas and skills are linked to service design. *This kind of adventure in the in-betweens and the search for what is bubbling under opens up fascinating new views*.

There is a power struggle going on: whose definitions, methods, and expertise categorisations will prevail? For example, service design agencies push their own methods to the market as general truths. There is a genuine need for analysis and critique. We would prefer if the situation remained as open as it is now. As soon as the field starts to build too many silos, competence areas become stuck within their boundaries. Disturbingly, our research shows that signs of silo-like thinking are already emerging in service design. Some books on service design are, in fact, surprisingly methodical by nature.

"Our" new field, service design, is a matter of pride for some and a means for marketing something new. As a by-product of the emergence of the field, some advertising professionals have started using the title 'service designer' without any experience in the area.

Why Is Service Design Needed

Rapid changes are making our operational environment more and more unpredictable:

> *Hypermobility and accelerating technology, and communication are going to create whole new lifestyle groups from "cosmocrats" to "global souls."* (Shah 2002).

This idea can be applied to consumption, as consumers are trying to simplify their decisions:

> *Consumers use variety of strategies to try to simplify the decision process in low-effort situations. These include price strategies (buy the least expensive, depending on the quality required); normative strategies (go along with recommendations from friends); variety-seeking tactics (buy something different from the last time). Another simplifying strategy is habit. Customers sometimes buy product they are accustomed to buying.* (Noel 2009, 148).

Maybe it's quite easy to understand the basic goals of service design: "Good service cannot be reduced to nothing more than an efficient operation: its value lies in the less tangible sense that the service is supporting you, meeting your needs, working for and on behalf of you." (Parker & Heapy 2006, 10.)

One of the interviewees of the ServiceD (2011) project put this principle of identifying the simplified core of the customer's problem, i.e. helping the client to ask the right questions, and assessing the problem the client is dealing with relevant in any way, into the following example:

> *"What sort of a bridge should we build across the river to reach our planned factory?" Now what is the actual problem that needs to be solved? How to cross the river? If that is the case, a tunnel would do just as well. Could the factory be built somewhere else*

than on the 'other' side of the river? What is the factory needed for? What sort of an evolution of the client's product and service repertoire are expected — and how is the client's expertise and competences developing? Surprisingly often the problems clients seek help with from a design agency are based on wrong questions. The core of concept design is, in fact, a search for the right questions. [30][8]

Searching for the right questions is not limited to design. Developing expertise or education in any given field sets great importance to finding the right questions. Developing expertise related to concept design equals *developing ways of thinking*.

Three abilities form the key perspectives in design education and expertise development; the abilities to ask the right questions, question existing solutions, and manage many-sided or cross-disciplinary issues comprehensively. Service design is immaterial by nature, and therefore it should revolve around enhancing, deepening, and developing thinking and ways of thought.

The latest addition to the key perspectives in design education and expertise development is participatory design or co-design (Parker & Heapy 2006). Design and especially service design is becoming an increasingly participatory process where service providers, customers, consumers, sub-contractors, planners, and other stakeholders work in close cooperation from start all the way to the finish. Consumers are turning into *prosumers*, and the Do-It-Yourself (DIY) movement is growing rapidly: "The growing interest in DIY is charging a virtuous circle — individuals who make things enjoy documenting their projects online, which inspires others to try making them, too." (Frauenfelder 2010a.) Other key words linked to the future of service design include social media, customisation, modularity, adjustable and multisensory service environments, ubiquitous digitalisation and mobility, geoinformation-based services, sustainability, foresight, strategy work, gamification, narration, ethnography, fast prototyping, etc.

Ubiquitous Society and Participatory Economy

The next societal shift is expected to lead to the *ubiquitous society* where the mode of the economy is more participatory in comparison to the service society. According to Green (2010), 'ubiquitous' is the most appropriate adjective to describe the steady progress of global connectivity to a completely pervasive state. This transformation changes the meaning of location in two ways. First, the location where we are or where other people or things are will become less significant to our decisions and activities. Secondly, the meaning of location is becoming more significant as the global network spreads all over the world, making us think about local market aspects of distant locations. (ibid., 8.)

From the perspective of the Design Tree (2012), the other aspects at the core of the development towards the ubiquitous society are adjustability, modifiability, modularity, mobility, individuality, location-based services, rising importance of apps, and real-time phenomena.

[8] The interviewees of he ServiceD project are not named, but numbers in square brackets are used to differentiate between respondents in this publication.

On the other hand, the ubiquitous society isn't here yet and its development is very much based on visionary works that function as self-fulfilling prophecies, as Adam Greenfield (2006, 94) has indicated:

> *For Minority Report, director Steven Spielberg asked interaction and interface designers from the MIT Media Lab [...] and elsewhere to imagine for him what digital media might look like in 2045. They responded with a coherent vision binding together: embedded sensor grids, gestural manipulation of data, newspaperlike information appliances, dynamic and richly personalized advertising, and ubiquitous biometric identification, all undergirded by a seamless real-time network. There is no doubt that their vision, interpreted for the screen, helped mold our shared perception of what would be technically possible, likely, or desirable in next-generation computing.*

Some emerging aspects of the ubiquitous society are presented by Westerlund & Kaivo-oja (2012).

Service Design, Co-design and Design Thinking

Our research shows that service design, co-design, and design thinking are rivals partly co-existing in the same realm. In addition, there is a power struggle going on. Which definitions and approaches will win the cultural battle? Are we going to let the forthcoming grand prize winners name what immaterial design is as they wish? No, the naming should follow the principles of co-design and we expect further enrichment of design expertise in the coming years.

Design thinking is an American approach. To be more specific, it is an invention of design agency IDEO, now further developed and studied in d.school: Institute of Design at Stanford. (cf. Kelley 2001.) Service Design, however, has stronger European roots. Co-design (cf. Fuad-Luke 2012) falls somewhere in between. In our conceptual map (Design Tree 2012) these siblings are presented without any hierarchy.

There is a paradigm shift going on. Design results will transform the design world towards the immaterial, and "mug design" is no longer the main issue. There is a lot of emerging pioneer work underway:

> *The quality of real pioneers is seldom recognized by contemporaries. Pioneers create new criteria of quality. An example is graphic expressionism, which separates the profession. Those who consider legibility a priority, find it hard to appreciate graphic expressionism and the work of David Carson, for instance. Carson has been active in changing the codes, switching genres. Sometimes even bigger changes take place, changes which can be called a revolution or a change of paradigm. An example is the rise of abstract art in the beginning of the 20th century. In the situation like that the position of old experts collapses and news experts step forth. (Koskinen 1999, 7)*

Design Research

Design usually emphasises concrete, hands-on practises. That can be either a weakness or a strength. Rapid ideation, prototyping, and concept design are good exam-

ples: hands-on attitude brings quick results. Then again, lack of theoretical know-how causes worse problems than many understand or admit: as long as designers can't take part in intellectual debate, they will not solve societal issues. Design research is relatively immature, but there are some very good approaches:

> *For example, research in Eindhoven has technical roots and builds on HCI, which is an accepted part of research in engineering and shares mathematical beliefs. This is in stark contrast to research in art and design universities like the Royal College of Art, in which constructive design researchers share vocabulary, techniques, conventions, and methods for breaking social conventions with contemporary artists. Scandinavian research, on the other hand, falls in between. (Koskinen et al. 2011, 159.)*

Whereas most marketing people actively try to find a seat at the executives' table, designers are more timid; they have difficulties expressing themselves both literally and orally. What is the role of a service design thinker anyway?

> *[...] the effective design thinker empathizes with colleagues who exist at the extremes of analysis and intuition, seeking to achieve deep understanding of their positions and uncover the greatest range of options for a compelling solution.* (Martin 2009, 170.)

It is very difficult to manage cross-disciplinary teams. Service design and co-design projects could employ a wide range of experts: psychologists, sociologists, semioticians, ethnographers, futurists as well as designers from other fields, such as graphic design (infographics), and from different art fields like performing arts (screenwriters, dramaturges, directors, actors, etc.).

> *Understanding value and the nature of relations between people and other people, between organisations of different kinds, are now understood to be central to designing services.* (Stickdorn & Schneider 2011, 50.)

Some Notions and Interpretations of the Design Tree

In the Design Tree (2012), *ideation and concept design* form the trunk of service design, design thinking, and co-design. Creating great ideas and developing them further into concepts is vital in a cultural and societal situation where things change rapidly. Accelerating change creates an environment where all planning work must be done faster and faster; the strategy process cannot last even a single year. The toolkit of designers is ready-made for this: rapid ideation, prototyping, and testing allow us to constantly create and test new ideas. Conservative, linear processes starting with research, strategies, planning, design, and implementation are helplessly heavy and slow in the contemporary environment. Strategic goals and means can grow old and out-dated before one could even recognise. In the times of real-time communication, data, statistics, and even real-time expertise, slow processes are becoming obsolete or forbidden. Adaptive thinking and systems are needed as well as greater flexibility. Good ideas (and rapid implementation) are the most valuable assets, alongside with brands and know-how.

Besides creating ideas and concepts, service design is about *designing service environments and processes*. Service designers have developed their own vocabulary describing the profession's activities: *touchpoints, service moments, blueprints*, etc. The language game is not necessarily easy to understand for clients or other outsiders. However, one's own vocabulary is a sure sign of maturing: a new field of expertise is growing older and towards a discipline.

As we want to emphasise, there are two major changes happening around service design right now: the emerging *ubiquitous society* and *participatory economy*. Issues related to these two changes are presented in leafs and small branches of the Design Tree (2012).

The first major change, ubiquitous society, includes e.g. pervasive digitalisation and computing, utilisation of geoinformation (location-based services), virtual crowdsourcing, increasing mobility of intangible things, apps-world, real-time phenomenon, the Internet of Things, and smart and mediated service environments show a way for a new kind of service design thinking where *adjustability*, *modifiability*, *modularity*, and *individuality* are the starting points of ideation along with adaptive systems.

This means that individuals are able to affect the atmosphere of the built environment (imagery, scents, soundscape, and colours), service development, or even physical shapes (see e.g. David Fisher's dynamic architecture[9]). All this is pointing out towards the (r)evolution underway. There will be no emphasis on static services, spaces, or brands. On the other hand, this development causes some worries: are our societies changing into dystopias where people are constantly under the eye of the Big Brother and market data crackers where even the most positive developments take place at the expense of privacy and freedom?

The other major change underway around service design is the move towards participatory economy. The customers' desire to tune and customise products and services into forms which suit their own needs is increasing. This is clearly visible, for example, in real estate development and housing. Hence, *customer-driven innovation*, *prosumerism*, *crowdsourcing* and *DIY* (Do-It-Yourself) are easily recognisable developments that illustrate the participatory economy.

Indeed, this development is currently taking a step forward: we now discuss prosumers who take part in the production of their own services in cooperation with service providers. This theme includes the idea of customer-driven innovation where end-users take part in product and service development and innovation activities.

Another concept that describes the phenomenon around the participatory economy is *the creator economy*, coined by futurist Paul Saffo (2010). He describes it as follows:

> *Well I think there is one central issue above all others in this innovation economy, and that is what is the shape of a new emergent economy. And we've heard words like prosumer implying really that what we have is the new kind of economic participant who does not merely purchase things and consume and does not merely produce things which used to be the vision but the new economy is built around new kind of economic actor that does both at once. My preferred term is creator not creative, creatives are*

[9] http://www.youtube.com/watch?v=biNVTsaeCc4

the leads who made things that hang on walls and we pay money for it, but the creator economy is one of which ordinary folks like us in a course of our day engaging economic acts that once consume and create.

Tim Brown (2008) states that "the early examples of the participatory economy or prosumerism are Google, Facebook, Twitter, Wikipedia, Threadless. These all rely on their ability to generate participation and through that create individual and group value."

The participatory economy, creator economy, or prosumerism is very closely connected to DIY. Mark Frauenfelder, one of the most influential people inside the movement, explains:

You know one of the things I'm interested in is makers and the effect they are having on a world. You mentioned little earlier about prosumers. I think that you see that happen more and more on innovation. The resent example I know about is with the espresso machines [...] so people who are espresso machine hackers, just individuals who buy espresso machines in last few years have been taking the machines apart [...]. The espresso machine manufacturers have been around hundred years but their innovation is very slow, they are very cautious and they don't want to try anything new but these hackers are trying all shorts of things [...] and manufacturers are now incorporating these changes in to their machines [...] so this was a very consumer-driven innovation [...] Individuals out there are free to experiment and free fail, and they are doing it to themselves and companies are learning from them. (Frauenfelder 2010a.)

The same conclusion regarding the increasing role of the personal customisation and co-design in design development processes can be made from the interviews of the ServiceD team (2011):

People are increasingly interested in "taking care of their own sphere of services", and therefore different systems and "service products" need to be developed (designed) to let people take care of (choose and manage) their own (and individualised) services. [41]

Future where C2C (consumer-to-consumer) services will become increasingly common. This means, for example, that people living in one area of a town begin to provide a service that used to be a public service or one offered by a company. The service could be based on crowdsourcing, social media, ad hoc networks built to surpass costly operators, etc. [50]

Design will have an increasing role in solving societal issues. Consumers feel that they can take part in the development and planning of services offered in their home town or neighbourhood. Dell and Starbucks have promoted customer participation in the design of their products for a long time already, and other businesses are now willing to follow suit. [50]

Another issue related to the participatory economy is *crowdsourcing*, coined for by Jeff Howe (2006). It is the act of outsourcing tasks traditionally performed by

an employee or contractor to an undefined, large group of people or community (a "crowd") through an open call.[10] It is also used to describe the idea that masses act as a database for information exchange and service development.

There is good reason to anticipate that crowd-accelerated innovations transform consuming and consumption into something new in the next few decades:

> *Consumer groups can be categorised using alternative terms; the first groups to adapt new ideas are called forerunners (or trendsetters) and early adaptors (or early mainstreamers). On average these consumer groups are more common in the y and z generations born in the 80s or later than in older age cohorts. Looking from a wider perspective, this range of phenomena can be called the participatory economy. In addition, the Makers Movement and DIY culture are key parts of an economy that promotes participation.* (Frauenfelder 2010b.)

It can be said that the changes in consumer culture and consumers' increased participation in production are usually supported by foreseeable changes in innovation activities. Current debate includes concepts such as open, radical, social, user-oriented, and crowdsourcing-based innovation, as can be read from Inkinen (2012) and Kaivo-oja (2012). Due to these various reasons, we anticipate that prosumerism will be more of a rule than an exception by the year 2015 and that both companies and their customers profit from cooperative innovation and shared product and service development.

Conclusions

It is obvious that (service) designers could play important roles in solving societal problems and helping ideas to surface and grow. On the other hand, it is not self-evident what design, service design, design thinking, and co-design are like in the future. Do these closely connected siblings merge and form a new discipline or is the future going to be something else?

It is also obvious that totally new competencies are emerging as ubiquitous society and participatory economy set a new list of preferences. Furthermore, many novel phenomena and trends will emerge in coming years and there will naturally be new types of linkages to such forthcoming things that re-shape our understanding about the evolution of (service) design. This is to say that the co-designed Design Tree is a prologue and vision that bases on the current best understanding of the evolution of (service) design. In the next ten years of design expertise enrichment, some novel competitive approaches will quite certainly bring many surprises. Fresh new design thinking or out-of-the-box events may utterly outcast the current design cultures. At least it is possible, if not probable or desirable. The discussion shall continue.

[10] http://en.wikipedia.org/wiki/Crowdsourcing

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2

Evolution of Expertise in Service Design – Comparison between Finland and Estonia

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Introduction

This article provides an overview to the evolution of service design expertise within the evolution of design in general. Its main purpose is to showcase the nature of the asynchronous evolutions of service design and design as a whole between Finland and Estonia. The key question is what triggering functions and turning points have enhanced the emergence of certain types of new competence needs that have eventually led to the current form of service design in the two countries. Another purpose of this article is to discuss the evolution of service design practices and concepts as well as the role and overall societal status of service design in Finland and Estonia.

The conclusions of this article are based on 23 deep expert interviews conducted in Finland and 21 similar interviews done in Estonia (ServiceD 2011). In other words, the summaries and quotations do not necessarily portray the ultimate truth about the issues, but merely act as summaries of experts' opinions. We have agreed not to name the interviewees; instead, numbers in square brackets are used to differentiate between respondents.

This article is divided into six subchapters, each of which describes the evolution of design in one particular era in Finland or Estonia. The three eras discussing the Finnish evolution are *prior to 1970, 1970–1989*, and *1990–present*. The three eras that discuss the evolution in Estonia are *prior to 1990, 1990s*, and *2000–present*. The reason for the use of different eras in the comparison is that the evolutions of design fields have been highly asynchronous in the two countries. Whereas the turn of 1970 was a big milestone in Finnish design, the period was quite indifferent in Estonia which was still a part of the Soviet Union until 1991.

The turn of 1990, on the other hand, was a major shift in both countries. Estonia gained independence and experienced a vivid decade of so-called *cowboy capitalism* which introduced design for Estonians in a new light. At the same time, Finland went through the deepest recession in its history. Finland's Soviet dependent export suddenly collapsed and the country urgently sought for new foundations for its industries. In the turn of 2000, a vigorous period of reforms ended in Estonia and the country shifted into a steady growth period. In addition, the turn of the millennium saw the ICT bubble burst. From the viewpoint of Finnish design, it was a relatively unremarkable milestone.

Originally the research team used nine eras for discussing the evolution in both countries. These eras were: prior to 1950s, 1950s, 1960s, 1970s, 1980s, 1990s, 2000s, now, and 2020+. Interviewees in both countries were asked to name the key characteristics of design in each decade. Questions regarding the nine decades contained the technologies and tools, customers, opinions leaders and gatekeepers, problems designers needed to solve, image and role of designers in the society, most typical professions and titles of designers, practices of planning service processes, and design areas that were in the forefront in the given decade. The following six descriptions of evolutionary eras of design in Finland and Estonia are an outcome of this research.

Finland prior to 1970

According to the Finnish experts' answers, design focused mostly on tangible items and issues prior to 1970. Architecture was the leading star of design already before the 1950s and continued in that position throughout the whole era. Art (or unique products), visual arts, and crafts were the other leading stars of design prior to the 1950s. The role of designer was bluntly that of an artist.

The Finnish interviewees stated that the importance of interior architecture, fashion design, and furniture design started to rise in the 1950s. Also the scope of customers started to widen, including e.g. car and furniture industries. Style, aesthetics, and functionality became more important, and the role of the designer was increasingly linked to industrial design.

CAD

Computer-aided design (CAD) is the use of computer technology for the process of design and design-documentation. It may be used to design curves and figures in two-dimensional (2D) space; or curves, surfaces, and solids in three-dimensional (3D) objects. CAD is used in many applications, including automotive, shipbuilding, and aerospace industries as well as industrial and architectural design, prosthetics, etc. In addition, CAD is widely used to produce computer animations for special effects in movies, advertising, and technical manuals.

The first CAD programs for graphic design came to the markets in early 1960s. 2D modelling started to gain more ground in 1970s and finally replaced manual technical drawing in 1990s. 3D modelling programs came to the markets in 1980s, and they are currently replacing the 2D programs. Simulation as the fourth wave of CAD has been a design tool since early 1990s, and simulation-based programs will probably replace 3D modelling soon after 2020.

In the 1960, interior architecture, furniture design, and fashion design took their positions as the leading stars of Finnish design. The first CAD[1] programs for graphic design came to the markets already in early 1960s but their role was still very small.

The key opinion leaders of the 1960s were Tapio Wirkkala and Timo Sarpaneva. The role of the designer started to be more that of an in-house designer instead of an external artist. The concepts of ergonomics, usability, and customer experience became widely affective especially in furniture design. These can be considered the first wave of systematic thinking somehow related to service design in Finland.

Estonia Prior to 1990

Talking about the evolution of design in Estonia, we should bear in mind that Estonia cannot be considered separate from the USSR prior to the 1990s. A large share of industry in the Soviet period was directly subordinated to the central government and product development was carried out and approved to a great extent via Russia. It should also be noted that the service sector in the context of a closed economy was less important compared to (heavy) industry and also that relatively little attention was paid to the quality of services. In the Soviet era, Estonia had all the typical features of an industrial country. The most important characteristics were a much larger proportion of manufacturing and agriculture than in developed countries and the low

[1] The description of CAD in the box is borrowed and edited from http://en.wikipedia.org/wiki/Computer-aided_design

level of infrastructure, service, and trade sectors in the economy. The interviewees highlighted three main factors that characterise the developments of design in that period: 1) establishment of the chair of design in the State Art Institute, 2) industry-orientation in the field of design, and 3) Estonia's leading position in design among the Soviet republics.

All Estonian interviewees stressed that establishment of the chair of design in the State Art Institute in 1966 was the most influencing factor that has fostered the development of the design field in Estonia. It was already in the 1950s when design activities began to separate from engineering and to adopt an independent position, but the establishment of a design chair had a breakthrough impact. The founder was interior designer Bruno Tomberg who became — and is still considered — the champion of design in Estonia.

Secondly, Estonian respondents stressed that due to the planned economy and industry-oriented economic structure, design could not perform its essential function in the Soviet system — to plan a product according to user-friendliness, economy, or other parameters, i.e. to solve design problems in the classical sense. Approaches to design were predominantly centred around the object, not the consumer and emphasis was given on the shaping of an aesthetical form:

> […] *you did not see the connections, why it was necessary to do it, how the product would move on to the consumer, what the consumer would do with it, whether it would be recycled, whether it would be ecological, etc. All these aspects were hidden at that time, they were not discussed.* [1]

The designers were largely subordinated to the Soviet industrial enterprises through their commissioned work. This mostly determined the essence of their work: the designer was not viewed as an important part of the team:

> *They gave him the already developed object and he had to make it beautiful. That was the worst problem at that time, the object was already completed and you had to make it look good. You could not exceed the size limits* […]. *Nowadays a designer can start from zero, but he can never achieve a great result unless they work as a team.* [1]

During the Soviet period, a certain degree of service planning existed, of course, but linkages or references to service design are not easy to make. Even such service design related category as marketing did not really function in Estonia prior to the 1990s:

> *[T]he advertising clips were made like movies: "we are such a big firm that we can afford advertising."* [16]

Thirdly, despite the complicated situation for design, the Estonian interviewees emphasised that Estonia was still the leader in design in the USSR — when there were exhibitions and something had to be shown abroad in the capitalist society, it was Estonia where the examples were designed. This can be seen as a supportive factor to the development of the design field.

Experts also argued that until the 1980s, designers were seen rather as artists. At the end of the 1980s the designer was no longer an artist but also not a designer in the modern sense. Further, Estonian interviewees noted that although the term 'design' existed, it was not permitted and could not be used officially. Instead, designations such as *design artist* and *artist-constructor* were primarily used. The title 'designer' became more or less acceptable in Estonia by the mid 1980s.

Design in Soviet Times

This is an old anecdote, I am not sure how truthful, which Bruno Tomberg allegedly told his students in the 1970s. When they were designing their fine telephones, which were never placed in production, since the Soviet Union only produced robust objects and military equipment. Well, what is the point of doing all that, designing these telephones, lamps, vacuum cleaners, tape recorders, which would never be produced. Tomberg said something like, "dear students, we are the ones to fill with our bodies the huge gap between the current situation and the wonderful future. The future generations could walk over us; what we are now doing would become a bridge for them." And that was what actually happened. The role of the designer in the Soviet era was somewhat incomprehensible and insignificant, its necessity was not perceived. Everything sent to the shops was bought up anyway and there was no need for any design. [11]

Finland between 1970 and 1989

The next big era of design in Finland can be traced back to the beginning of the 1970s, ending by the collapse of the Soviet Union and the emergence of the Internet and mobile phones (Nokia in particular) in the early 1990s. The Finnish interviewees' answers show that the characteristics of the beginning of this era included the emergence of new materials (such as plastic) and many new techniques. Computer aided design (CAD), in the form of 2D modelling, started to gain ground among designers in the 1970s.

According to the respondents, the customers of designers started to be big domestic companies and the fashion and entertainment industries. Due to the market change, the role of the designer started to be more that of a stylist; the one who encrusts a cake with sugar. The 1970s was also when the design of public services, cost management, quality and style improvement, design optimisation, use of test labs, and media design started to gain more attention.

3D modelling programs came to the market in the 1980s. It was also the time when fashion design, design management, and brand management became the leading stars of the field. One driver behind this shift was the general societal increase in prosperity of the country and designers' customers. By that time, the designer's role started to be more one of an outsourced designer and a designer as an engineer or a specialist.

Estonia in 1990s

The gaining of independence after the collapse of the Soviet Union in 1991 brought along a lot of radical economic and political changes in Estonia. It was practically a time of survival for producers and designers alike. The whole system fell apart. Businesses were forced, in order to survive, to adopt market economy rules and to consider demand within Estonia and opportunities for export to the West. A turn towards the Western markets was the only option because access to the Russian market was increasingly difficult due to politically set trade barriers. So, the first decade after independence was characterised by very fast transformations. Estonia arrived at so-

called cowboy capitalism, which meant (explosive) development of some sectors and a time of decline for others.

The Estonian interviewees stressed that three main aspects characterised the 1990s: the beginning of the advertising era, expansion of computers, and the changing role of designers.

The most direct consequence of the changed economic environment was the sharp decline in production in all branches of the economy. Many enterprises changed from being manufacturers of finished and semi-finished products to being subcontractors of Western firms. For product designers, it was a really tragic period as one respondent remembers:

> *At first there was a brief period of blind optimism, when they believed that at that moment they shall reach the skies that they shall do something magnificent.* [...] *And then it became apparent that the only option was to produce some chair legs as subcontractors. Then came the period (until now), when the enterprises did not contribute to product development.* [3]

On the other hand, the 1990s and early 2000s were a great time for advertising. As the interviewees pointed out, firms suddenly figured out that advertising was not just money spent on a movie clip but an investment. Therefore the end of the Soviet period and the beginning of the new era meant good times especially for graphic design:

> *[N]ew firms were emerging all the time, wanting logos, business cards – everything was necessary.* [16]

Where technology is concerned, the emergence of computers played a central role in the 1990s; the acceptance of computers took place fast. Estonian designers adopted computers very rapidly – almost instantaneously. The emergence of computing brought along the development of many new technological opportunities. The interviewees remarked that the introduction of computers changed visualisation as a whole as well as the tasks of designers; it made relations with clients easier and more straightforward. On the other hand, the availability of computers and software reduced the importance of designers in the 1990s. Computers meant that everyone could do their own design and no-one was willing to order professional work from designers and pay for it:

> *When computers appeared and pirated Corel Draw was downloaded and then they were all logo-makers – it looked absolutely horrible, if there was a business meeting and business cards were handed out and you offered someone your services for making some improvement, the usual answer was: "No, no! I have a cousin, he has Corel Draw and he can do the logo himself." It took some time before the firms got the idea that such design and reputation would not let them export anything.* [5]

Alongside the emergence of computers, the interviewees emphasised the beginning of the Internet era which completely changed communication patterns:

> *In 1999 I encountered the Internet for the first time, sending files via the Internet; and the option of contacting others over the Internet. What we have now is a totally new level. The Internet has hugely changed communication and is still changing it.* [16]

The problems solved by designers in the 1990s largely reflected the specifics of the era: to create as Western an appearance as possible. In a broader context this meant that the designer's job was first and foremost to "make things look good:"

> *At that time it was not said that the designer should be involved in the process* [...]. *The designer was the one who made the logo, it was displayed in the homepage and that was all.* [12]

Although we can find some origins and traces of service design (for example rapid prototyping) in this period, the designer was still primarily the creator of visuals; the one who designs the end result. Corresponding, narrowly discipline-centred skills were highly valued. According to one interviewee, the designer's role in the 1990s was to contribute to turning the Republic of Estonia into capitalism — to produce advertisements. The designer was viewed as someone creating pretty, eye-catching objects. There were also discussions over the name of the profession, incl. some attempts to *estonianise* the term 'designer' (apparently due to the heightened national sentiment): various versions were brought up but eventually the term 'designer' remained in use.

Finland between 1990 and 2012

The third and latest era of design in Finland can be traced to begin in the 1990s as the Soviet Union collapsed. Thus ended both the national self-censorship called *finlandisation*[2] and the bilateral trade between Finland and the Soviet Union, leading to the deepest recession in the history of the country. Suddenly Finnish industries needed to establish new economic foundations: in less than a decade, the whole Finnish industry shifted from heavy industrial products to more refined and designed products and services, led by the rise of the mobile phone company Nokia. This era was also when 2D modelling finally replaced manual technical drawing and when the Internet and mobile services finally broke through. Furthermore, what was characteristic for this era was the rise of ecological, environmental, and ethical awareness that has affected business and regulation widely.

Based on Finnish experts' answers, what was characteristic of 1990s design was the rise of brand management, usability design, interaction design, web design, multimedia design, and process design. The new technologies that came to the markets were CD-ROM, the Internet, mobile phones, email, and simulation programs. The role of the designer became more that of a consultant, brand expert, solution maker, web and software developer, and usability enhancer.

The 2000s was a time of rising importance of concept design, web design, design management, and multimedia design. The 3D modelling programs that first entered

[2] See http://en.wikipedia.org/wiki/Finlandization

the markets in the 1980s started to replace 2D programs and the role of simulation tools became increasingly important.

Fast prototyping, Web 2.0/social media, user-centric viewpoints, mobile web, and content created by end-users were tools and principles that drove the change in designers' work in the 2000s.

According to some interviewees, the role of the designer changed in the 2000s towards that of a design consultant, experience manager, service design consultant, and creative personality. The customers of designers were more and more media and big hi-tech industrial companies, but also small and medium sized companies, ICT, web, and software companies were hiring designers.

In addition, the Finnish respondents pointed out the characteristics of the current decade, named in research team's original questionnaire bluntly "Now" or "2012," but which referred in principle to the whole decade from 2010 to 2020. For this decade, the interviewees named service innovation, application design, design thinking (c.f. Brown 2009), interaction design, social media planning, geoinformation based planning, and concept design as the leading stars of the field. Steve Jobs and IDEO/Tim Brown were named as key opinion leaders. Frans Smalingnis was named as an opinion leader where service design was concerned.

> *The biggest change is that "industrial design" becomes more and more everyday (as we move from an industrial society towards a service society) – the importance of products decreases and design work concentrates more on "making our world better" through concepts and services.* [41]

As regards technological development, the interviewees discussed 3D printers, social media boom spreading ideas, service path modelling, and mobile services as current drivers of the field. The key customers of the present time are largely the same as they were in the 2000s. However, Virgin Atlantic Airways and Bank of America were added as examples of large global businesses to the list.

The role of the designer has changed to one of a strategist, strategic designer, creative director, and "the sharp end of the company identity." Designers are working more often directly under the CEO, in service design offices, or as private consultants between a company and its clients or customers:

> *The importance of concept design where the key is not in individuals but in teams consisting of experts of various fields making different sorts of plans (designs) will increase. Today we speak of textile designers or interior designers; in the future, the focus will be on strategic planning.* [32]

Finally, the Finnish interviewees provided their opinions regarding the future of design. In short, the respondents expect that multisensory design, 3D design, process design, design thinking, and psychology are becoming the leading stars of design. They also gave their insights to the themes designers will focus on in the future. These issues included, for example, designing better living environments, "Me-products," entirely customised products, sustainable development and ecological lifestyles, privacy and data security issues, consumer understanding ("what to whom

and how"), user experience knowledge gathering and analysis, service saturation, and ethics. Furthermore, some of the experts pointed out that, in ten years, websites will die and be replaced with a larger set of experience solutions and services and that the public sector is the next big client. A big part of service designers' work will be in the standardisation of public services as development team members.

In 2020+ the role of service designers will be more one of a project team member (internal resource), facilitator, web designer (in operational, strategic, planning, or management level), interpreter and sense-maker of users' needs, or "the one who understands design possibilities." In public services, the role will be a development team member and in design in general it is more one of a social problem solver, system (business) developer, individualist thinker, a creative element of a community, or lead designer and member of the board. (cf. Miettinen 2011).

Estonia between 2000 and 2012

During the 2000s when the extremely vigorous period of reforms was over, the changes Estonia went through were far more extensive than those in developed countries. Before the economic crisis (2008–2009) the Estonian economy grew very quickly. During that period the structure of Estonian economy kept changing and this also influenced developments in the design field. In the interviews, Estonian respondents highlighted the following three key topics as characteristics of the period: the increased importance of designers, the changing pattern of clients, and the expansion of the service sector.

The Estonian interviews lead to the conclusion that the most important change compared to previous decades was that the designers' role became more important and wider. The sphere of designers was expanded in part by the developments of the Internet – creating Web pages and portals became an important part of designers' work and ensuring user-friendliness and ergonomics became keywords. The respondents noted that the term 'interactive design' reached Estonia in the 2000s and the methods of measuring usability were employed – how the user will find somebody's site, who he is, and how he can operate there. Unlike earlier, designers were expected to solve complicated, many-faceted problems. Design started to be more widely understood by customers as well. This, in turn, means that broader and more varied skills are expected from designers. Interviewees stressed that customers no longer speak about design as style, but start to characterise the designer as a strategic business partner. Designers are being increasingly involved; their role as a partner is on the rise:

> *There have definitely been changes. Briefly this means that they previously expected nothing from a designer but specialised contribution, now they expect a very broad perception of the world and an increasingly advisory role. I have done some projects without actually drawing a line.* [...] *a good designer has also become a very good advisor.* [16]

The designers are now much closer to their clients' business. When we speak about design, we also speak about business strategy; we speak about the whole activity which – in the ideal case – should be present in every design process. The designers are allowed to be more independent and their opinions and solutions are accepted:

And now designers are allowed to be designers, not some kind of idiots who know nothing of life. Today, they expect the designer to be more professional – which is definitely nice. [16]

Maybe now the time has come when a firm aware of its dignity will order such thing from a professional, because this is not about just adding pictures to text in a computer, it is something more. [5]

Nevertheless, in some cases designers are even today viewed as "creators of pretty objects." Estonian interviewees admit that, as a term, 'designer' has not yet unequivocally reached the people.

The second important factor characteristic to this period is that during the 2000s the public sector became an important client for designers alongside the private one. This is the case primarily for graphic design but also for service design; the public sector started to work out better services (incl. e-services) to raise effectiveness and to meet new demands. According to one interviewee, the public sector, including the state, is a financially large customer. Another respondent states that the public sector has been an important potential client and still is. Due to the economic crisis, graphic designers began to compete for projects in the public sector because the private sector fell and ran out of money first. For product designers, the main client has been and still is the private sector.

The third key notion in the current period is that the importance of the service sector is on the rise. More than 70 % of the Estonian GDP is derived from the service sector. As the competition is growing, companies and also the public sector are forced to make efforts to improve their services; to make them more user-friendly and personal. The interviewees emphasised that in the field of design, increasing attention is given to terms and ideas such as design thinking, efficiency, user-friendliness, and "getting rid of noise." Nevertheless, the share of service design is still relatively marginal in Estonia:

As there is movement towards services, the orders for design for services are inevitably increasing. But since all that is so new – the deliberate designing of a service – it is quite marginal at present. But one has to start from the marginal. [15]

However, Estonian experts stressed that larger service enterprises and many start-ups are highly interested in service design. Looking outside one's own organisational boundaries has become a trend in a good sense. There is great interest, but the readiness for investing is rather low.

Conclusion

There are clear similarities in the evolution of Finnish and Estonian design and service design. The deep roots of service design, i.e. art, crafts, design, and organised planning are much the same in both countries. The change in the designers' roles has evolved in both countries from an object-centred individual artist and craftsman towards a client-centred, strategic, and holistic role in a multi-disciplinary team.

However, change has been highly asynchronous between the countries due to the differences in national histories.

Many questions sparked highly important discussions to which almost everyone had an opinion. The Finnish interviewees discussed, for example, whether service design should become an independent discipline with its own curricula that requires solid educational background in industrial design or a flexible toolbox and business development philosophy that anyone can and should utilise and whether designers or service designers will ever become true strategy makers and members of boards or not. The Estonian interviews revolved more around the questions of how to raise the importance of the role of designer, how to involve designers as strategic partners, and how to strengthen the customer orientation. These themes are pretty analogous to the discussion underway in Finland some years ago.

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Content Analysis – Centres and Peripheries in Service Design

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Introduction

One of the key objectives of the ServiceD project has been to study the contents of service design. A big part of the results of this interview-based content analysis are discussed elsewhere in this publication. The entire historical evolution of service design has been visualised as a poster (Design Tree 2012). The historical roots, current concepts, practices and expertise, and the probable future prospects of service design are qualitatively mapped and discussed in other articles of this publication. This article focuses on the results of systematic content analysis. Hence, the purpose of this article is to quantitatively measure what our interviewees had to say about service design (ServiceD 2011).

Service design lacks a universally accepted definition and the discussion on defining service design is ongoing. In the same way as the Finnish and Estonian definitions, the international definitions vary. This is evident in the following quotations:

> *[D]esigning service means defining an appropriate mix of physical and non-physical components.* (Goldstein et al. 2002).

> *[S]ervice design aims at designing services that are useful, usable and desirable from the user perspective, and efficient, effective and different from the provider perspective. It is a strategic approach that helps providers to develop a clear strategic positioning for their service offerings. Services are systems that involve many different influential factors, so service design takes a holistic approach in order to get an understanding of the system and the different actors within the system.* (Mager & Sung 2001)

> *[...] continuity of co-production and mutual adaptability — characterized by the process of exchanging service/benefit and building relationship involved within service.* (Tung & Yuan 2008).

This is why the conceptualisation of service design is continually topical and needs further attention and clarification.

Service vs. Design

I wonder why some individuals find it difficult to link the word design to services and why service designers are often so low on the organisational hierarchy of larger companies. In Ancient Rome, it was the job of slaves to provide services. Product design, most of crafts, and all art was done by free men and esteemed professionals. The best designers became stars or even "brands." Great servants remained slaves. [47]

Foundations of Content Analysis

The key purpose of this content analysis is to identify the core terms by which (service) designers understand and perceive service design. In our approach, the persons who design services are considered best qualified to describe the phenomenon they encounter in their daily practice. This article addresses two particular issues. First, focus is given to the terms used when explaining service design — these can be considered the core of service design. Secondly, the article takes a look at the different issues that constitute service design and the branches or phenomena that have links and ties with service design.

To make these identifications, we make use of the principles of the core/periphery approach of content analysis (Borgatti & Everett 1999; Onyancha & Ocholla 2009; Ocholla et al. 2010) which is well suited for differentiating frequently used terms from infrequent ones. The discussion is premised on the findings of a qualitative study — interviews with 44 Estonian and Finnish designers carried out between June and December 2010 (see ServiceD 2011).

In this article, we analyse the interview findings that relate to the explanation of the concept of service design. The analysis was done across all answers to particular questions encompassing both Estonian and Finnish interviews. Analysis of the key terms was carried out in three phases. First, we analysed the usage (frequency) of keywords in the respondents' explanations of service design. Second, we clustered the most frequent words based on their meaning. Third, we analysed co-occurrences of different keywords by identifying which ones the interviewees used in combination. The analysis of the related branches that constitute service design focused on identifying the core branches based on the frequency of appearance in the respondents' answers. The results were analysed by using content analysis methods. *Simple Concordance Program* was used for the data analysis.

Core of Service Design

We were interested in finding out how the concept of service design is understood by professionals. In the interviews, the respondents were asked to explain the most important components of service design:

Q: How would you explain what service design is and what are its three most important components?

Results of the single term analysis across all the responses are outlined in Table 1. Pronouns, adverbs, conjunctions, particles, etc. were excluded from the analysis. The Table consists only of nouns, adjectives, and verbs that were used when explaining the concept of service design.

The results reveal that besides *service* and *design*, the interviewees most frequently used words such as *product*, *people/person*, *thing(s)*, *process*, *needs*, *way*, *issue*, *possible*, and *think* when explaining the concept of service design. These terms constitute the core of the concept as perceived by respondents. The core terms indicate that service design is understood as a process that is closely related to persons and their needs.

Table 1. Top 150 single terms used by respondents (N=44) when explaining service design (source: expert interviews of ServiceD project, compiled by the authors).

Single term	No	Single term	No	Single term	No	Single term	No	Single term	No
service	227	user	15	everything	9	field	6	customers	5
design	154	was	15	making	9	goals	6	desire	5
product	49	client	14	processes	9	goes	6	details	5
people	47	create	14	start	9	goods	6	developing	5
things	36	doing	14	anything	8	located	6	end	5
process	35	idea	14	definition	8	manufacturing	6	find	5
one	31	know	13	difference	8	media	6	graphic	5
needs	26	important	13	Estonia	8	meet	6	hand	5
way	24	offer	13	industry	8	needed	6	immaterial	5
thing	23	say	13	signs	8	opinion	6	information	5
issue	22	sense	13	clients	7	others	6	interior	5
person	22	sort	12	environment	7	personnel	6	issues	5
possible	21	designers	12	made	7	said	6	looking	5
think	21	designing	12	order	7	stages	6	means	5
company	20	thinking	12	planning	7	system	6	physical	5
example	20	understand	12	reach	7	taking	6	picture	5
time	18	whole	12	simple	7	term	6	products	5
want	18	being	11	talking	7	understood	6	put	5
designer	17	first	11	terms	7	visual	6	satisfied	5
different	17	make	11	using	7	wider	6	seen	5
get	17	point	11	value	7	world	6	selling	5
new	17	see	11	viewpoint	7	aspect	5	shop	5
offering	17	simply	11	web	7	begins	5	skype	5
development	16	take	11	account	6	big	5	social	5
experience	16	use	11	bus	6	broad	5	solving	5
go	16	part	10	come	6	communication	5	working	5
need	16	side	10	companies	6	components	5	works	5
work	16	solution	10	concept	6	convenient	5		
business	15	understanding	10	creative	6	course	5		
consumer	15	users	10	dealing	6	creating	5		
services	15	consumers	9	easier	6	customer	5		

Clustering the terms based on similar meaning or connotation enabled us to distinguish between seven categories of words: 1) person-related, 2) process-related, 3) need-related, 4) uniqueness-related, 5) wholeness-related, 6) functionality-related, and 7) experience-related words.

Person-related terms include words such as *consumer* (incl. consumers, consumer-centred), *client*, *user*, *people*, *person*, and *customer*. Although these words have slightly different connotations, they all indicate that persona is in a rather central position as regards the concept of service design. Explaining service design, more than half of the interviewees (26 out of 44) used one or more of these terms, in some cases in parallel.

The second group includes **process-related** words which indicate, in one way or the other, that some continual and process-based element is related to the concept of service design. This group consists of terms such *process(es)*, *development*, *developing*, and *planning*. 50 % of the interviewees (22 out of 44) used one or more of these terms.

The third group consists of **uniqueness-related** terms and encompasses words such as *difference*, *different/differently*, *new*, and *distinct*. The unifying element is that all the terms refer to certain element of uniqueness or peculiarity in service design processes. Almost half of the respondents (19 out of 44) used these terms.

The fourth cluster – **need-related** terms – includes, for example, *need(s)* and *necessity*. The usage of these kinds of terms has almost the same frequency as the previous group; almost half of the interviewees (18 out of 44) used these terms.

The fifth group – **wholeness-related** terms – includes words referring to a certain unity or completeness of things. This group encompasses terms such as *whole*, *everything*, and *complete*. There were 14 respondents who used these terms.

The sixth group – **functionality-related** terms – highlights the elements of simplicity and convenience. It consists of terms such as *easy*, *simple*, and *convenient*. The use of these terms was identified in the answers of 13 respondents.

Experience-related terms include the word *experience* indicating to a certain feeling or perception related to service design. Nine interviewees used this group when explaining the concept of service design.

In the following, we explore the co-occurrences of the groups by analysing which terms the respondents used in combination with each other when defining service design. This provides deeper understanding of the usage of different key terms. The findings reveal that one respondent used all the seven, seven interviewees combined six, and two respondents used five groups of terms when explaining service design.

The results reveal three most widely used types of combinations between the word groups. The most frequently used combination encompasses *person-related*, *process-related*, and *need-related* terms. The co-existence of these terms was identified in 13 cases. This combination was further combined with other groups of terms. Most frequently the interviewees used words from these three groups with uniqueness-related (ten cases) and wholeness-related terms (eight cases). The respondents used these also in combination with both functionality- and uniqueness-related or uniqueness- and wholeness-related terms (six times both cases).

All in all, *uniqueness-* and *functionality-related* terms were used in combination 11 times. The third most frequently used combination was to use *uniqueness-related*

terms and *wholeness-related* terms, identified in altogether eight cases. The analysis regarding the co-occurrence of term groups enables us to identify the most characteristic definitions or descriptions the respondents used when explaining the nature of service design (see Table 2).

Table 2. Definitions of service design based on the co-occurrences of key terms in interviewee responses (N=44) (source: expert interviews in ServiceD project, compiled by the authors).

Most wide-spread combinations of key terms when explaining service design	Examples from interviews
Combination of person-, process-, and need-related terms (+) combined with functionality- and uniqueness-related or uniqueness- and wholeness-related terms	*Service design is a process that deals with creating, designing and elaborating ideas from the constant experience of the end user.* [17]* *[Service design is] rather about creating a service, [...] it's like you have a benchmark – the benchmark of the needs of a person, and now you're imagining how to offer it to that person, [...] how will that person and the service meet. [...] how, in terms of service development, the certain stages should be; how to take into account the needs of the person etc. [...] [It is] a product development process.* [21] *Service design – this process and the solution – it's not so much about the certain product at the end of the line, it's about drawing out the path of the needs of the consumer/client and mapping them. It often seems that it's for nothing, but actually all these intersections between the user of the service and the service provider are very important. It's crucial that the system is elaborated, that the service provider and the service receiver have the chance to relate to that service as conveniently as possible.* [19]
Combination of uniqueness- and functionality-related terms	*[...] the keywords of service design [...]. it's important that it would be easy and convenient to use and it would be useful as well as attractive to them. It's important that it be distinct from others. And [...] you think it through in stages and in a systemised manner. So when this service finally reaches the consumer, the prior process and the stages – that no one would just wait; all the stages should be necessary.* [20] *In developing or designing services, one viewpoint is well described by the classic example of an airline company: create a travel experience from A to Z. All touchpoints and service moments are planned. [...] Service design is about creating a service, a new mode of manifestation. I took part in designing services for a law office: we actualised existing services in a new way; services were productisised.* [43]
Combination of uniqueness- and wholeness-related terms	*[Service design] process is the be-all and end-all. Starting from gathering information, clarifying issues, diagnostics. So you don't just say how things are or should be; you go to the people and make the process work better. [...] The whole needs to be emphasised, not the details. Design as a platform, as a basis, as a sphere of leading-thinking. That's how it goes: it's about the development of processes where not just mere analytical but also creative and so-called non-linear thinking are attempted to be used. The understanding that things don't go through a formula in strategic planning.* [10] *So even when we're talking about a simple three-legged stool for example, it's possible to think about the materials it's made of, can they be recycled, what's the visual identity, what is this side of the service, how are they being offered. [...] the positioning and being different are extremely important.* [15]

* Numbers indicate interviewees; numbers were given to avoid naming the interviewees.

Fields Related to Service Design

Another angle taken in exploring the designers' definitions of service design was to find out how service design is related to other concepts or fields. The respondents were asked to highlight the main fields service design is mostly related to and/or has grown out of.

Q: From which areas service has design grown out? Please explain.

In addition to the question, the interviewees were also given a random list of different fields (different design sub-fields, other creative fields, and other business and organisational fields). They were asked to distinguish the fields that are closely related to service design. The interviewees were also able to complement the list if they found that a relevant field was missing.

Based on the results, five fields were identified that were mentioned by the majority of the interviewees. These were graphic design, communication design, design thinking, process design, marketing (incl. social media marketing), and usability design. These can be considered as the fields to which service design is most related to as perceived by the interviewees. The respondents also saw linkages with interior, industrial, and landscape design as well as web design, communication, and strategic planning. In addition, content analysis of the responses highlights three main observations about how the concept of service design is positioned in relation to other fields: 1) wide-ranging links with various design sub-fields, 2) connectivity with meta-level design concepts, and 3) multi- and cross-disciplinary linking of fields.

First, wide-ranging links with various design sub-fields indicates that practically every sub-field of design can be related to the concept of service design — depending on the context and the service that is designed. As explained by an interviewee:

> *A service must always take place in some sort of environment: it can be the design of an interior, landscape, infrastructure, or there's a digital environment. That's where you consume this service. The prerequisites for this are another thing: if this service is in a digital environment, you clearly need interaction design, communication design; you need product design in case you're consuming this service in some certain product — a phone, for example. [...] Service design is about the whole process being elaborated, including how the information is being graphically forwarded, what the product is like, what you need to consume this service, etc.* [19].

A second observation the results present is that the interviewees saw stronger linkages to what could be called meta-level design concepts, such as design thinking, design management, and concept design. This indicates that service design is perceived first and foremost as a set of universal principles or as a background philosophy that can be applied regardless of the type of the service. As described by interviewees:

> *Concept design — certainly related. [...] It's for creating new markets and products. It could easily be used for service design, like what types of services could exist. [...] Design thinking (design as a process) — certainly related. This is one of the main compo-*

nents of service design. […] Design thinking can be applied universally. […] Design management – certainly related. It's a field that any subfield of design needs. Notwithstanding the type of field of the design that the company is buying, they have to manage it somehow. This includes composing a budget, the starting goal, etc. This exists in any field. In the grand scheme of things, it means managing a specific project. That is, composing and managing strategy. [19]

Service design should be a background philosophy for work; one that includes a toolbox that is applicable in many different cases and different problems. Service design cannot take the place of any other design field nor become a competing solution to any given problem. Service design should be a means to find out clients' needs, to break existing silos, and to customise services in ways that suit the situation at hand. [50]

Thirdly, service design is understood as a multi- and cross-disciplinary concept. In most cases, the interviewees combined it to a broad scale of different disciplines, e.g. design sub-fields or other creative fields, meta-level concepts of design, and organisation-related disciplines. To quote the interviewees:

Service design brings traditional design work and socio-cultural aspects (psychology, architecture) to close cooperation with each other. [45]

Design thinking + process design + marketing = service design – that's how we can put it together, more or less. [20]

[Service design is] first and foremost about this multisensory design, followed by web design, architecture and marketing. [7]

Towards Comprehensive Understanding of Service Design

Linking the results of the key terms used to explain service design to the findings highlighting the main branches service design is related to indicates a rather good coherence between the interviewees' responses. Firstly, we may argue that the fields most often related to the concept of service design explain rather well why certain terms arise from the responses. We may claim that the reason why one key term or another was frequently used is rather directly related to a particular concept from which service design has emerged. In particular, we may argue that the concept 'design thinking' explains the importance of wholeness-related terms when defining service design.

Similarly, the concept 'process design' directly refers to the emergence of process-related terms in the responses. In the same way, we may argue that seeing the relation of service design and usability design explains why person-related, need-related, and functionality-related terms were identified frequently in the interview responses. We may also suggest that the close relationship between marketing and service design, as emphasised by the respondents, explains why they also used uniqueness- and experience-related terms when explaining service design. Often,

key terms are linked with more than one concept, but this rather strengthens than weakens the coherence between the responses.

In addition, the findings regarding the key terms and related fields indicate that the interviewees understand service design as a meta-level concept. In particular, the wholeness-, process-, and functionality-related terms indicate that service design is understood as an all-embracing and comprehensive concept. Similarly, the respondents related service design with other meta-level concepts such as design thinking, process design, and design management by indicating that these concepts — like service design — provide universal principles or background philosophy one has to follow in all kinds of design-related tasks.

Furthermore, we may discuss that the terms and design fields related to service design reveal that we are dealing with a multi-disciplinary concept. Following the key terms (process-related, need-related, wholeness-related terms, etc.) suggests that there is a need to reckon with principles of various fields when designing services: e.g. for fulfilling functionality one has to reckon with ergonomics, in order to follow process-based principles one has to understand organisational and service management processes, etc. Similarly, when discussing related fields, the interviews allow us to emphasise that service design is built on various different disciplines embracing design sub-fields as well as other organisational and management disciplines.

Conclusion

To sum up, as understood by the designers interviewed in Finland and Estonia, service design is more an approach in design than a distinctive field of its own. Based on the findings, it may even be argued that although the word 'design' influences the explanation of service design towards describing it as a domain in its own right, it is rather understood as an all-penetrating approach that cannot be classified into one category, but which can be defined via relationships with different categories and approaches. However, this is an average interpretation; the opinions regarding this matter vary in Finland and in Estonia much the same way as they vary in the broader international arena.

The discoveries of this study enable us to argue that both Estonian and Finnish design communities are involved in the contemporary debate on service design. The interviews helped us go forward in conceptualising the core of service design. However, due to the diversity of explanations, the border between the core and periphery is not fully defined and therefore the conceptualisation of service design remains topical.

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Generation Analysis in Service Design

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Introduction to Generation Analysis

Sociological generation analysis has long roots. The first sociologist who started to study societal generations systematically was Auguste Comte (1830), who suggested that social change is determined by generational change and, in particular, conflict between prevailing generations. Comte's approach towards generational analysis, based purely on results of statistical analysis, is called positivism in sociology. It measured social change in fifteen to thirty years life spans. According to Comte, that helped to reduce societal history into a chronological table.

Contemporary generation analysis still bases much on Comte's approach, further theorised by e.g. Karl Mannheim. The main idea is that the big changes and events that take place during each generation's sensitive age form the collective mindset of that particular generation. The sensitive age when an individual establishes her understanding about good and bad things in the world, and about her place in that world, is usually between 15 and 19 years of age. The things that form each generation's mindsets are naturally very different (Lancaster & Stillman 2003). Before the era of global mass media, the mindsets of same aged people were not necessarily similar in different countries.

Today, we can argue that, for instance, the Generation Y (born either 1976–1989 or 1980–1995, depending on the definition) has very similar values and demands for societal and labour issues all over the world (cf. Sheahan 2005; Zemke et al. 1999). The engine of the Arabic spring, Chinese riots, Mediterranean 1000EUR generation's protests, and Generation Y's demands for new ethical rules for working life and society in the global West have the same origin (cf. Gravett & Throckmorton 2007). This is due to the big changes that took place and were broadcast all over the world when this generation was between 15 and 19 years old. Examples of these big societal changes are discussed below.

The duration of "a generation" varies in time and between countries. The "natural" average generation in human history has been approximately 16 years: that is the average age of women at first childbirth. In some developed countries that "natural" interval between generations has increased to 20 to 30 years due to delayed first pregnancy, even though 16 years is still approximately the average length of generations in most of the world. Hence, it is not always clear when a generation begins and when it ends. Sometimes nationally important events affect national mindsets more than international events. Hence, some sociologists want to name their own lists of generations regarding a given country. That is the case for instance in Finland: many sociologist have named generations that last less than 10 years, such as Big cohorts (1945–1950), Great transformation generation (1951–1960), Wellbeing generation (1961–1970), etc.

In the Western context, mostly dominated by societal development of the U.S., the generations are defined as follows:

- *Lost Generation* (born 1883–1900) went through the WWI in their sensitive age.
- *Greatest Generation* (1901–1924) went through the Great Depression and WWII.
- *Silent Generation* (1925–1945) experienced the emergence of space age and Cold war.
- *Baby Boomers Generation* (1946–1964) went through many big societal upheavals, such as Prague 1968, Vietnam war, and the oil crisis.
- *Generation X* (1965–1975 or 1980) experienced the emergence of computers, the Internet, and mobile communication as well as the collapse of the Soviet Union and the Berlin wall.
- *Generation Y* (1976–1989 or 1980–1994) lived through the emergence of social media, free electronic services, 9/11, and the war on terror.
- *Generation Z* (1990–2005 or 1995–2010) is described as the generation of digital natives.

Background for ServiceD Project's Generation Analysis

We have selected *Baby Boomers*, *Generation X*, and *Generation Y* to be studied in this project; these three generations are in active working life at the moment.

The analysis is based on our research team's 44 deep interviews. 23 of these interviews were done in Finland and 21 in Estonia.[1] The deep interviews contained 25 open questions regarding the interviewees' education, curricula, first job or profession in the field, past requirements to enter the first job, current requirements to enter a similar job, how education should be developed, etc.

As the selected method for the analysis has been deep interview, the number of respondents represents only a small portion of the design field employees of each generation. Therefore, the representation in each generation may be somewhat biased. However, all the interviewees are either carefully chosen experts of a particular branch of design or service design or they are generalists. They represent their generation and field of expertise very well.

Deep interviews allow a much better connection to the mindset of a generation than a closed questions survey, but such an approach also requires a significant amount of work.

Baby Boomers

The Baby Boomer generations of Finland and Estonia differ from each other in many respects. Arguably, this finding is partly due to the small number of respondents from

[1] The Estonian interviews and related analysis have been done by ServiceD project's Estonian team, i.e. Külliki Tafel-Viia, Silja Lassur, and Andres Viia. Kuosa & Westerlund have summarised the Estonian results based on the ServiceD (2011) interim report, created cross-national summaries for each generation, and analysed the differences between the three generations discussed in this article.

this generation in both countries. However, it is easy to comprehend that the Soviet system Estonia had to endure plays a major role in these differences. The greatest difference between the two nations' Baby Boomer designers can be found in their educational backgrounds: whereas nearly all Estonian respondents had either intramural or extramural education in industrial art, i.e. design, only one fourth of their Finnish counterparts had any formal design education. The Finnish and Estonian Baby Boomers are discussed separately in more detail below.

Finnish Baby Boomers

The Finnish Baby Boomer generation (born 1946–1964) includes eight interviewees whose curricula are very versatile. Both educational and vocational backgrounds are highly heterogeneous with little shared elements. Often the representatives' basic education is from disciplines that are unrelated to design or services; for example from social sciences or civil engineering. In two cases, the educational background was from marketing, a field clearly linked to design. One interviewee had no formal education and, actually, only two of the respondents of this generation had formal design field education.

The Baby Boomers have usually ended up working in design or service design by accident. They have often started as a trainee in a company which does some design work – over time they have been drafted to more demanding tasks.

Finnish Baby Boomers usually had no international experience and they were most likely to never have heard the concept 'service design' or were unable or unwilling to explain it. Quite often the representatives' expertise in the field seemed to be based either on highly specialised skills – for example on good visual skills – or on holistic competence, meaning the ability to understand the whole design process. Today, the Baby Boomers most often work as executives or in higher management.

Estonian Baby Boomers

In Estonian interviews, the Baby Boomers consisted of six design experts born between 1952 and 1963. The Baby Boomers' only option for obtaining design education had been the Estonian State Institute of Arts. In fact, most respondents had formal education in industrial art. In private communication, specialists used the designation 'design.' Designers were taught creativity and manual skills alongside sociology and philosophy. The design faculty was an important output opportunity for a great number of artists as it was not restricted by state censorship:

> *The Institute of Arts design education believed in the principle that the designer must be able to do everything on his own. With his own hands, without assistants and possess the mentality of a transformer of the environment in the broadest sense (e.g. they were taught sociology and a fair share of philosophy). This could be described as the universal approach.* [13]

It was characteristic of the period that employment in state-run enterprises was guaranteed to all (intramural) graduates. Extramural students were not assigned to

jobs. However, such students were frequently already working according to their special skills and abilities.

> *I was working already when I was a student. I studied extramurally since it took a lot of time to be admitted and I worked as an arts designer at the same time and already had work [...]. After graduation they came to me with flowers and contracts.* [5]

Hence, it is easy to state that the requirements to enter the field were two-fold: intramural students needed simply to graduate and extramural students needed particularly sought for skills. Upon graduation, the Baby Boomers were expected to be "competent in designing." Designers concentrated on objects; their task was to complete a given product. What would come of the product — how it was marketed or how it suited consumers' needs — was not on the designers' agenda.

Most Estonian design graduates found work as designers, but there was also migration to other specialities. The latter phenomenon was made possible by the broad nature of the education. Since specialisation at the university started only after the third year, design students received instruction in a number of disciplines (including graphic arts, photography, product design, interior design, etc.) and they were able to perform them all to some extent. Their occupational titles were usually 'artist-constructor,' 'design artist,' etc. 'Designer' was not a title in official use.

Generation X

According to the interview study, both Finnish and Estonian designers belonging to the Generation X have at least some amount of formal design education. However, the level of education varies quite a lot: whereas most representatives of Finnish Generation X have finished their master's degrees, Estonian designers of the same age cohort have, on average, a lower level of formal education. Similarities between Generation X in the two nations also include the fact that at the time of their entry to the job market, they needed to understand new (computational) tools and new methods of work.

Finnish Generation X

The interviewed Finnish Generation X (born 1965–1975) contains six interviewees. Their curricula are much more homogenous than those of the Baby Boomers. All of the X generation representatives have at least some amount of formal design education: most have finished or almost finished their master's degrees in arts or design. Many have been studying several subjects that can be combined to working with diversified design projects, such as industrial design, marketing, and interior architecture, etc. All Generation X representatives have at least been studying in tertiary level in fields related to design. A few of them have international experience.

What is common with all Finnish X generation representatives is that they have usually had some special skills or know-how of certain new technical methods which enabled their entrance to the field. Many work in concept design, with communication or strategic issues, and diversified projects. Quite often the X generation representatives call for more holistic and "systemic" understanding to design education.

Estonian Generation X

The educational background of this generation was predominantly received in the Estonian Academy of the Arts (former ERKI) in the 1990s. Thanks to the new economic situation emerging with the restoration of Estonia's independence (incl. the rapid development of advertising), many postponed their graduation to a later period. Generation X also had the opportunity to receive education abroad — and a number of students took advantage of this possibility.

A transition from the old, Soviet study system to a new one occurred in the 1990s as the previous system no longer met contemporary requirements. The massive emergence of computer technology and software caused confusion among students and lecturers. Estonian interviewees repeatedly mentioned that the design studies lacked the basic principles of entrepreneurship.

> *The skill of thinking, analysis, sensing context: that was nearly not at all taught when I was studying graphic design. These were the miserable 1990s just as computers came up and knocked everyone out.* [11]

The Estonian Generation X entered their first jobs in the field usually while studying — the main employers were design and advertising firms. Typically, studies took place in parallel with work; advanced studies, such as obtaining a master's degree was not a high priority.

It was typical for the X generation to find employment in advertising because the new economic conditions meant great demand for the advertising industry and graphic design. Most students migrated towards these spheres regardless of their specialisation. Industrial designers moved towards graphic and interior design because demand for product designers was practically non-existent.

> *It was a time when everyone got work who wanted it. The economy was booming. Advertising agencies were seeking for new workers all the time. It kept becoming worse until that crash. Salaries were becoming increasingly fantastic. Several students chose to work instead of studying.* [11]

Companies expected job applicants to have practical skills — computer skills in particular — so that they could start working right away. Skills with computer programs were more important that having a formal education in the field. Where product design was concerned, the designer was still viewed as an artist who makes objects look pretty.

Generation Y

There are many similarities between the Finnish and Estonian Y generations. In both countries, designers are faced with tight competition for jobs. This has led to a situation where many younger designers have decided to found their own companies. Naturally, there are other reasons besides the scarcity of jobs for starting new businesses, but competition is one reason amongst many. Generation Y is also characterised by international experience. Many have studied or worked abroad or have plans

for doing so. Moreover, formal education is no longer the key to success: the value of degrees has inflated as the amount of educated people on the job market has increased. However, the experts' answers indicate that education has changed quite a lot. Holistic or at least many-sided thinking is a key factor in education just as well as in the job markets.

Finnish Generation Y

Nine Finnish interviewees belong to Generation Y. In short, their curricula are even more homogenous than those of the X generation. All Y generation representatives have a significant amount of formal design education in the tertiary level and most have systematically studied diverse subjects — for example graphic design and media studies — or they have been involved with interdisciplinary studies which have often been provided through formal education such as IBDM programs.

The Y Generation has obviously acknowledged early on that competition in the field is hard and there are many well-educated people competing for available jobs. In effect, they have been forced to differentiate, specialise, and get more holistic in order to succeed. For many, this has meant that they have established their own (big) business at a very early age. This is a significant change in comparison to generation X and especially to the Baby Boomers.

As employees, Generation Y representatives carry titles such as 'creative director,' 'creative designer,' 'web designer,' and 'service designer.' Most of the representatives of this generation have international education or work experience. Many work with digital services and have specialised in certain programs in order to get their first job. The Y generation often says that education is no longer the factor which leads to recruiting as there is so much know-how available in the labour markets.

Estonian Generation Y

According to the ServiceD project's Estonian research team, the educational background of this generation of designers is more varied in comparison to the earlier ones. The Y generation has studied at various universities in Estonia or abroad. Knowledge obtained abroad is valued highly. Several interviewees noted that the emphasis of design studies has shifted to solving problems and viewing the system as an integrated whole.

> *Education obtained abroad is respected by employers [...].* [2]

> *I believe that the change which has occurred means that students are told this is not a place teaching them to draw; it is a place where they learn to think and solve problems.* [5]

Employment options for Generation Y are significantly more varied in comparison to the earlier generations. Designers work in various fields. Finding a job that meets the particular skills of a given educational field of design is difficult. According to the interviewees, this is largely due to the economic situation. If designers of the Y Generation

do work in the specific field they have studied, they are usually entrepreneurs. Graphic designers make an exception; they predominately work according to their specialisation. On the other hand, many interviewees pointed out that companies are ready to hire specialists; the problem is that no formal education can provide professional experience to an extent where graduates could be considered ready-made or experienced specialists:

> *The enterprise needs a ready-made specialist [...] someone who would do right now what it takes to survive in the market. [...] And unfortunately enterprises either lack the desire or opportunity to invest, to provide in-house training.* [9]

What about Z?

The digital businesses and the design of Internet services are already everyday business. This means that the skills that were demanded from Y generation to enter the field will significantly differ from the skills that open doors for the Z Generation. Companies are recruiting "the right people" who are really interested in the work, have a good drive, are willing to learn, and are able to bring something new to the competence palette of the company. As an interviewee noted, he "would not recruit any more juniors." [46] What he is looking for is an experienced visualist who knows the digital services well and has long experience in interior design. All in all, competence needs are changing; thus creating challenges for education.

Conclusion

As the analysis shows, design work is becoming increasingly complex, knowledge intensive, many-sided, and immaterial by nature. Competence requirements of designers are in constant change. Each generation meets a different kind of labour market, needs to fulfil new types of societal needs, and brings new, unique branches to the evolution of design (see Design Tree 2012).

The three generations studied in this research are different in various dimensions, including, for instance, educational backgrounds, work experience, competences, and roles in work projects. These generational gaps clearly exist in both countries. It may even be claimed that, despite the very different histories of the nations, the overall differences in the evolution of service design are smaller between Finland and Estonia than between the generations.

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PART II:
Theory and Practice of Service Innovation

Service Science, Service Architectures, Service Designs, and Dynamic Service Business Development

Jari Kaivo-oja

Introduction

The aim of this article is to discuss the basic concepts of service business. It is focused on service design (SD) and service architecture (SA) development. There is a long history of academic and industrial interest in the service sector as well as service modelling and design. To be successful in the 21st century markets, you need to (Sherwin 2000, xxiii; Clifton & Simmons 2009):

- pick the right markets,
- design exceptional products and unique services,
- market and brand your products and services creatively,
- know your customers' expectations and needs, and
- distribute your services and products efficiently.

Without relevant knowledge about service architectures and designs, it is impossible to do these actions properly and professionally. Many service design experts emphasise the needs of customers, end-users, and associated interfaces in the service design process (see e.g. von Hippel 2005; Ulwick 2005; Ulwick & Bettencourt 2008; Miettinen 2011). This article uses a broader perspective to service design development. I emphasise the so called *prosumer approach* (links between production and consumption) in innovation development. Consumer-driven innovations (Ulwick 2005) are needed, of course, but technological and economic aspects are likewise important in service design and architecture planning. There is need to combine aspects of technical innovations, business model innovations, and social innovations (see Inkinen & Kaivo-oja 2009; Kaivo-oja 2011).

Autonomic innovations are not the only form of innovation. Modular and systemic innovation play big roles in many business fields (Teece 1986; 1988; 2006; 2007). Service design and architecture can be seen as key elements of *orchestration capability*. Service design and architecture are needed in orchestration and management of new innovations. Orchestration capability is a key concept defining a firm's ability to purposefully build and manage innovation networks (Ritala, Armila & Blomqvist 2009).

In national economic statistics, the service sector is often defined as whatever is not agriculture or manufacturing. Services are processes, performances, or experiences one person or organisation (service provider) does for the benefit of another. Typically, a service involves deployment of knowledge, information, skills, and competences that a person or organisation offers to others. Today many services are knowledge intensive services. This has led to the emergence of knowledge intensive businesses (KIBS). (Toivonen 2004; Strambach 2008).

Services in the digital economy employ standardisation and mass customisation. Service business, in particular, needs service architectures and designs that produce good brand experiences for service users and customers (Landa 2006). In the contemporary, late-industrial society, other clusters of economy also need professional service designs and architectures. Service design is not a strategic issue only to the service sector, but also to other clusters of economy.

Service Science, Management, and Engineering (SSME)

The key to service science is interdisciplinary thinking, which is focused not merely on one aspect of a service but rather on service as a system of interacting parts that include people, technologies, and business. For example, IBM and other IT companies have created an industry consortium called the *Service Research and Innovation Initiative* focused on establishing what it calls 'service science' as both a key area for investment by companies and governments and as a full-blown academic discipline (see Jana 2007).

The grand concept *service science, management, and engineering* (SSME) is a term introduced by IBM to describe service science, an interdisciplinary approach to the study, design, and delivery of services systems. Today, SSME is a global call for academia, industry, and governments to focus on becoming more systematic about innovation in the service sector. It is the largest sector of the economy in most industrialised nations and fast becoming the largest sector in developing nations as well (see Hefley & Murphy 2008). Service innovations and well-functioning service architectures are keys to success in the global economy (see e.g. Metcalfe & Miles 2000).

Ubiquitous Revolution and Internet of Things Mean Huge Demand for Service Design and Architecture Planning

Service systems are complex systems in which specific arrangements of people and technologies take actions that provide value for others. Key systemic interactions of service systems are 1) man-to-man, 2) man-to-machine and 3) machine-to-machine. Ubiquitous technology introduces avatars and robotics to service systems and service business in general. In addition, the *Internet of Things* means a huge challenge for service design and architecture planning. The phrase 'Internet of Things' heralds a broad vision of the future Internet where connecting physical things — from bank-

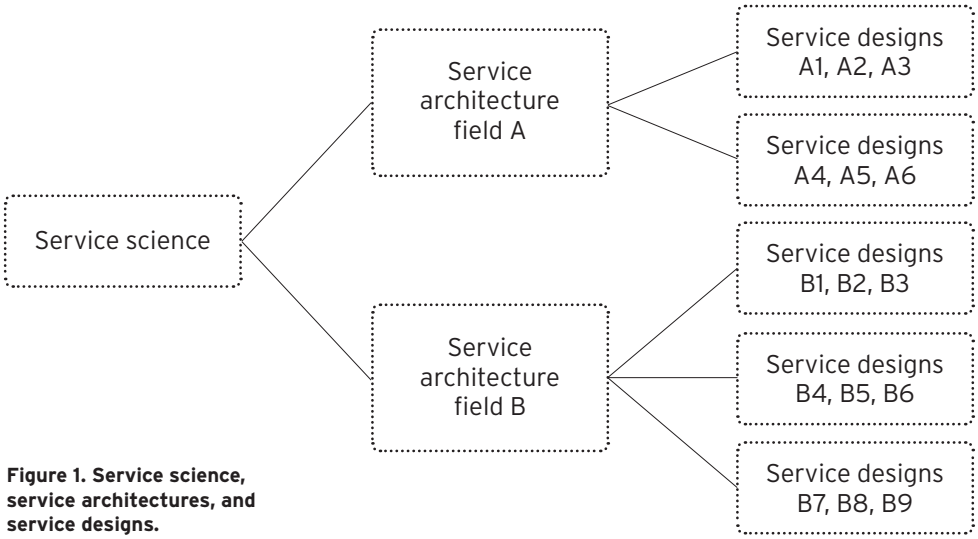

Figure 1. Service science, service architectures, and service designs.

notes to bicycles — through a network will let them take an active part in the Internet, exchanging information about themselves and their surroundings. This will give immediate access to information about the physical world and the objects in it — leading to innovative services and increases in efficiency and productivity. (see Hansmann et al. 2003; Stappers 2006; Sánchez López et al. 2012.)

Figure 1 presents these three basic concepts of service systems. Service science produces service architectures for different service systems (A, B, etc.) and service architectures provide systemic frameworks for service designs.

Today, service science is connected to main economic clusters and business fields. At least the following business fields can be identified: 1) agriculture, 2) manufacturing, 3) services, 4) education, 5) culture, 6) healthcare, 7) welfare system, 8) environment, 9) energy, and 10) communication and digital technologies. Service designs, architectures, and infrastructures are needed in these business fields. Service design and architectures are naturally very important in the service business.

According to Higgins (1994), *creativity* is the process of generating something new that has value to someone. *Problem solving* is the process required when we seek some kind of a solution or resolution, such as removal of a drawback or achievement of a specific enhancement or improvement. Problem solving usually includes creativity as a part of the solution process. Service design activity is necessary when dealing with any kind of a service innovation or re-shaping project. The *service design process* can include problem solving and, if necessary, creativity and innovative solutions (ideas or inventions). Thus, *service design, architecture planning, and implementation* are together a multi-step procedure (see Figure 2).

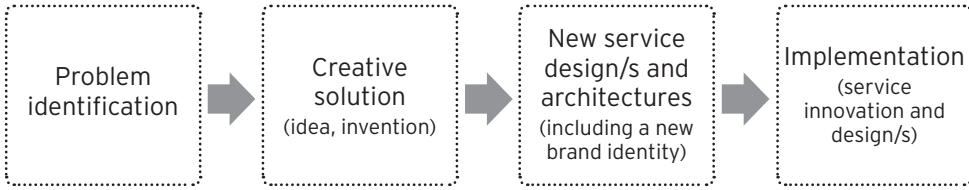

Figure 2. Service design, architecture planning, and implementation (multi-step procedure).

Such a multi-step procedure leading to new service design and architectures should be well-defined, organised, and controlled. It should also be easy to explain, learn, and utilise with predictable results.

Service-oriented Modelling: Keys to KIBS and Service Business Success

Service-oriented modelling contributes to many strategic issues of modern organisations. Such issues are 1) loosely-coupled computer environments, 2) software asset reusability enhancement, 3) reduction of time-to-market time, 4) alignment of business and IT organisations, 5) loosening structure of silo organisations, 6) strategic and tactical organisational solutions, 7) software assets consolidation, and 8) expenditure reduction (see Bell 2008.)

It can be stated that service-oriented modelling is a necessary condition for the future operations of successful cloud companies and ordinary firms. Thus, the economic benefits of better service design are considerable. This issue list is a logical reason why service design is a big strategic issue for many organisations. For example, the competitiveness of knowledge intensive business services (KIBS) depends on these eight key strategic issues that can be developed through service design activities.

There are many *categories of services*: 1) business to business (B to B), 2) business to consumer (B to C), 3) business to public sector (B to PS) , 4) consumer to consumer (C to C), and 5) business to civil society (B to CS, including NGOs) services.

In many industry branches, there has been a growing recognition that service innovation is now as important as technology innovation — if not more important. That is why social and business innovations have received more attention from companies and corporations. Service science is focused on developing breakthrough service innovations. Service innovations are often a combination of technology, business, and social aspects of innovation. Service science helps us to develop service science modelling. The *service modelling paradigm* embodies 1) the analysis, 2) service design, and 3) architectural disciplines of service design/s (Bell 2008). Key issues related to service design and architecture are *brand identity and associated business model/s*.

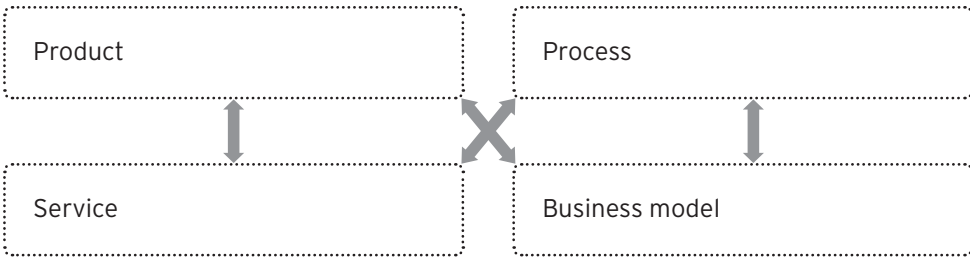

Figure 3. Key planning objects of service business (and service architecture).

All the planning objects of a business can be branded. Planning objects (Figure 3) can be integrated and connected to form a service architecture — and service designers must be aware of the larger service architecture of the business.

The *service-oriented modelling venture* is about simulating the real world. Diagrams, charts, blueprints, and other modelling deliverables are elementary parts of the modelling process. Service oriented modelling is about human behaviour, social structure, and relationship inspection. The *service-oriented life cycle model* is often used as a basic service design model.

As such, service science draws on ideas from a number of existing scientific disciplines — including cognitive science, organisational research, psychology, computer science, economics, mathematics, human resources management, management sciences, marketing, operations research, and others — and aims to integrate them into a coherent whole. Today many service design experts are discussing the *service-oriented architecture (SOA) paradigm*, based on the best practices and best service

models. Especially in the field of safety design, this is a very useful approach (see Bell 2008; 2010).

Service Architecture: Two Planning Philosophies

As curious persons, we are passionate about new ideas and inventions that promise to transform our lives and create new opportunities. We like to replace old technologies with new ones rapidly. Markets demand novelties — new products and services. There are two philosophies to change our service architectures. They are based on the ideas *built to last and built to be changed*. (Collins & Porras 2002.)

These alternative philosophies lead us to two alternative service architecture and design planning models. In the first one, very sustainable and durable service architectures are planned. The second one leads us to plan modular service architectures that can be re-designed and re-planned easily. Classical example of modular design is the complex of Taj Mahal (see e.g. Balasubramaniam 2009). Both planning philosophies have their benefits and costs. It is paramount to decide which philosophy is applied in a given service design or service architecture project.

Service innovations — and innovations in general — can be classified as 1) autonomous, 2) modular, or 3) systemic. The division can also be made between autonomous, modular, and systemic service design. "Built to be changed" philosophy leads us to develop all these kinds of service innovations. "Built to last" philosophy leads to autonomous service innovations. Thus, service innovations and associated service design are also based on these two planning philosophies.

Today it is not possible to develop service architectures without software and hardware concepts. Futuristic software concepts contribute to all contemporary service architectures. This is a starting point for service architecture planning. Ubiquitous computing innovations are changing the realities of service architecture planning. The borderline between real and virtual world is changing which means that "First World" and "Second World" are more interactive worlds. (Stappers 2006.)

As we know, ubiquitous computing is roughly the opposite of virtual reality. Whereas virtual reality puts people inside a computer-generated world, ubiquitous computing forces the computer to live out here in the world with human beings. Virtual reality is primarily a horse power problem. We can easily predict that ubiquitous computing proves to be a very difficult problem of integrating human factors, computer science, engineering, and social sciences. That is why cross-disciplinarity is a necessary professional approach to build a ubiquitous society which really works well.

Awareness about these ubi-innovations and ubi-inventions is a necessary element for successful service architectures and designs. Customer driven service architectures are very much needed when new Web 3.0 and Web 4.0 architectures emerge in the coming years. Especially Privacy Enhancing Technologies (PETs) must become an elementary part of new ubiquitous service architectures (see van Blarkom, Borking & Olk 2003). Obviously we also need more software diversity in the future. Heterogeneous computing landscapes provide a more promising future horizon for modern service architectures than massive homogenous computing landscapes with associated service architectures. There is need to develop new planning and modelling processes,

standards, and practices (see Weiser 1991; Stappers 2006; Greenfield 2006; Jurvansuu 2010.)

We shall also need a more holistic perspective to service design management. Conventional reductionist modelling perspective will probably produce more heavy costs than a holistic planning approach. The new modelling paradigm embodies analysis, design, and architectural disciplines that are pursued during a given project. In addition, innovative learning and validation processes are needed to test the new service architectures and designs.

Service Innovations, Service Design, and Problem Identification

One key challenge of successful service design process is *problem identification*. Problems are discovered in the environment of a service process. One cannot solve a problem or take advantage of an opportunity until one knows it exists. You cannot be creative in generating alternatives until you have a good reason to do so. The rational techniques for environmental analysis focus on standard control processes and environmental scanning.

There are various ways to identify problems by comparison against other organisations and companies. Such techniques are benchmarking, best practices, and racing against phantom competitors.

Typical tools used by futurists and foresight experts are trend analyses, scenario analyses, and weak signal analyses (Mendonça et al. 2004; van der Hejden 2004; Joglekar & Ford 2005; Brown 2008; Kaivo-oja 2011). These tools enable one to see the forest for the trees, something someone close to the situation may not be able to do. Nowadays weak signal analyses are very popular. Performing a good weak signal analysis is a challenging task. One must use various sources of information to find strategically important weak signals. Many experts still rely on trend and scenario analyses. Some like to use both trend and anti-trend analyses. Thus, we can develop design on the basis of trends and anti-trends. In addition, some like to use both forecasting and back-casting scenarios. Especially useful are interface and customer scenario analyses (see Alexander & Maiden 2004.)

Another good way to discover new problems and challenges is to perform opportunity searches. Active opportunity searches can turn up situations and new service design applications of current knowledge of system analysis. One does not have to be limited to traditional sources. It is smart to try something new, like the manager who searches for science fiction literature to find ideas that are applicable to his high-tech business. It is wise to study current trends and anti-trends and ask what they mean to your business and organisation.

Problem recognition leads always to new possibilities and new solutions. Many people recognise that a problem exists when they have failed to meet an objective or believe they may fail to meet one. That is why problem recognition is a really important part of innovative service design. Typically, people may recognise an opportunity when they become aware that they could exceed their objectives by choosing a certain alternative or taking advantage of a situation.

There can be 1) a difference between a historical situation and a current situation or 2) a difference between current situation and feasible future situation. When a dif-

ference exists, a problem situation is identified. Good alternative ways to recognise problems are (see e.g. Higgins 1994; Jones 1997; von Stamm 2003):

- creating an idealised situation,
- making checklists,
- doing inverse brainstorming,
- making up parodies and limericks,
- listing complaints,
- responding to someone else,
- role playing,
- performing suggestion programs, and
- performing workouts and creativity circles.

Service professionals can be trained to use these service design tools and techniques. Creative identification of problems is also important solving them. Good problem recognisers have better capacity to provide smart service designs and architectures than worse recognisers. In many R&D projects, useful skills in problem recognition processes include analytical skills, creative problem-solving skills, self-confidence, abilities to deal with ambiguity, strong interpersonal skills, and the ability to be proactive in transactions.

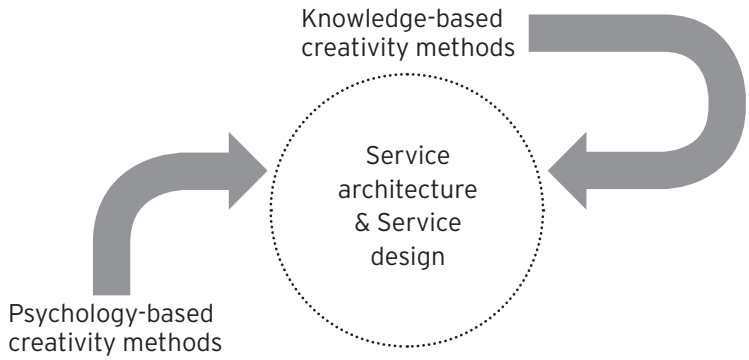

Figure 4. Creativity cycle; two creativity method types for service design and architecture.

Creativity methods have been categorised to the following technique categories: 1) conditioning/motivating/organising techniques, 2) randomisation techniques, 3) focusing techniques, 4) systems techniques, 5) pointed techniques, 6) evolutionary directed techniques, and 7) innovation knowledge-based techniques. The first five groups are *psychology-based*. Today, with the development of *knowledge-based approaches* (techniques 6 and 7), psychology-based techniques can be combined with and supported by the knowledge-based techniques (Figure 4). There are 90 available techniques that can be used also in service design and architecture projects. (Zusman 1998.)

A list of issues requiring professional attention from a SD (or SA) team during the creativity cycle includes the following aspects (see e.g. Wheeler 2009, 121):

1. vision and mission (state clearly),
2. key services and products (list),
3. competitive advantage (state clearly),
4. key stakeholders (list),
5. value proposition (state clearly),
6. target market (define),
7. attributes (identify and define characteristics of brand and brand identity), and
8. key competitors (list).

Definitions and check lists are needed in professional service architecture and design processes.

Service Design Should Be Connected to Brand Identity and Business Model

As noted above, business model development and branding are closely linked to the planning of service design and architecture. Successful service business requires great service brands and smart service business models. This is why SD and SA processes must be linked to the developments of brand identity and business model/s.

Branding a service, one must provide a coherent brand identity. First, service development needs a vision which is a foundation and inspiration for the best brands. The brand must also have a *meaning*. Good brand stands for something and there are good ideas and a defined set of values behind a planned service. In addition, services should be authentically presented. *Authenticity* means that a service provider has a very realistic and updated situation analysis about its market, positioning, and value proposition.

Differentiation is also needed because brands compete with each other within their business category. Because we live in the attention economy, brands compete with all other brands that want attention. *Durability* is the ability to have longevity in a world in constant flux. Green economy is needed in the future and the importance of sustainability is not going to decrease. Durability is connected more and more to sustainability issues. Whenever customers experience a service brand, it must feel familiar and have the desired effect. *Coherence* is created by professional service design. Consistency does not need to be rigid or limiting in order to enable the customers to feel like they are dealing with one brand.

Flexibility is a word of today. An effective service brand identity positions a company for change and growth in the future markets. Flexibility supports an evolving marketing strategy. Organisations need to actively manage their assets, including the brand name, trademarks, logos, visual images, integrated sales power, and other marketing systems. Active management of these issues create *commitment*. Values are needed to build awareness, increase recognition, and communicate uniqueness

and quality. Values express a competitive difference that creates measurable results. (Wheeler 2009, 31.)

A *business model* describes the rationale of how an organisation creates, delivers, and captures value. Value is created in economic, social, or other forms. Today, the process of business model construction is part of business strategy (see Hummel et al. 2010). Professional service designs and architectures cannot be created without a business model.

Business model is used for a broad range of informal and formal descriptions to represent the core aspects of a business. Core aspects of business model include 1) purpose, 2) offerings, 3) strategies, 4) infrastructure, 5) organisational structures, 6) trading practices, and 7) operational processes and policies. To develop a new business model, Osterwalder (2004) and Osterwalder & Pigneur (2010) propose a single reference model called *Business Model Canvas* based on the similarities of a wide range of business model conceptualisations. It is one of the most used frameworks for describing the key elements of business models.

By the help of this business model design template, an enterprise can easily describe their business model. Aspects of the template are *Partners, Activities, Resources, Value Propositions, Customer Relationships, Channels, Customer Segments, Cost Structure, and Revenue Streams* (see Business Model Canvas 2012). There are three basic models for business model development: 1) business reference model (FEA 2005), 2) component business model (Bhidé 2000), and 3) industrialisation of services business model (see Levitt 1972; Mundie 1987).

The business model can be used in the planning process before or after a new service design launch. One company can have one or many business models. There are also many basic business models such as 1) bricks and clicks (Gulati & Garino 2000; Timacheff & Rand 2001), 2) collective (i.e. trade association, cooperative, franchise, multi-level business model, business alliance, or business network), 3) cutting out the middleman (see e.g. Graham 2008), 4) direct sales (see e.g. Xardel 1993), and 5) distribution business models (Fast Trac 2012).

This discussion is summarised in Figure 5.

Figure 5. Service design and architectures, brand identity development, and business model development.

Summary: Fundamental Ideas of Service Science Development

This article has discussed some key themes of service design thinking. We can summarise the discussion by saying that service design development is typically a process of co-creation (see e.g. Ramaswamy 2009). Because service design matters where innovation capability and innovation orchestration are concerned, it is necessary to pay

as much attention to the process as to the content. A combination of various competences is needed to ensure successful service design processes. Service design processes must include some creative, technical, business, marketing, and social competences.

Service science, management, and engineering (SSME) is an important concept in the service economy. There are three key issues in service design development: service science, service architecture (SA), and service design (SD). These concepts are interactive and interrelated. Service science includes service architectures of various business fields and, in turn, service architectures include various service designs. In order to further develop service designs and architectures, creativity and especially knowledge-based and psychology-based creativity techniques are needed.

In this article, links between brand identity creation, business model development, service architecture, and service design have been underlined. These expertise fields need to interact to enable the co-creation of successful service architectures, service designs, service brands, and service business models.

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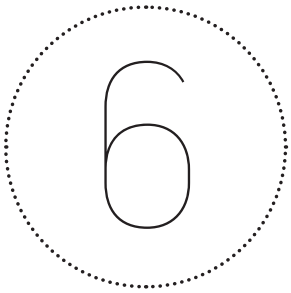

Designing Services: Challenges of Creativity, Serendipity, and Open Innovation

Sam Inkinen

If you would ask ten people what service design is, you would end up with eleven different answers – at least.
– Marc Stickdorn & Jakob Schneider (2011, 29)

[...] same point can be generalized to life: maximize the serendipity around you.
– Nassim Nicholas Taleb (2007, 204)

Creativity, *serendipity*, and *open innovation* are examples of topical key concepts which have relevance for *design thinking* and *service design processes*. As we know, the terms *creativity* and *creative economy* have been used extensively. (cf. Inkinen et al. 2006)

In addition, the ideas concerning so-called *creative class* (see Florida 2002) have become key issues all over the globe. It is also obvious that (service) designers belong to this new "class" and are in the heart of many interesting and important contemporary processes.

We normally say that an *innovation* is a new product, a new process, or a new organisational/social structure that enables an actor to be successful in the market. The traditional *closed innovation model* is built upon the idea that one's own organisation possesses all the necessary knowledge and know-how. Protecting these knowledge assets is considered a way of securing a competitive edge in the market.

In recent years, however, debate over *open innovation* has gained a lot of ground. This change in the discussion is almost drastic enough to be called a paradigm shift. Don Tapscott, the "guru" of digital economy and net generation, has aptly written:

Thanks to the Internet, companies are beginning to conceive, design, develop, and distribute products and services in profoundly new ways. The old notion that you have to attract, develop, and retain the best and brightest inside your corporate boundaries is becoming null. With costs of collaboration falling precipitously, companies can increasingly source ideas, innovations, and uniquely qualified minds from a vast global pool of talent. The end result is that the corporation may be going through the biggest change in its short history. (Tapscott 2010, xiii)

We nowadays live in a networked, hyper-connected, and global world (Castells 1996). The main question in the framework of this article is *how* to create something new and valuable; *how* to enable creativity to take place or to "happen" in the practices of design teams, business development, and human interaction (cf. Christensen 1997; Kelley 2001).

Albert Einstein (1879–1955) once stated that "imagination is more important than knowledge."[1] It is clear that pure knowledge and know-how is not enough in the contemporary business environment. We also need imagination and creativity to ensure positive outcomes in (service) design processes and innovation management.

One of the most important keywords in today's economy and business world is *service*. In the post-industrial society and the information age, the *service sector* is expanding remarkably and facing new challenges in the dawn of the next generation

[1] www.quotationspage.com/quote/703.html

Internet and ubiquitous media. It is no surprise that user-centred concepts and user-centred design have become essential approaches in creating new solutions and real added value for customers.

In addition to open innovation, the principle of *serendipity* and various kinds of serendipitous "bumps" seem to have lots of potential in the (service) design context. Serendipity means an accidental, unplanned encounter which can lead to better-than-intended outcomes (cf. Roberts 1989; Eyre 1999; Muller & Becker 2012; Kakko & Inkinen 2005; 2007; 2009).

The aim of this article is to introduce and discuss topical key notions and challenges addressed to (service) design processes and (open) innovation dynamics in the rapidly changing global business environment.

Creative Class and Creative Economy

As we know, discussion on the different aspects of creativity has been active among universities, research communities, ministries, government agencies, think tanks, and other networks all around the globe.[2] The main goal of the European science and technology policy, for example, is to develop innovativeness and R&D processes into a more sensitive, efficient, and result-driven direction. (cf. Inkinen & Kaivo-oja 2009a; 2009b)

It is interesting to note that creativity has, in recent years, been closely connected to the wider discussion on the society and the economy. The discussion emphasises, naturally, themes such as national competitiveness and innovativeness (cf. Inkinen 2006).

Richard Florida's *The Rise of the Creative Class* (2002) has become a key opus that could be described as the bible of dynamic regional development. Aiming to underline the rise of the creative class in American metropolises, the book looks at the structures of contemporary society from the viewpoints of creativity, regional development, and the socio-technical foundations of knowledge work.[3]

According to Florida (ibid.), the creative class is found at the centre, at the core of society. Its values and principles underline the links between cultural creativity and the structures of the information economy. The book aims to find out where new, thriving business takes place in the contemporary society and to understand where businesses based on the input of creative, innovative professionals and knowledge workers are moving to geographically. (cf. Kakko & Inkinen 2004; 2005)

Creativity Is a Key Driver of the Information Society

According to sociologists Scott Lash and John Urry (1994), the new wealth of the contemporary society has primarily been created by the producers of expert services.

[2] One example of the exchange of thoughts on the European level comes from the German speaking world; the publication *Die organisierte Kreativität. Kulturpolitik an der Wende zum 21. Jahrhundert* [Organised Creativity. Cultural Politics at the Dawn of the 21st Century] edited by Franz Morak (1999) offers a glance at "organized creativity" from the viewpoint of areas such as education, cultural politics, design, and new media.

[3] Florida and his followers argue that the self-acknowledgeable professionals of creative industries tend to choose home and work environments (including cities and/or regions) that support and promote a rich and many-sided cultural life, offer a multitude of opportunities for participation in various activities, and have an atmosphere of spiritual openness (key issues being tolerance and cultural diversity).

Producing special services (financial and cultural services, ICT solutions, educational services, etc.) requires a high level of education and professionalism.

It can be said that *creativity* is a key driver of the information society. Enthusiastic individuals and knowledge workers (researchers, designers, programmers, artists, and other innovators) demand more than healthcare programmes from their employers and more than a sports stadium and a symphony orchestra from their home town and region. The creative class values active and many-sided cultural services.[4]

It is generally agreed upon that in a post-industrial, (post)modern society technology develops, but we should not forget that social and economic structures develop just as well. In fact, in many people's opinion the most essential change in our societies during the last half a century has not been the advancement of technology but the change in our social structures and cultural life.

Globalisation, the mobility of capital and work, and changing values essentially shape current developments and our future paths. At the same time, information technology and computer networks have brought along a new set of rules that affect our lives. Digital technology, ICT solutions, ubiquitous computing (cf. Weiser 1991; Greenfield 2006), and other socio-technological developments have had a crucial influence in the way the post-industrial society is built around *information*, *creativity*, and *knowledge capital*.

According to many scholars and researchers (cf. Florida 2002; Inkinen 2006), it is characteristic of our time that economic and technological creativity is increasingly linked to *artistic* and *cultural* creativity (including design). These new links and combinations of creativity should give rise to the much needed new concepts, inventions, and innovations.

Spirit of Creativity

Decision-makers of science and technology policies all around the world stress that *creativity* and *innovativeness* are prerequisites for development and competitiveness (cf. Inkinen & Kaivo-oja 2009a; 2009b). It is often stated that a creative, innovative environment makes organic growth possible as a means to enlarge the shared, common good.

Such an environment comes with a positive culture of "doing" (Inkinen 2006). Innovative spirit and a "creative buzz" are needed in communities, organisations, and design teams. This is especially relevant in the business world in the face of ever-tightening global competition.

We should not forget that the social aspects of human networks and human development are essential. PowerPoint presentations and memos calling for the goals for innovativeness too often forget that, in the end, we are discussing an issue closely

[4] Florida's and his followers' view of the contemporary society is based on a theory arguing that *human creativity* has become one of the essential (if not altogether the most essential) driver of economic growth in Western societies. They argue that by understanding the rise and meaning of the new "class," we can also understand the processes of societal change and be able to influence our future proactively. This said, we have to understand that creativity is a many-sided issue and its scope should not be limited to technological innovations, patents, new products, and the like. The Floridan view of the ideals and mechanisms of the creative economy reach out all the way to the fundaments of our societal and cultural processes. (cf. Florida 2002)

tied to *human* and *social* action. Even if we talk on the level of innovation systems, environments, or ecosystems, new ideas and development are sparked and created by *creative individuals* who have their own needs and individual desires.

In the near past, there was a lot of talk about *innovation systems* (cf. Nelson 1993). Today we see more discussion on *innovation environments* and *innovation ecosystems*.[5] A thriving innovative community is often a social organisation where various actors of academic, cultural, and business worlds meet in a fruitful way.

Maximise Serendipity

It has to be stressed that alongside strategic planning and decisive management, accidental meetings and fruitful serendipitous bumps play a major role in innovation processes.

A key term used is 'serendipity' which is discussed interestingly and thoroughly in many books (see Roberts 1989; Eyre 1999; Muller & Becker 2012). Serendipity means the accidental, unplanned encounter that leads to better-than-intended outcomes (cf. Kakko & Inkinen 2005; 2007; 2009). In a way, serendipity equals a lucky chance, a fruitful accident, or a positive collision. Merriam-Webster Online[6] defines serendipity in the following manner: "the faculty or phenomenon of finding valuable or agreeable things not sought for."

The word 'serendipity' refers to an old Persian fairy tale where the three princes of Serendip travel to far-away lands. During their travels, the princes encounter such fascinating and wonderful things that they nearly forget the reason for their travels. In the context of serendipity it might be interesting to note that the World Technology Network mentions happy accidents as one of their important goals (emphasis added):

> ***About World Technology Network***
> *The World Technology Network is a London-headquartered organization that was created to "encourage serendipity" – **happy accidents** – amongst those individuals and companies deemed by their peers to be the most innovative in the technology world. WTN's areas of interest range from IT and communications to biotech, energy, materials, space, as well as related fields such as finance, marketing, policy, law, design, and ethics. Each year, WTN members are brought together through an ongoing global series of Roundtable Dinners, Chapter Meetings and other events. WTN also publishes "World Technology Intelligence", a bi-monthly magazine about what is imminent, possible, and important in the technology world, written largely by its own members – the people driving the most significant innovations. Central events in the WTN calendar include the annual World Technology Summit and World Technology Awards – the culmination of a global judging program through which new members are nominated and selected and by which the network grows and is refreshed.*[7]

[5] The concept of innovation environment seems to include wider and deeper viewpoints than the traditional research on innovation systems. Innovation environments are affected, amongst other things, by the history and culture of the geographical region, behavioural patterns, and traditions acquired over time.
[6] http://www.m-w.com/dictionary/serendipity
[7] http://funredes.org/english/institucion/institucion.php3/docid/439

It is worth stating that concepts such as 'serendipity,' 'chance,' and 'luck' are not unproblematic, nor is the discussion around them. It is also relevant to say that we live in a more fragile, complex, and connected world than ever before (cf. Castells 1996; Green 2010) – even if the "networked society" (cf. McNeill & McNeill 2003) is not, historically speaking, a new issue.

It is often emphasised that success today is enabled, as it has been in the past, through networking, collaboration, and cooperation. These standpoints can be considered prerequisites for creative innovation management and many (service) design processes. Understanding the theory and practice of networks, Albert-László Barabási (2002) sums this up as follows:

> *The most visible element of this [organisatorial] remaking is a shift from a tree to a web or a network organisation, flat and with lots of cross-links between the nodes. As valuable resources shift from physical assets to bits and information, operations move from vertical to virtual integration, the reach of business increasingly expands from domestic to global, the lifetime of inventories decreases from months to hours, business strategy changes from top-down to bottom-up, and workers transform into employees or free agents.*

There are various kinds of networks. A few examples of networks discussed in the academic and management literature are *supply networks* (just in time), *strategic alliances* (airlines), *production networks* (product licenses), *innovation networks* (cooperation between industry and universities), *client networks* (product and service development in cooperation with clients),[8] *standardisation coalitions* (e.g. businesses supporting a certain standard for the next generation of mobile phones), and *policy networks* (policy-related cooperation) (cf. Bruun 2002, 104).

In addition, subcultures and ground level organisations cooperate with each other in a creative and networked manner. This cooperation is increasingly global and multicultural, making good use of social media and mobile networks.

As stressed above, it is again crucial to understand that *people*, not organisations, cooperate. Developing cooperation and a real, open interaction between people is usually a challenging task. Experiences suggest that successful cooperation between institutions and individuals relies on a shared willingness and trust between participating people and communities.

Open Innovation

Growing attention has been recently devoted to the concept of *open innovation* both in academia and in praxis. Henry Chesbrough (2003; 2006) describes how organisations have shifted from so-called closed innovation processes towards a more open way of innovating.

Traditionally, business development processes and the marketing of new products have taken place within a firm's boundaries. Several factors have led to the erosion of

[8] Client networks are primarily considered business-to-business networks; the list could also include consumer network approaches such as *crowdsourcing* (cf. Surowiecki 2004).

closed innovation. First of all, the mobility and availability of highly educated people has increased over the years. As a result, large amounts of knowledge exist outside the organisations' research laboratories and design teams. When employees change jobs, they take their knowledge with them, resulting in increasing knowledge flows between companies.

Secondly, the availability of venture capital has increased significantly, making it possible for good and promising ideas to be further developed outside the business organisation. Besides, the possibilities to develop ideas and technologies outside the organisation are growing, for instance, in the form of spin-offs or through licensing agreements. Finally, other organisations in the supply chain play increasingly important roles in innovation processes.

As a result, organisations have started to look for other ways to increase the efficiency and effectiveness of their innovation processes; through active search for new technologies and ideas *outside* the firm and also through *cooperation* with suppliers and competitors in order to create customer value. Another important aspect is the further development or out-licensing of ideas and technologies that do not fit the strategy of the organisation. Open innovation can thus be described as: *combining internal and external ideas as well as internal and external paths to market*.

The open innovation model implies that organisations have to become aware of the increasing importance of open models and practices of innovation dynamics (cf. Chesbrough & Vanhaverbeke & West 2006; Inkinen & Kaivo-oja 2009a; 2009b). Not all good ideas are developed within the (business) organisations, and not all ideas should necessarily be further developed within the boundaries of the same organisation.

These approaches (open innovation, open communication, deep cooperation and collaboration) have been understood to be relevant also in the design world: "Understanding value and the nature of relations between people and other people, between people and things, between people and organisations, and between organisations of different kinds, are now understood to be central to designing services." (Stickdorn & Schneider 2011, 50)

Go With the Flow

The mindset of a creative person has been outlined by the Hungarian-born creativity researcher Mihaly Csikszentmihalyi (1996; 1997; 2003). He has coined the term *flow*, which is used to describe a deep feeling of happiness where everything just seems to succeed with no effort.

Flow can be a part of work (i.e. a design process) or leisure time and it is a deep, transcendent experience. During a flow period, awareness of oneself disappears and it can be compared to a supernatural experience.

How does a person create? A paradox of creativity is that it can be learned, but not necessarily from text books. However, we must agree that there are varying opinions on this issue. While some experts claim that it is easy to learn or to teach creativity, others say that it is difficult or impossible. No matter what the truth is, bookstores sell a whole variety of "ABCs of Creativity" as well as more substantial handbooks.

An (academic) example of the latter could be *Handbook of Creativity* by Robert J. Sternberg (2002).[9]

Competition refines, it is said. Many contemporaries state that a crisis also refines. Deadlines or other severe pressures may give rise to magnificent ideas and innovations, while crises and conflicts have given birth to a great number of novel solutions. Many people have experienced how the creative mind still functions even though the person is utterly tired and stressed out.[10]

On the other hand, competition and too tight schedules often kill spontaneous creativity. It is interesting to note that the *slow life* phenomena (including slow food, slow travel, slow design, etc.)[11] have been growing all around the world in recent years.

Maybe this is grounds for stating that creativity is often born out of extremes; either idleness or utter necessity.

Thinking Out of the Box

"Discovery consists of seeing what everybody has seen and thinking what nobody has thought."[12] These words by Nobel Laureate in Physics Albert Szent-Györgyi (1893–1986) are also relevant in the framework of this article.

One problem is how to bring knowledge about creativity into practice. Creative people are often sensitive. On the other hand, they can also be prima donnas with gigantic egos. This kind of people can be very valuable for a company but also a difficult challenge for creative (design) teams.

How are things in real life? Not necessarily too well. Companies big and small declare that *thinking out of the box* is their goal and a prerequisite for success. In practice, the outcomes for thinking on one's own – regardless of existing schemes, models, and set rules – are often not positive at all. This is why people with really original ideas and true creativity are not necessarily very successful in the business world.

Besides attempts to conceptualise and to study creativity, action has been taken to enhance creativity in practice. Perhaps a creative community is more like an *organism* than a traditional organisation (cf. Kakko & Inkinen 2004; 2005). Furthermore, maybe problem-solving inside an organisation is first and foremost a *process* that includes various identifiable and separable phases.

[9] "The goal of the *Handbook of Creativity* is to provide the most comprehensive, definitive, and authoritative single-volume review available in the field of creativity. To this end, the book contains 22 chapters covering a wide range of issues and topics in this field. / The chapters are intended to be accessible to all individuals with an interest in creative thinking. Although the authors are leading behavioral scientists and most readers are likely to have an interest in behavioral sciences, those involved in the natural sciences and humanities will find much that appeals to them in the volume, especially because so many of the examples and even case studies draw on the natural sciences and humanities." (Sternberg 2002, ix)

[10] The ever worsening atmosphere in our workplaces has also been a key issue in recent years. It is easy to list aspects that restrict creativity: external evaluation, fear of job loss, a feeling of Big Brother watching, etc. Conflicts are, of course, a part of a creative community as well, but there the contradicting opinions related to new ideas tend to be ultimately fruitful. A key issue is how to combine competition, creative freedom, and profit-making responsibilities.

[11] "Slow Design is a branch of the Slow Movement, which began with the concept of Slow Food, a term coined in contrast to *fast food*. As with every branch of the Slow Movement, the overarching goal of Slow Design is to promote well being for individuals, society, and the natural environment. Slow Design seeks a holistic approach to designing that takes into consideration a wide range of material and social factors as well as the short and long term impacts of the design." http://en.wikipedia.org/wiki/Slow_design

[12] http://www.quotationspage.com/quote/151.html

In his interesting article, Yrjö Toivola (1984, 199–200) made references to studies made at the State University of New York in Buffalo that outline the development of problem-solving as a process as follows (translated from Finnish):

1. Problem, challenge, opportunity, outlining
Understanding that an opportunity to create something new, something better exists; intuitive knowledge, as well as a vision, might be a trustworthy guide at this phase (as well as in phases 3 and 4), because actual, fact-based, knowledge and its "mending effect" always come in too late.

2. Fact phase
Digging out the real facts in order to find the core of the problem that one is about to solve.

3. Problem phase
Identifying the actual problem according to the facts.

4. Idea phase
The shaping of alternative solutions.

5. Solution phase
Refining and polishing the chosen solution to make it usable and implementable.

6. Approval phase
Having all the actors who need to take part in the actualisation of the chosen solution in order to make it successful to approve with it.

7. Realisation phase
The arising (new) problems, or newly identified parts of the original problem, may force the process to be started anew or some phases to be gone through again. Several phases may have to be run through multiple times even before the realisation phase has been reached.

A creative (design) environment is challenging, free, dynamic, supports ideas, is emotionally safe, and its atmosphere promotes humour. In such an environment, debates are considered positive, conflicts constructive, and risk taking is allowed. As a result new ideas have enough time and space to take shape.

Many design processes have a bottleneck where good (but scattered) *ideas* ought to be refined and made real in the form of *concepts* or *prototypes* that could, in turn, be further developed into successful innovations on the market. The ideal members of (service) design teams are active individuals who have the desire to maintain various kinds of social networks and to get to know new interesting things and collaborative tools.[13]

[13] Recent years have brought about specific ideation and innovation tools that act as idea storage, promote *swarm intelligence* and *crowdsourcing* (cf. Surowiecki 2004), and follow the principles of *social media*. They include conversational and ideating forums and support open innovation practices in the R&D processes and decision-making.

This kind of creative individuals have a healthy self-esteem – they are professionals who want to work in an environment that is as open as possible, an environment that is interconnected in many directions and that is built upon the ideals of equality, work satisfaction, and collaboration. They take moving beyond and across organisational boundaries for granted and intuitively create professional networks (*ad hoc* organisations) if the situation or goals so demand. (cf. Kakko & Inkinen 2004).

Homo Ludens – Homo Creativus – Homo Connectus

Creativity, *innovation*, *flexibility*, *agility*, and *connectivity* seem to be highlighted as essential strategic issues for success in today's business life (cf. Bahrami & Evans 2005; Doz & Kosonen 2008; Green 2010), and this will be increasingly the case in the near future.

It seems clear that the innovators, experts, and knowledge workers of the creative economy possess loads of human capital and seek various kinds of experiences to develop their own minds as well as their technical toolkits. Such people are characterised by the *ethos of creativity* and by a diversity of cultural competence(s). Following the lines of Florida (2002), the *creative class* can be viewed as an interesting condensed mix of the bourgeois and the *boheme*.

It is somehow symptomatic that the term *homo ludens* has become popular in the contemporary debate. We have understood that the human is not merely a *homo economicus* of economic rationality or the engineering blacksmith of *homo faber*, but a playful human (*homo ludens*) as cultural philosopher Johan Huizinga stated as early as 1938 in his classic work of the same title.

Huizinga's main idea is that even "unnecessary" challenges seem to play a big role in the advancement of the human culture. Works of art, games, and sports are deeply rooted phenomena of humanity, even though they are not the results of straightforward need or necessity.

Homo ludens has been a key term, not only in academic discourse but, for example, in the advertising world. This kind of individual knowingly seeks new experiences, plays around with possibilities, embraces the idea of freedom, and is happy to take risks.

A reference to the French word *bricolage* might add some interesting depth to this discussion. It is used to mean building, assembly, or hobby-like handcrafting and acts as a nice metaphor of creative processes and the management thereof, since creativity is often defined as a process of assembling where something new and extraordinary is built.

Other phrases starting with the word *homo* have also been used to describe the contemporaries of the information society. Aki Järvinen (1999, 170), a researcher of digital culture, has used the phrase *homo aestheticus-informaticus* to describe the knowledge-intensive humans who nevertheless stress the importance of aesthetic values and new sensations (art, design, experiences, entertainment industry, etc.).

Apparently, the contemporary human is, indeed, *homo creativus* (Inkinen 2006) and *homo connectus*: the creative individual actively searching for new perspectives and being connected to various (digital) networks. As a conclusion, it can be said that the significance of creativity, openness, and connectivity seem to be growing – also in service design processes.

What Is Innovation?

What is, actually, an innovation? In short, innovation can be defined as a new product, new process, or new organisational structure that enhances the chance for success on the market. Antti Hautamäki (2007, 110) has described the main concepts in the following manner (translated from Finnish):

> *Ideas, inventions, and innovations are often distinguished from each other. An idea is a preliminary thought or a mental image of a new device or solution. An invention, on the other hand, already exists, but it is not applicable or commercial as such. An innovation is a novelty that is applicable in practice. Typically, innovations are commercialised products or services. The route from an idea to an innovation is often long and includes a number of different phases.*

When pondering on the deeper meaning of concepts, it is fruitful to look back in time and find out what classic thinkers have written and to see how they have argued on different aspects of the issue at hand.

It is justified to say that Joseph Schumpeter (1883–1950) is the father of so-called *evolutionary economics*. In fact, this area of economics is sometimes referred to as *neo-Schumpeterian economics* or *neoschumpeterianism*. It is a line of research that is especially interested in research on the *change in technology*. According to evolutionary economics, it is *technology* that forms the dynamic core of the development of societies and economies and is a prerequisite for economic growth. (cf. van Ark & Kuipers & Kuper 2000)

The Darwinian influences are apparent already in the name of evolutionary economics. This line of research has borrowed concepts from the theory of *evolution* and created models based on this framework (cf. Lemola 2000, 150). Alongside evolution itself, the borrowed concepts include *variation*, *choice*, and *adaptation*. In addition, evolutionary economics underline the significance of history (hereditary factors in the theory of evolution), the cumulative nature of development, discontinuation (mutations), etc.

The main ideas of Darwin's evolutionary biology are natural selection and the origin of species. Darwinian evolutionary biology and modern biological theories have also created the term *ecosystem*. It is widely used in economics, innovation research, and business talk as well.[14]

Innovation Environments and Ecosystems

As said before, the terms 'creative class,' 'innovation environment,' and 'innovation ecosystem' have been actively used in recent years. Antti Hautamäki has described recent academic theories and discussion as follows:

[14] Again, we should not forget the history. In fact, the idea to describe business environments as developing ecosystems is not new as such. Thorsten Veblen (1857–1929) criticised the classic model of economic balance already in the late 19th century and emphasised the ability of institutions to adapt to ever-changing circumstances of the market. When we track down the historic (scientific) origins of evolutionary economics, we also notice the obvious influence of classic economists such as Adam Smith (1723–90), Karl Marx (1818–83), and Alfred Marshall (1842–1924). (Hautamäki 2007, 128–129)

> *The most interesting new standpoints are the various network theories, Richard Florida's theory about the creative class, and the theory of innovation ecosystems that follows the model of biology. These all emphasize gradual development that is based on earlier strengths. Whereas traditional innovation policies have a spirit of guidance and enabling (top down model), the new standpoints underline the importance of the activity and self-guidance on the bottom level (bottom up model). Good examples of the top down model are the focus points of R&D funding – which are, of course, understandable where resources are scarce. (Hautamäki 2007, 121–122; translated from Finnish)*

What do we understand with *ecosystems*? It is advisable to discuss the semantic dimensions of such a biological metaphor. As we all know, continuous competition takes place between different species and between the individual animals of a single species (cf. the references to Darwin above). Changes in the environment are reflected in the food chain, the biological processes, and the population.

In the same way, each actor and service of an innovation economy or digital ecosystem has to find its own "ecological niche" in order to survive the struggle for existence that takes place on the market. Only in afterthought will we be ready to assess and analyse the effect the current change and turbulence have had on the long-term structures.

Ecosystemic thinking can be applied when taking a look at (service) design processes or innovation structures. Silicon Valley is often mentioned as an example of a successful, market-oriented, and future-oriented ecosystem or of a community that refines and enriches ideas towards potential innovations.

What makes Silicon Valley so special? The success of Silicon Valley as the prominent technological expertise centre and as the global R&D diamond has been explained with favourable conditions, positive and entrepreneur-oriented atmosphere, and with the tradition of success. (cf. Kenney 2000; Hautamäki 2007; Inkinen & Kaivo-oja 2009a; 2009b)

Conclusion: Innovation and "Innoflation"

Some years ago, I wrote an article "Innovation and 'innoflation'" for the *Finnish Design Yearbook* (Inkinen 2008). I wrote already then that "[c]reativity, innovations, creative economy and creative industries are examples of key concepts that draw a lot of attention, as well as ambitious research and development interests. These words have been associated with downright contemporary fanaticism, which has undoubtedly led to a certain 'innoflation' – a loss of meaning of concepts with *creative* or *inno-* in them." (ibid., 13)

It is obvious that the use of the words such as 'innovation,' 'creativity,' etc. should be examined (more) analytically and critically. The classical distinction between ideas, inventions, and innovations might also turn out to be rather useful in this discussion. Thus, a thoroughly analytic view and a Hegelian *Anstrengung des Begriffs* (testing of the concept) with regard to the new concepts, approaches, and relations between them (creative class, open innovation,

serendipity, service design, social media, ubiquitous computing…) would be very welcome.[15]

On the other hand, today's concept and service designers should understand the changing nature of the contemporary service and media environments. Creative economy and creative class challenge many traditional ways of collaboration. Tomorrow's *modus operandi* may differ dramatically from that of yesterday's or today's. Creativity, foresight, and *design thinking* improve (service) innovations and solutions. High motivation and ambition levels play key roles:

> *Innovation is about seeing the world not as it is, but as it could be. It's about exploring really "wicked problems" whose solutions can't be found in past experience or proven by data. Contrast this with most companies' obsessive reliance on efficiency and predictability — and it's no wonder breakthrough innovations are so rare* (Martin 2009, cover note).

To sum up, times are interesting and challenging for today's business enterprises. From the viewpoint of the current *innovation economy*, the interdependencies between the society, businesses, universities, and media are of paramount importance. Today's *homo ludens*, *homo creativus*, and *homo connectus* search eagerly for new solutions and opportunity windows — not least with the fresh eyeglasses and methods of *open innovation*.

The changing operational framework and socio-technical context (cf. Greenfield 2006; Weinberger 2007) calls for new methods and mindsets to approach (service) design and contemporary innovation challenges. "Think Out of the Box," "Go with the Flow" (cf. Csikszentmihalyi 1997; 2003), and "Maximise Serendipity" (cf. Taleb 2007) can be considered to be relevant guidelines for today's innovators and service designers.

In addition, *creating shared value* has become one of the key goals and challenges in today's corporate practices. Michael E. Porter and Mark R. Kramer published a highly interesting article in *Harvard Business Review* (Jan–Feb 2011). Its ingress aptly reflects the changing (business) realities:

> *Capitalism is under siege…. Diminished trust in business is causing political leaders to set policies that sap economic growth…. Business is caught in a vicious circle…. The purpose of the corporation must be redefined around CREATING SHARED VALUE. / How to reinvent capitalism — and unleash a wave of innovation and growth […]. (Porter & Kramer 2011, 62–63)*

It would be positive and fruitful if service design(ers) can help corporations to fulfil these new challenges of sustainability, sense of community, and shared value. Sometimes answers and solutions arrive from unexpected sources — following the principles of *serendipity*. Therefore, contacts, connections, and surprising meetings and

[15] Debate on technology and innovation has in recent years been disturbed by the fuzziness and ambiguity of terms. John A. Barry (1992) has described the discussion on technology with an appropriate word, *technobabble*. The content of words is, naturally, dependant on the definer and the context. Even if we do not take too tight a stand on the ways languages are used, it has to be stated that especially new, trend-like *buzzwords* are sometimes used carelessly and accompanied by (too) far-fetched rhetoric. On the other hand, right key words electrify discussion and, for example, the terms and concepts of *creativity* and *innovation* have proven their usefulness on many occasions.

bumps in the in-betweens of various business fields and between different organisations are of paramount importance.

"Innovation is about seeing the world not as it is, but as it could be." (Martin 2009, cover note). These words constitute an exceptionally good motivating slogan for today's innovators and (service) designers.

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Co-designing Services in the Co-futured City

Alastair Fuad-Luke

Introduction

Today, the service economy is part of everyday life. Unlike the industrial economy, the service economy is fleet of foot, moving wherever it wishes while simultaneously creating and adapting to socio-technical trends. This has fuelled a vibrant debate on service design over the last decade, although the roots of this emergent discipline go back to the early 1990s (Meroni & Sangiorgi 2011, 9), including the work of G. and B. Hollins who realised the potential of service design to offer a more holistic way of managing design in the service sector (Hollins & Hollins 1991).

By the late 1990s, there was a parallel discourse also beginning to shape the debate on services. Design researchers exploring *Design for Sustainability* (DfS) examined the drivers for shifting consumption from products to *product-service systems* and *dematerialised services* (Balcioglu 1998; Charter & Tischner 2001). Manzini's propositions for dematerialisation (of products to intangible services) envisioned a merging of two discontinuities in society; one driven by matching resource use to fresh patterns of production and consumption (the *sustainable society*) and the other being the emergence of the *information society* (Manzini 1998) which, as we recognise, has transmuted into the networked society, a phenomenon first articulated by the sociologist Manuel Castells (2000).

The emergence of a stronger service sector came from the ashes of European manufacturing, as it bled away to the new labour markets and factories of India and China, coupled with the rise of the global information highway via the Internet. Certainly the *service economy* has become an economic imperative of Europe and the global North (Young 2008), already in 2007 accounting for nearly 70 % of employment and 72 % of gross value added in the 27 European Union member states (Meroni & Sangiorgi 2011, 11). Service design supports the service economy by addressing the

> *functionality and form of the services from the perspective of clients. It aims to ensure that service interfaces are useful, usable and desirable from the client's point of view and effective, efficient, and distinctive from the supplier's point of view* (Mager 2008).

However, this positioning of services in the context of client/supplier has recently evolved. Several in-depth publications about service design indicate that the boundaries between clients and suppliers are blurring in collaborative services, social innovation, and peer-to-peer services (Miettinen & Koivisto 2009; Meroni & Sangiorgi 2011). The customer/consumer/user is now a vital part of the service mix. So, this paper explores how co-designing (designing together) our services could be the next critical evolution of service design to ensure the sustained integration of human and natural ecologies for our cities. Indeed, the proposition here is that co-designing services in an open innovation environment is a pre-requisite for *co-futuring*, a term the author coined in 2009 to signify more participatory democratic forms of decision-making informed by design and leading to *anticipatory democracy* (Fuad-Luke 2009a).

Why is Co-design So Appealing?

Services are complex, involving many actors, stakeholders, suppliers, and their synergistic coordination in order to deliver a satisfactory result. Determining the needs of these diverse players and ensuring their mutual satisfaction can be challenging. Co-design offers a flexible portfolio of soft system methodologies which ensure that the voices of the key actors and stakeholders are heard and integrated into the system being designed. This participation in the design process is essential to maximise the satisfaction of all parties involved in service use or provision. Moreover, it reduces risk of service failure.

The emergence of co-design has paralleled that of service design and, arguably, enjoys considerable common ground. For some observers, co-design is simply *design with, for, and by society* supported by a societal, cooperative ambition to become more sustainable (Fuad-Luke 2007, 37). It requires designers to embrace a new skill set as *enablers*, *catalysers*, *activists*, *facilitators*, *connectors*, *arbitrators*, *storytellers*, *visualisers*, and *scenarios setters* (ibid., 47). In a recent review of co-design and co-creation (the latter being a term deployed by many disciplines including design, business, and beyond), a common feature of co-design is its application to a design context by giving a voice to those traditionally not involved in the design process and a set of processes and tools for collaborative engagement of users and stakeholders (Mattelmäki & Sleeswijk Visser 2011). However, the author believes that the real appeal of co-design is its application *upstream* and *downstream* of the design brief (see Figure 1).

This power is encapsulated in the *co-design loop* (Figure 2), an infinity loop for designing together (Fuad-Luke 2009b). The first loop, entitled *sharing experiences* enables a collective understanding and re-defining of the context by the key actors, stakeholders, communities of practice, and communities of interest. The second loop, *understanding problems*, leads to a deep dive into the diverse issues, problems, and needs of the stakeholders, leading to a collective understanding of the meta-problems or challenges and, hence, the identification of the correct problem-space(s). Only now can a correct design brief be articulated at the start of the third loop, *designing solutions*, where solutions to the problem space(s) are co-designed or co-created. The first and second co-design loops are upstream of the brief, the third loop downstream, but once the product, service, or other design outcome has been launched, it immediately becomes part of the first loop, being a new experience for sharing.

Miettinen's service design methodologies (Miettinen 2009, 10–28) are easily adapted to the co-design loop, so integration of co-designed services is definitely a practical proposition (see Figure 3). Co-design offers a genuine approach for involving all the *relevant* people into the designing of new services.

The New Now: Reframing the Needs of the City

Cities exist to satisfy peoples' present needs and aspirations. Futures cities will continue to exist because they satisfy the present *and* future needs of the people (economic, social, cultural, civil, and political) while simultaneously meeting the ecological

Figure 1. Co-designing upstream and downstream of the brief.

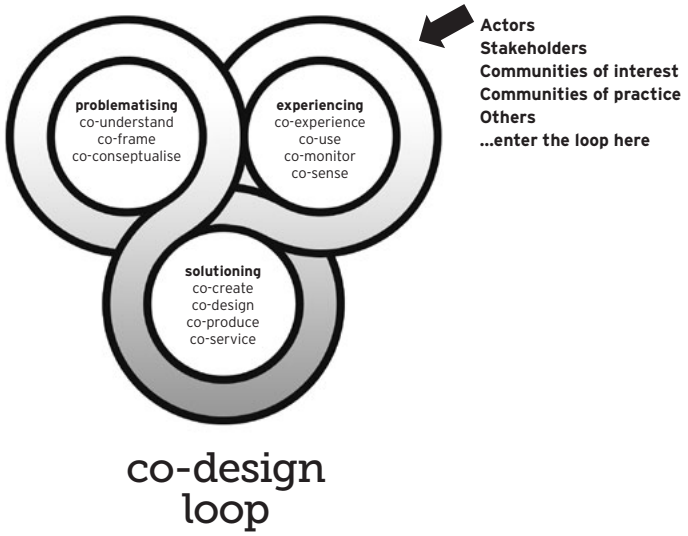

Figure 2. The co-design loop, 2009.

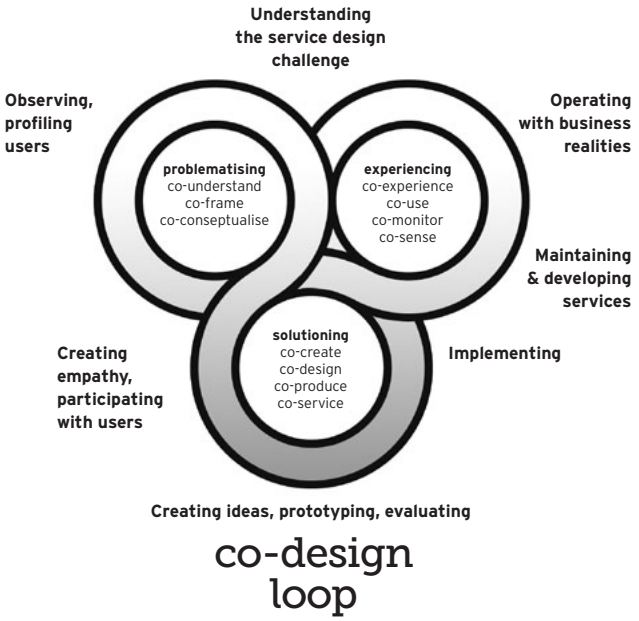

Figure 3. Typical service design considerations (after Miettinen) mapped to the co-design loop.

needs of their surrounding bio-region and wider planetary concerns. A bio-region, sometimes called an eco-region, can be defined as

> *an area constituting a natural ecological community with characteristic flora, fauna, and environmental conditions and bounded by natural rather than artificial borders* (The Free Dictionary 2012).

The linking of our human condition with wider concerns is critical to understanding two contemporary phenomena whose significance we are still trying to grasp — climate change and the effects of the impact of our anthropocentric activities on our natural world. Paul Crutzen, who received a Nobel laureate in 2002, coined the term 'anthropocene' with Eugene Stoemer to recognise a new geological era in which human activity is a genuine geophysical force significantly altering the climate and hence the geology that is being *futured* (Crutzen & Stoemer 2012). Under these emergent phenomena, service designers' work could become more significant because it has the triple opportunity and challenge of providing concurrent services to the people, the city, and the planet. Contemporary design and design research practice do not look adequate to deal with these challenges. A huge mindset shift, embracing ideological and attitudinal changes, is required.

Service design has to address *real needs*, not false wants or commercial imperatives. Peoples' needs have been a subject of study for psychologists, economists, and designers for some time. Maslow's needs hierarchy is well known for its hypothesis that we tend to satisfy our basic physiological needs before our social needs and then our individual needs of belonging and self-actualisation (Maslow 1943). Less well known is the work of the Chilean economist Manfred Max-Neef who developed a broader, more universal way of thinking about needs in his study about *Human Scale Development* (Max-Neef 1991). He proposed a matrix of ontological needs (having, being, doing, participating) with nine axiological or value-based needs (Table 1).

He also suggested that needs can be met by *genuine satisfiers*, *pseudo-satisfiers*, and *false violators* (of others' needs). Indeed, he called the most extreme violators *destroyers*; they destroy the resources or abilities to satisfy the needs of recipients and/or others in the present and, potentially, the future (ibid.) — in other words, everything that isn't a genuine satisfier of needs can '*de-future*' (Fry 1999).

Designers have an established toolbox for looking at needs from several distinct points of view, such as ergonomics, usability, inclusive design, user-centred design (UCD), empathic design, and, more recently, social design and collaborative design (see e.g. Erlhoff & Marshall 2008). Less obvious is how we look at the needs of an entire city or our wider planetary needs, although the huge volume of literature on sustainable development gives extensive articulation to these issues. There are fresh thoughts on how we sustain our cities that give a re-framing of cities' needs. The first, from the perspective of sustainability and planning, is Janis Birkland's concept of *positive development*, development that would

> *expand the ecological base, meaning ecosystem goods and services, natural capital, biodiversity and habitats, ecological health and resilience and bio-security* (Birkland 2008, xi).

Table 1. Max-Neef's Human Development Scale and Fundamental Human Needs (Max-Neef 1991, 32–33).

Fundamental Human Needs	Being (qualities)	Having (things)	Doing (actions)	Interacting (settings)
subsistence	physical and mental health	food, shelter, work	feed, clothe, rest, work	living environment, social setting
protection	care, adaptability, autonomy	social security, health systems, work	co-operate, plan, take care of, help	social environment, dwelling
affection	respect, sense of humour, generosity, sensuality	friendships, family, relationships with nature	share, take care of, make love, express emotions	privacy, intimate spaces of togetherness
understanding	critical capacity, curiosity, intuition	literature, teachers, educational policies	analyse, study,meditate, investigate,	schools, families, universities, communities
participation	receptiveness, dedication, sense of humour	responsibilities, duties, work, rights	cooperate, dissent, express opinions	associations, parties, churches, neighbourhoods
leisure	imagination, tranquillity, spontaneity	games, parties, peace of mind	day-dream, remember, relax, have fun	landscapes, intimate spaces, places to be alone
creation	imagination, boldness, inventiveness, curiosity	abilities, skills, work, techniques	invent, build, design, work, compose, interpret	spaces for expression, workshops, audiences
identity	sense of belonging, self-esteem, consistency	language, religions, work, customs, values, norms	get to know oneself, grow, commit oneself	places one belongs to, everyday settings
freedom	autonomy, passion, self-esteem, open-mindedness	equal rights	dissent, choose, run risks, develop awareness	anywhere

The second, from a poly-disciplinary perspective, is Charles Landry's notion of city-making as an art, which invokes the humane dimensions in city development (Landry 2006). It seems that services that naturally combine many static, dynamic, and human-centred ingredients are perfectly poised to help *re-shape* cities, the lives of the inhabitants, and bio-regions.

Seeing the Dynamics: The City as a Space of Flows, a Space of Places

There is an urgent imperative to refresh our perspective as to what constitutes a city and how its human ecology – together with its biotic (living) and abiotic (non-living)

ecosystems (whose totality is expressed as natural capital) – is in dynamic balance or unbalance. Manuel Castells lucidly observed at the turn of the Millennium that "*space is the expression of society*" and "*space is the material support of time-sharing social practices*" (Castells 2000, 440–441). He distinguished between the *space of flows* and the *space of places*, seeing them as spatial logics that are often in a tension of structural schizophrenia. Space of flows is "*the material organisation of time-sharing social practices that work through flows*" (flows of capital, information, technology, social interaction, images, sounds, and symbols) (ibid., 442). It is constituted of three layers of material supports:

1. a circuit of electronic exchanges from micro-electronics to macro telephony and broadcast systems,
2. its nodes and hubs, and
3. the spatial organisation of the dominant, managerial elites.

Castells saw the space of flows as blurring the meaningful relationship between architecture and society, contrasting the architecture generated by the space of flows as different to that generated by the space of places – place being "*a locale whose form, function and meaning are self-contained within the boundaries of physical contiguity*" (Castells 2000, 453). The local logic of civil society is tied to the space of places, while the logic of the space of flows is driven by a global logic of international business. While Castells' ruminations conceal a convenient binary division, it is most appropriate to consider how the design of services, many of which operate within the space of flows, genuinely affect the space of places (and so the lives of the civic population). It seems essential, therefore, to invoke co-design as the complimentary approach to service design to ensure a re-democratisation of existing and new service provisions in the city – otherwise we get more business-as-usual, more of the same services by those who dominate the space of flows.

Spect-actors: Collaborative Services for Efficacious Resource Use and Happy Lives

Spect-actor is a concatenation of two words – spectator and actor. It is attributed to the Brazilian playwright and theatre director Augustus Boal and refers to a play where the actors and the spectators combine their creativity to complete the dialogue, actions, and narrative in real time (Paterson 2012). The actors have a framework, partly populated by a script, but it is only completed as the audience participates with their own impromptu "scripts." One could describe the outcome as a collective creative act. Conversion of a passive audience into active participants is part of the journey that service design has also embarked upon. As the terminology and practice of service design has evolved over the last decade, the requirement to go beyond simple *user-perspectives* in the design of services has been clearly demonstrated.

First generation service design agencies in the UK set up in the early 2000s, such as *Live|Work*, *Engine*, *Thinkpublic*, and *Participle*, have widened their remit from commercial and public service design to the development of platforms for social innova-

tion and social design. This trend is reflected in two projects initiated by the UK Design Council, called *Design of the times* (Dott) (Design Council 2012a; 2012b). The first was in the city of Newcastle in North East England, called *Dott07*, and the later project in the extreme South West, in the county of Cornwall (an area of special economic assistance under the Objective One programme in the European Union), called *Dott Cornwall*. Both projects applied co-design to the creation of new services. For example, *DASH* was a service to young people to reduce the incidence of sexually transmitted diseases and teenage pregnancy (Dott07) and local services were co-designed to revive the fortunes of one of the UK's oldest tin mining towns, Camborne (Dott Cornwall).

These projects are embedded within a wider UK government agenda to facilitate innovation at a community level, for example through NESTA's Public Services Lab projects (NESTA 2012). Many designers and design agencies are involved in these initiatives, including *thinkpublic* in its Barnet Council community coaches initiative (thinkpublic 2012), *Engine* in Kent County Council's *social innovation lab Kent, S.I.L.K.*, (Engine & Kent County Council 2012a; 2012b) and, more recently, various design inputs to the *Neighbourhood Challenge Initiative*.

There is a growing body of work around the idea of *collaborative services*. In France, *La Region 27e*, the twenty-seventh region (there are only 26 governmental departments) has brought designers, architects, and other *creatives* together to challenge innovation at the social level (La Region 27e 2012). Cipolla (2009, 233) talks about *relational services* which she defines as "*services because people are interacting to produce a commonly recognised benefit*" and "*relational because the interpersonal relations are an essential component of these solutions*."

This reminds us of the relevance of the work of Ivan Illich in the 1970s. His book *Tools for Conviviality* (2001) frames the services of friends, family, private companies, and government departments as *all* important in the health of individuals. In Illich's terms, *conviviality* embraced a vision of a society in which interpersonal dependence is affirmed. As governments across Europe are tightening their financial belts in order to meet fiscal regulations, and for example the Finnish government has had a recent reminder from the European Union to look at their deficit balance (Cord 2012), governments will need to foster new relationships with communities and citizens to maintain current service standards and, perhaps, significantly improve them. Municipalities who have to deliver local services would do well to invite designers to look at collaborative models of service. There is sufficient evidence from design practitioners and researchers to suggest that existing and near-trends that affect much of Europe, such as an aging population, the rise in long-term debilitating health conditions, demographic changes, immigration, racism, climate change, and economic decline require a step change in the way that social innovation is embraced by national, regional, and local government institutions (Meroni & Sangiorgi 2011, 119–200).

The mindset shift is to view all stakeholders as potential collaborators and actors. The citizens of any city are an amazing resource. In a recent workshop facilitated by the author[1]

[1] Muotiole Suomi: a series of five workshops organised by the Ministry of Economy and Employment and Hill & Knowleton strategic consultants. Dates and themes are: 16.5.2012 – Present situation of Finnish Design (Helsinki Design Pavilion); 12.6.2012 – Future visions for the year 2020 (weegee, Espoo); 19.6.2012 – Building blocks for national design strategy (weegee, Espoo); 21.8.2012 – Arctic perspective to the strategy and steps for implementation; and 5.9.2012 – Short term goals – steps for implementation.

as part of a series of five workshops to co-create a new strategy for Finnish design, one contributor created a new term *'Public-Private Citizen Partnerships (PPCP)'* to replace the existing *PPP* (Public-Private Partnerships). This places the citizen as an equal contributor. Perhaps co-designing services for the city is a means to convert passive consumers to active citizens and to encourage protective bureaucracies to adopt more open modes of collaboration. It would seem that designers have an opportunity to play a significant role in this socio-cultural transition.

Developing Platforms for Nurturing Innovative Co-designed Services

The adoption of *user-driven open innovation* is a feature of platforms that are trying to encourage innovation and enable smart cities and communities. The *European Network of Living Labs* (ENoLL 2012), with over 300 labs in Europe, is arguably one of the larger experiments in collectivising business and community-driven innovation, but the sheer diversity of approaches, ways of engagement, and activities can daunt would-be newcomers to adopt this system. This prompted suggestions for harmonising a shared reference framework, *the Harmonisation Cube*, around six cross cutting themes: *user involvement*, *service creation*, *infrastructure*, *governance*, *innovation*, and *methods and tools* (Mulder et al. 2008).

This suggests a level of complexity within the Living Labs concept that might mitigate the ease with which ideas are co-created, developed, and exploited for collective benefit. Certainly there are diverse experiences of user involvement in Living Labs as signified by the *domain design research landscape* which embraces User Content Creation (UCC), empathic design, participative design, User Centered Design (UCD), User Group Experience (UGE), User co-Creation (UcC), open innovation, User Experience (UX), and User Driven Innovation (UDI) (Salminen et al. 2011).

Four types of Living Labs were identified: B2B Testbeds, Usability Testbeds, Undercover Testbeds, and Co-creation Living Labs. The latter seems to suit the co-design or co-creating of services best since it involves the users in ideation and solution development and therefore the users are seen as value creators rather than just sources of knowledge.

A different strand of the collaborative innovation story, driven primarily by design research activities, is to be found in Milano Politechnico's projects including the *enabling platforms* proposed in the *Sustainable Everyday* project (Manzini & Jegou 2003) which continued later in the *EMUDE* and *Creative Communities* projects focusing on embedded innovation, social innovation, and collaborative innovation (Jegou & Manzini 2008). Many design concepts were brought to life by the application of scenario setting and storytelling. The most recent appraisal of the research work in Design for Services in Milan and elsewhere around the globe reveals four areas of interventions, presented in more detail in Table 2, to which key concepts are applied and emerging tools are deployed (Meroni & Sangiorgi 2011, 202):

- Designing interactions, relations and experiences,
- Designing interactions to shape systems and organisations,
- Exploring new collaborative service models, and
- Imagining future directions for service systems.

Table 2. A human-centred approach to Design for Services.

Areas of interventions	Key concepts	Emerging tools
Designing interactions, relations, and experiences	Co-experience Co-creation Empathic design	Design documentary Video blog Storytelling and directed storytelling Emotional map Film diary User diary Customer journey map
Designing interactions to shape systems and organisations	Design of interactions between: User and service interface Service staff and services system/organisation Service systems	Interaction design guidelines Visual service scripts Idea sketches Service blueprint Expressive service blueprint Desirability, viability, feasibility
Exploring new collaborative service models	Emphasis on co-creation Transformation and experimental approaches New service system configurations New media as enabling platforms	Self-report techniques (Myspace) Experience prototype Living Labs FASPE – fast service prototyping and stimulation for evaluation
Imagining future directions for service systems	Generate scenarios as stories Facilitate convergence Collective design thinking Building capacities towards community-centred design	Glimpses Story collection Video sketch Story board Service moodboard Micropanoramic System map Service breakdown

Coupled with Miettinen's list of approaches and tools (Miettinen 2009, 15–24), existing or prospective service designers have a fantastic toolbox to access. However, if we are concerned with the effects of service design on the near and far futures, we need to return to approaches that will help us identify problems or issues of strategic concern to the locality or city, the communities, and their bio-region. We also need to address the balance between the spatial logic of Castells' space of flows and space of places.

The New Localism: from De-futuring to Co-futuring

In co-designing existing or new services, we really need to decide what we wish to grow, nourish, and maintain as well as what we would like to diminish (i.e. where we would like to reduce the potential for design that harms). If we don't ask these questions, we continue with business as usual and that, on current evidence, sets us on a path of *de-futuring* – a term coined by Tony Fry to denote humanity's history of destroying its own future (Fry 1999). Almost a decade later Fry suggested that design

needed to urgently shift its purpose and ethics of practice to ensure *design futuring* (Fry 2008). The author suggests that *co-futuring* is a more appropriate term as it invites professionals and citizens to be involved in more participatory forms of design decision-making;

> *Co-designing "now" is about "co-futuring", to give positive directionality to the future and to proactively contribute to what happens next. Co-futuring requires what Alvin Toffler, in his 1970 polemical book Future Shock, called "social future assemblies", a new form of "anticipatory democracy".* (Fuad-Luke 2009a)

Co-futuring requires that designers themselves and their fellow co-designers (professionals, pro-ams, and citizens) consider the potential implications and impacts of their design solutions on ten key capitals (Figure 4) (Fuad-Luke 2009c, 6–17). This framework of capitals was expanded to 29 forms of capital, and named as the *Design Capitalia framework* (Fuad-Luke 2011) as a means to strategically and systematically think about existing, retrospective, and future design projects' impacts on diverse capitals.

The framework is currently being developed as an Open Source framework at Aalto University's School of Arts, Design and Architecture for launch, potentially, at the *Open Knowledge Festival* in Helsinki in September 2012.

Several Finnish co-futuring design experiments are currently in progress in Helsinki and its metropolitan area as well as in the city of Lahti, just one hour north of the capital. It is hoped that they will generate new levels of understanding in how

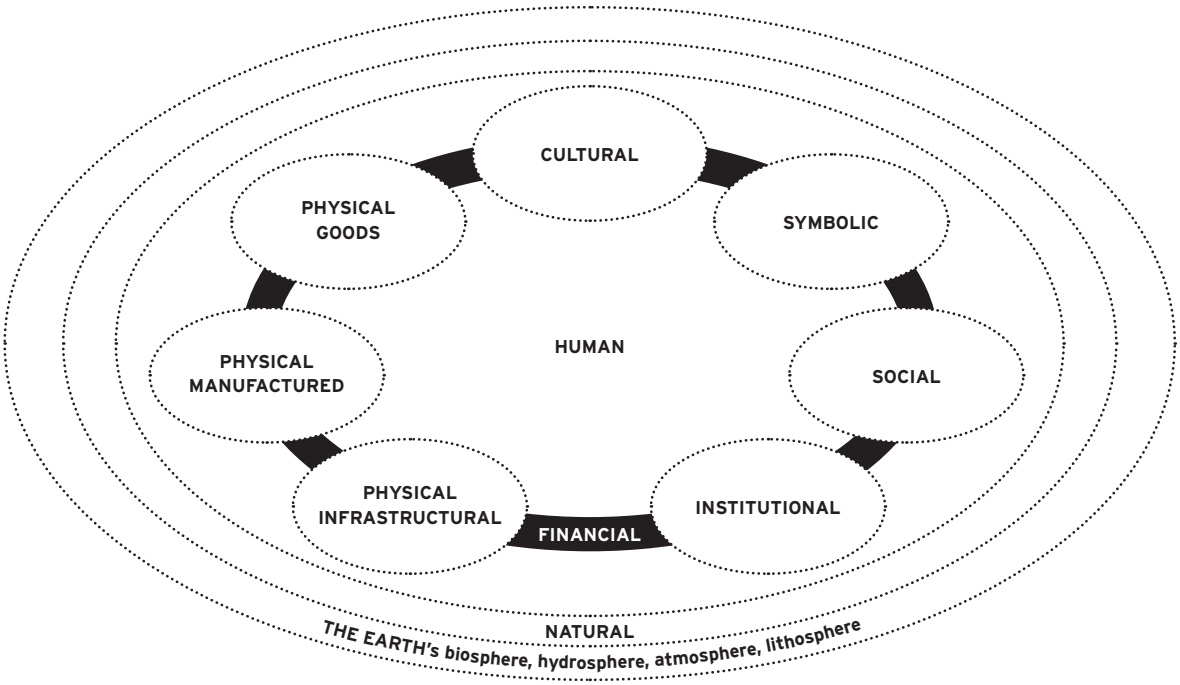

Figure 4. Ten capitals to consider when designing.

design can work in a broader societal agenda to deliver better lives, more wellbeing, and more positive impacts.

- *365wellbeing* is the largest of Aalto University's *Living+* programme for the World Design Capital 2012 in Helsinki. It involves twelve teaching and research master's level modules in four themes: service, care, suburb, and change working with a diverse group of public bodies, communities, and other stakeholders in projects focusing on care of the elderly, IT health services, life in the 1970s suburbs, and contentious societal issues like smoking. (Aalto University 2012)
- *Lahti, the city of design* — the author was a facilitator for three co-design workshops in October and November 2011 set up by Lahti Science and Business Park to develop a deeper understanding of the present and historical context of design in Lahti, the local and bio-regional context, the challenging issues for the city and its various designers and design communities, and to set a meta-design brief to inform how the city strategically embeds design in its future development. Among the outputs from the co-design workshops was a new mapping of the design actors and stakeholders with the citizens placed pivotally in the middle of the map (Figure 5). This has allowed the city to view its design potential with a fresh perspective.
- The Ideas Bank (working title) — this project emerged from the co-designed meta-design brief of Lahti from an early idea-storming session with various design stakeholders. It currently consists of four pilot projects that are testing the development of a platform which is underpinned by a three-way arrangement between the donors, developers, and funders of ideas with a focus on the beneficiaries of the (realised) ideas. The steering group for The Ideas Bank comprises Aalto University (the author and Katharina Moebus), Lahti Science and Business Park (Kaisa Souvilainen), Ari Kiuru (Kiuru Design) and Anne Hyvärinen (FutureLab at Lahti Design Institute, Lahti University of Applied Sciences). Pilots are on-going with the platform development in a parallel process. The expected launch date for the platform is late 2012 or early 2013.

Towards the Co-futured City

There is a wonderful window of opportunity to enjoy developing a new mutuality between professional designers (of all disciplines from graphic designers to service designers, architects, and planners) and citizen designers. Co-futuring demands greater participation and helps share the risks by democratising decision-making.

Today's information technology and ubiquitous mobile connectivity invite fresh ways of collaborating and open discourse that challenge the dominance of the space of flows by the management elites. Design is opening up (van Abel et al. 2011) and becoming more activist-orientated (Fuad-Luke 2009c; Jane 2011). In fact, *open design* is rapidly expanding from being an activity dominated by enthusiastic digital geeks to one where new visions of distributed and peer to peer production and consumption

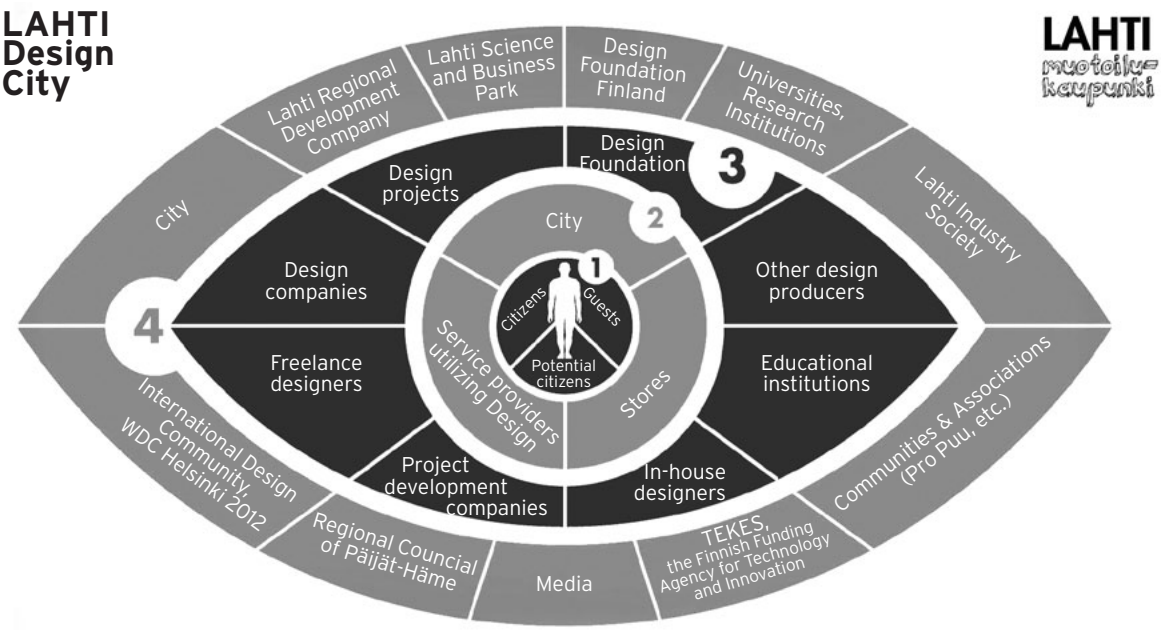

Figure 5. A new map of the city of Lahti 'design stakeholders' with the citizens firmly in the centre.

are actively being discussed and tested. People aren't necessarily waiting for municipalities, businesses, or communities to give them permission; Antonelli (2009) actually names "the People" as contemporary innovators in the design world.

Even *urban dream management* has entered the lexicon of co-futuring. Of the twenty or so creative disciplines co-ordinated by architect Hella Hernberg who made these urban dreams, only a handful called themselves designers (Hernberg 2012).

In short, cities are waking up to the creative potential of their own citizens. Saint-Etienne in the mid south of France is a prime example, calling itself a Creative City that embraces *Design for All*, the "Cite du Design" (Franc & Frances 2011; Jegou 2011) with an ambitious desire to reinvent itself with design as the driving force.

Helsinki's designation as current *ICSID World Design Capital 2012* (WDC 2012) with its motto "embedding design in life," its open design programme of summer events in a temporary pavilion, and even the emergence of an *Alternative Design Capital* organisation (ADC 2012), all signal that design dialogue is in rude health.

However, co-futuring — especially around service design — requires a new openness between municipalities, businesses, and communities. The combination of service design and co-designing with diverse actors, stakeholders, and communities offers genuine promise to co-future our cities.

Near-future Developments in Service Design

The futures of design-as-usual, co-design, open design, and service design are clearly intertwined. They are driven by many *horizons* rushing towards us. For the author, these horizons include restrictions in and movement of diverse *capitals* combined

with shifts in means of producing services and consuming them (see Table 3). In particular, there will be restrictions on some forms of capital (energy, water, minerals, civic fiscal budgets, biodiversity, and ecosystem health), increased movement of others (private financial capital), and a desire to grow other capitals (human, social, natural). As we lurch towards the future we are also trying to find new words to describe the economic shifts that these horizons are *already* causing.

Table 3. Some drivers likely to impact on the development of service design.

Restrictions in and movement of 'capitals:'	**Changes in service production and consumption:**
• Resource supply and security, especially future energy, water, and mineral supplies • Reductions in the civic fiscal budgets to provide city and public services • Increases in the mobility of commercial capital (moving to new global hot spots of profitability) leaving unemployment in their wake • Increased warming of the planet's atmosphere and more incidents of extreme weather • The acceleration of biodiversity losses, reductions in ecosystem health • Increasing societal value seen in growing human and social capital, while balancing financial and natural capitals.	• The shift from mass services to distributed, personalised, or customised services – 'the long tail' becomes a mass market? • From big global corporations to diverse SMEs and microenterprises, including Peer to Peer, P2P services • From linear to cyclic life cycle services • From oil-based materials and energy to renewable sources • From eco-inefficient to socio-eco-effective services • From product-centric to result-centric services • From product ownership to services for sharing • From long to short supply chains • From wasteful to zero waste services

Alongside the established political descriptors of the economy, there are many new terms to describe alternative and emerging economies (Table 4). Service designers will be happy to see that the *service economy* ranks first in a recent listing of 50 most popular Internet searches for adjectives coupled with the word 'economy' followed by 'national,' social,' 'open,' and 'information'. This presents a huge challenge and opportunity for service design, and raises some key questions:

How does service design

- contribute to resilient national economies that can be sustained over time?
- ensure greater social participation leading to solutions which generate more social equity and equality?
- encourage greater open innovation bringing together municipalities, cities, businesses, professionals, and communities?
- define and utilise information with emergent digital and other technologies to meet peoples' real service needs?
- balance global with local economic needs?
- create new market sectors (commercial, public, and social)?
- ensure that existing and new services are more eco- and socio-effective?

Table 4. Prefixes or adjectives applied to 'economy.'

Alternative & Emergent orientation				Dominant & Political orientation			
Non-monetary	**Un-measured or unofficial**	**Environmental technology orientated**	**Dynamics**	**Type**	**Sector**	**Political orientation**	**Geographical & spatial**
12 Money-free 14 Time-based 25 Gift 50 Barter	16 Black 32 Grey 42 Informal	11 Green 27 Sustainable 28 Bio- 31 Clean Tech 33 Renewable energy 35 Eco- 37 Low-carbon 49 Lithium	4 Open 21 Emerging 22 Alternative 30 Transition 34 Distributed	8 Market 29 Mixed 38 Dual 41 Palace (historical use) 43 Conceptual 46 Subsistence 47 Post-scarcity 48 Hydrocarbon	1 Service 5 Information 10 Digital 15 FIRE (Finance Insurance & Real Estate) 17 Design 19 Industrial 20 Learning 23 Knowledge 26 Creative	3 Social 9 Political 14 Social market 23 Planned 36 Stable 39 Self-managed (de-centralised) 40 State directed 44 Socialist market 45 Unsustainable	2 National 6 Global 7 Local 18 Regional Distributed

It seems there is a window of opportunity to explore how open, local, co-designed services involving Public-Private Citizen Partnerships (PPCPs) could provide a radical way forward. However, attitudes have to significantly shift to create a culture of mutuality between professionals and citizens, where everyone works together to deal with the huge challenges and levels of complexity. Pursuing self-interest alone will not work. Parallel to this attitude shift, it is necessary that designers, design educators, business people, civil servants, and citizens receive training which clearly demonstrates the tangible benefits of creating and designing services together. Forward looking cities can create the right cultural climate by providing facilities and spaces to encourage synergies between these actors and stakeholders.

Living Labs, Creative Communities, and Social Innovation Networks are signalling new possibilities, but service design needs local spaces (real and virtual) where the actors and stakeholders can feel comfortable coming together. These spaces must welcome all stakeholders, especially entrepreneurs, civil servants, and citizen designers, in a genuinely democratic way. The collaborative environments and ways of co-designing new services or re-designing existing services must be exciting, passionate, flexible, and adaptable because recent history teaches us that technological, social, and political change happens very quickly. We are also witnessing rapid ecological change, so service design of the near future needs an ecosystem approach informing its core philosophy. All future services need to build in positive and negative feedback loops to prevent potentially damaging exponential growth.

Service design is clearly entering a new phase of evolution. If you contribute or are part of the service design economy, take a deep breath as the next decade could be an enjoyable but turbulent ride.

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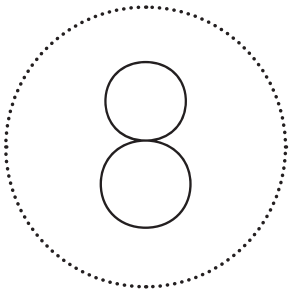
PART III:
Futures of Service Design



Trends and Drivers Affecting Service Design

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What Are Trends and Drivers?

A trend is a flow of transformations that cannot be changed very easily. A current trend is a push of path-dependence from history, which we believe will continue in the future. For example, one of the most obvious large social trends in the Western world is the ageing of the population. Thus a trend is something that can be proven to exist based on statistics or collective agreement. There are several globally affecting trends that create our knowledge about the probable future. These are usually called megatrends where the word 'mega' refers to something that should affect everybody and everything. The actual concept of megatrend was invented by John Naisbitt (1984).

> *Even though megatrends say something about what we know about the future, it is not certain how society, companies or any of us will react to these forces. [...] Megatrends have different meanings for different companies, organisations and individuals, because we react, consciously or not, differently to trends such as globalisation (vs. anti-globalisation movements), individualisation (vs. new communities) and the increasing pace of change (vs. the slow movement)* (Larsen 2006).

Although different authors describe megatrends somewhat differently, there are two which are always listed: globalisation and rapid technological development. The other megatrends often included in the contemporary lists are, for example, sociocultural change, ethical-ecological change, demographic changes, increase of individualisation, climate changes and environmental impacts, energy crises, increasing health and wellbeing, and new political power structures (cf. Cornish 2005; National Intelligence Council 2008; Z_punkt 2012; Keys & Malnight 2011). The lists of trends addressed to guide companies' strategic development also describe the issues of urbanisation, mobility of knowledge, goods and people, increase of prosperity, acceleration of change, commercialisation, and networking (Watson 2010; Larsen 2006).

All trends include drivers – the agents or factors driving a change forward. The two basic types of drivers in social systems are pulling and pushing drivers. A pulling driver refers to broad grassroot-level demand for something (Kuosa 2010). A pushing driver is, for instance, a political decision to put something forward. An example is the American space program set forth by President Kennedy: "*we will put a man on the moon and return him home safely within a decade.*" (Coates 2009). Drivers described in this article are mainly pulling drivers, because they base on the descriptions of interviewees on how they feel something that happens around them forces designers to make changes in the (service) design field.

As the whole world is changing quite rapidly, so does the field of service design. The Finnish and Estonian research interviews (ServiceD 2011) help us identify specific trends, drivers, and other change factors that pull service design into change. The respondents were asked to describe the most important factors that will bring along changes in the field of design (by 2020). As there were only minor differences between Estonian and Finnish respondents in that respect, this chapter presents the results of all the interviewees' answers: their understanding of the most influencial trends and an analysis of what kind of changes and challenges do these trends present to (service) designers.

Three Main Trends Towards 2020

The main (mega)trends the interviewees described can be divided under the following three keywords: technology, globalisation, and changing values. All these include several drivers that impact each other. They even push each other's development and, therefore, have a complex impact on the development of service design.

The following subchapters give an overview of 1) what these trends are about, 2) how they are seen through the eyes of the respondents, and 3) what kind of impacts they have on designers' work or the design field in general.

Technological Development

Technological development — especially information technology, digitalisation, and ubiquitous technologies but also biotechnology, nano-technology, and energy technologies (Larsen 2006) — is the megatrend that all respondents described as the next decade's most important change factor.

Computers and the Internet have already changed the work processes of designers and this trend will continue. Digitalisation is a very important aspect linked to everything that runs with electricity — it has a particularly close link with ubiquitous technology. ICT becomes involved in all physical space, web space, and media.

Basically ubiquitous computing refers to the process where everything in our environment becomes immaterial, wireless, and digitised and we get more and more sensors, surveillance technologies, computing power, and hidden intelligence in the materials and systems that surround us. It also refers to the emergence of virtual or augmented reality, artificial intelligence, and intelligent robotics.

This all indicates huge challenges and potential for future developments. On one hand, the development of information technology and technological convergence change the content of design work — they bring new activities to the field:

> *Digitalisation and ubicomputing (ubicom) are bringing new professions to the design field by 2020.* [38]

> *New technologies are creating so many new possibilities that comprehensive understanding is needed to create new services for the new platforms.* [52]

> *Augmented reality design is coming and it requires a lot of new types of thinking in design work.* [38]

> *The most important driver of change by 2020 [is] technological convergence.* [42].

On the other hand, the interviewees highlighted that continuous technological development will greatly alter the interaction and communication models among designers and customers. The respondents see that increasing interactivity, changes in media, and the increasing importance of social media are relevant aspects in planning one's work in the future:

Technology surely has a stronger impact through various service touchpoints and interaction channels. [46]

What I think is that maybe old media will persist. And a whole lot of new ones will emerge. As for service design, I believe it will undergo a total change within the next three years. The reason is quite simple. As I watch my own communication and that of my sons, it is totally different. It is very important for me, even in personal relations, that I would rather meet a person. I would rather phone them. Mails are used for more official communication. But for them Facebook etc. are more important. You can learn everything about a person there: who his friends are, to look at pictures etc. Our personality has been diluted. This is a situation where people are not leaving the society, but turn themselves off the electronic networks. You could be expelled as well, if you act weird. On-line communication reaches some level, when people will never meet in person. [...] in the modern communication, you even do not have the voice. [16]

A third aspect that relates to technology development and will have a huge impact on designers' work concerns the emergence of new materials:

New materials coming up. It will depend on carbon. We should get rid of that oil stuff as soon as possible. Carbon could be tied to other materials, they already had a carbon car spring at the Hannover fair in Germany. Carbon itself is terribly fragile, but they will mix it with organic textile.... I believe that this will mean in principle a huge change in product design materials. Another aspect is that these things [showing iPhone] must become flexible. I have broken some four iPhones at home, in that respect it is anything than perfect. It should not break. If it starts bending, then is the next product design. [6]

New materials, new technologies: bionics, nanotechnology. They bring new dimensions and new opportunities. [13]

As for materials, some are definitely the type you cannot talk about very freely, since people are very closed or limited in that regard, but I believe that a lot of the laws of physics have not yet been discovered today and the moving of physical object in general would change [...]. I am sure that even within my lifetime production will no longer matter and we shall have sort of boxes, well not at home, but at work or in public places and if something breaks down – some physical object (if we still have them) you just push a button and take the new one out and replace it. It is not about teleportation in the sense of physical movement, but ones and zeros would move – bits and bytes. [21]

In addition to new materials and technologies, the respondents stress that the world is moving towards immaterialisation, which refers to the emergence of products, services, and items that carry little or no material at all. It is again one side of digitalisation and technological development, and it may lead to the emergence of virtual or augmented realities which, in turn, present new challenges to designers.

Future in design is absolutely moving towards video industry. [...] meaning that the USA and Japan will overwhelm us with a flood where information would be relayed via mov-

ing pictures rather than readable materials. In other words they believe that future will bring a lot of video everywhere and all the time in all imaginable environments. No specific portal you would visit, instead a lot of service providers will communicate with you via videos. Instead of e-mails they send you some actor reading the text so that you would not have to read it yourself. The idea is somewhat similar to what sci-fi authors and movies have been promising – sort of holograms telling you everything. [4]

The need for service designers might increase through technological development. In 2020s, the field has most probably moved further than mere 3D in the interaction design between the audience and the movie. Ambience design and perhaps even augmented reality might enter the film industry to moving seats, scents, and so forth. In the future we might also see augmented reality and touch-interaction as parts of moviemaking. Could the movies of the future be living projects that adapt according to the needs and wants of the audience and audience interaction? Such movie projects would be led by some sort of a service designer. [49]

Virtuality will be a key trend; e.g. making movies without actors. Service development is cheaper using virtuality as long as it is possible to analyse how things (potential services) work. [35]

The technological development speeds up our lifstyles and accelerates all kind of processes. This development is well described by an interviewee:

If you take a look at the technological development of the world, it has been, well, exponential. It is a continuously accelerating graph. And I explain it that way – it is based on the same processor, the development of the processor. Since the moment the processor was invented, the development started to accelerate exponentially. [...] the predictable horizon, where you can predict the future, is coming ever nearer. If you predicted 100 years ago, what would happen in 20 or 50 years, the difference was relatively small. But now I would not predict even ten years' developments. [3]

As everything is faster, including lifestyle, design processes are accelerated as well. This makes the creative process very fast; there will be less or no time for any control or testing. This also influences the expectations placed on the designer and his know-how. When talking about changes in production processes, caused in particular by the development of 3D technologies and rapid prototyping and manufacturing, it is easy to state that the winners will be the designers who are quickest to prototype their products and services.

A major issue is the need to intensify the design process(es). Actors who are quickest to prototype will be met with success. [42]

This kind of rapid prototyping and intensified design processes also translates into rapid manufacturing – the product implementation process is decreasing in importance. This should also lessen the need for mass production and provide designers new possibilities:

The rapid development of 3D printing and all these technologies, this shows that we shall pretty soon see the disappearance of large scale, mass production. Maybe not in case of the initial product, but spare parts and all that will work the way that we shall produce them on our own. And then the know-how will be especially valuable. Then the draft solution by myself, the designer, will be moving, it will be rented. No longer the product. Obviously, today the power belongs to the producers, but it will move to the creators. This means that the large producers' power will decline, which is good, this means that there will be less unwanted purchases. And the designer, the creator, will have more power. [21]

The ubiquitous (r)evolution will change many things in industrial design, but also in service design. Table 1 presents the *emerging*, *transforming*, and *anywhere* phases of this development. In other words, the table shows that we are gradually moving towards the ubiquitous society: the change will not be an all-or-nothing revolution. Therefore, the functions of service design appear different in the three phases. For example, in the emerging phase services are planned for mass market, in the transforming phase they are planned for segmented customer groups, and finally, in the anywhere phase, services are planned and tailored for persons.

Table 1. Three stages of "Anywhere" aspects (Green 2010, 47) (source: Yankee Group).

	Emerging	**Transforming**	**Anywhere**
Connectivity	Rare	Frequent	Ubiquitous
Connected devices	One or two	Several	Many
Media	Physical	Mixed physical and digital	Digital
News	Scheduled	Mixed scheduled and on-demand	On-demand
Payments	Cash	Electronic/cash	Mobile payments
Services	Mass market	Segmented	Personal
Social interactions beyond immediate family and neighbors	Rare	Frequent	Constant

Globalisation

Second megatrend that all the respondents mentioned was globalisation. It refers to the process where the whole world is becoming more and more interconnected, homogenous, and "flat" in a sense that distance and time lose their meaning. The dimensions of globalisation are economy and flow of capital, technological development, travelling and logistics, value shift, global media, politics, and legislation. In other words, globalisation is one of the true megatrends that constantly shape the world. The interviewees referred to two different aspects of globalisation. Firstly,

both Finnish and Estonian respondents indicated the 'relocalisation' of design due to the movement of production. This trend was interpreted as a negative one:

> *Globalisation is of course the biggest driving force. When manufacturing leaves a country, design follows it. This forces new models to production and planning.* [38]

> *Then it is negative that specific design fields, say new ideas and approaches will lead to close cooperation with the producer. The producers are presently clearly moving, they already have moved, to Asia. And we are already noticing that the designers are actually moving after them. Large enterprises usually are the example and while Samsung had its design department in London and many European products naturally had all the time in London, then from America and Europe many design departments have already moved there – to production.* [21]

On the other hand, globalisation was interpreted positively or challenging, especially in terms of expanding markets opening new possibilities for designers:

> *Positive is that we shall become the part of a large, worldwide design family. Maybe in the first stage part of the European design family and the enterprises will find it increasingly easy to find a designer from Europe or from Estonia. This is positive – the market is increasing.* [21]

> *Big, international operators will have their offices also in Finland – on the other hand, there will be small, local actors as well. [...] The whole design field will change, and an important issue affecting this change is the balance between globality and locality of the actor(s).* [35]

Globalisation includes eight key forces that require attention from service design professionals (Gratton 2011):

1. 24/7 time activity of the global world,
2. The emerging economies, the BRICSA[1] countries,
3. China's and India's decades of growth,
4. Frugal innovation,
5. The global educational powerhouses,
6. The world becomes urban,
7. Continued bubbles and crashes, and
8. The regional underclass emerge.

For service design, these forces mean that 1) planned service designs must adjust to 24/7 activity, 2) the BRICSA countries will dominate global markets and there is strong demand for novelties, products, and services, 3) China and India will become

[1] Brazil, Russia, India, China, and South Africa.

industrial superpowers and consumption markets with strong growth rates, 4) the frugal innovation model must be taken seriously in Europe and new service designs must be adjusted to the frugal service innovation, service design, and associated models, 5) there will be increasing competition in the global employment markets because of global educational powerhouses, 6) customers become urban customers – this fact needs more attention in customer-driven innovation processes, 7) economic cycles are faster than before; there will be no golden ages but short golden times, and 8) the consumption power of people is low in certain regions and thus the pricing of products and cost structures require more attention.

Changing Values

The third identified megatrend is closely related to the megatrends of technological development and globalisation. *Changing values* refer to slow global socio-cultural change from traditional values, collectivism, and religion towards individualism, liberal values, experience orientation, and secularism. Individualisation is a global phenomenon. From the service designers' perspective, individualisation is visible in the gradual dissolution of traditional segments, as customers are increasingly expecing individual and unique products and services:

> *Things should be more personal. The "Me" has to make a difference, to have an impact on an individual level. Things have to be different for me, created for me alone, because "I" recognise what is "for me." The importance of emotions has to be increased as regards the results of all processes; it is of paramount importance to understand the extent of emotions' role in human decision-making and operation. Generic design might fall to the background.* [34]

> *Currently we think things through more and more via the individual user/customer, not so much through target groups or the company itself. This development will become increasingly intense.* [44]

The respondents mentioned the emergence of green thinking and sustainability as a very important value to be followed. The environmental aspects were especially highlighted by Estonian interviewees:

> *The world will change through the people and the man will believe that he becomes more spiritual. For example, in ten years people cannot behave so ignorantly towards the environment. There will be a new relationship with nature, chemistry will be "out" etc.* [13]

Environmental responsibility will increase its importance in designers' work as clients and consumers want more and more products and services that are sustainable and in harmony with nature. Some respondents also stated that individuals themselves become more harmonious, more aware of their part in the nature, more spiritual, and the "world of things" becomes less important.

> *There is another trend, somewhat semi-mystical, but the world is very clearly turning inward – into the individual itself. All the external, physical, is becoming less important.*

Much less important than today. This is already apparent. And this is, how to say it, so right and irreversible a path that this will definitely change a lot of things. And then it will all fit in place — ethics and everything. The internal world is incomparably richer than the external one. Unfortunately only few people know or believe it now. [21]

These kinds of changes in values push people from product-oriented thinking towards service-oriented thinking where the role of physical things is much smaller than today and where the quality of services determines customer satisfaction. The changing values, coupled with technological development, will continuosly drive the changes in people's needs. The respondents noted that the production of immaterial things — such as services — increases and these will create value for people. Consumers' needs will also change because of environmental values arise. The interviewees emphasised that challenges related to creating a living environment that functions better and takes sustainability and related issues into consideration are increasingly important for people. Sense of community and co-design are growing trends that drive several changes in designers' work. Designers are challenged to correspond freely to "personal/individual" and "people's real needs":

People will be less interested in equipments or channels, and more on how to get the service or knowledge they need. Everything in production is becoming more end user centred. Consumer selects services from a cloud of services. iPad is an example of forthcoming tools that are used for cloud services. [38]

As people become more interested in how to get personalised and "easy to use" services of high quality, the convergence of different design fields and other competence areas is inevitable. Especially Finnish interviewees pointed out that the increasing importance of customer viewpoints in design processes leads to comprehensive and less silo-like thinking.

Change is born out of breaking down the barriers between the different fields of design as well as between design and other fields of expertise. In the future, there is no division in service development that follows the curricular borders of academic institutions. In working life, whole processes are planned from the customer viewpoint and the created service incorporates all the needed fields of competence. The value of service design is measured by the end result, by the created service per se. [39]

What's needed is the ability to integrate various elements of a service to each other, the ability to integrate information systems to each other in order to streamline their usability and to advance their compatibility. Where information systems are concerned, this is a 'common mantra' nowadays. Service integration means taking multiple issues simultaneously into consideration; this means that, for example architectural and multisensory design viewpoints have to be taken into account at the same time. In a sense, the integration of service elements is a form of art. [33]

In addition to the abovementioned aspects, individualisation and technological development challenge designers, existing design processes, and design marketing. The

trend of user involvement is taking a step forward: it has enabled end-users to play a role in the design of products and services or even to create them on their own. We now discuss *prosumers* who take part in the production of their own services in cooperation with service providers. This theme includes the idea of customer-driven innovation where end-users take part in product and service development and innovation activities.

In the research interviews, the themes of personal customisation, prosumerism, and co-design were explained in terms of one being a developer of the services according to personal needs and, on the other hand, in greater involvement in design development processes.

> *Computer-assisted individualisation brings about huge changes to the world of design as well as to the overall marketplace. The customisation of products and services blurs the division between products and services even further. Prosumerism and related viewpoints pose new kind of problems for designers as well as professional service developers.* [33]

> *People are increasingly interested in "taking care of their own sphere of services," and therefore different systems and "service products" need to be developed (designed) to let people take care of (choose and manage) their own (and individualised) services.* [41]

As regards marketing, digitalisation has made it much easier to reach consumers globally. Individualisation also accelerates the role of marketing because consumers demand individually tailored products and services. The interviewees also presumed changes towards more individualised branding and marketing.

> *The future of marketing communication and brand management revolves around the customer experience. For example, the customer experience about a digital service is formed — in addition to products of the digital world — from service provider's interaction with the customer and the whole environment and setting where the service is used.* [50]

> *Web pages die in eight years and we will see direct services marketing to people — whether they want it or not. Thus, urban planners should define the limits to direct marketing — what are the responsibilities, what can be seen, how much can be transmitted in an hour, how car drivers can be interrupted?* [38]

These kinds of changes indicate a new type of digital divide between different population groups.

> *Prior to 2020 we will start to get 200 advertisements of restaurants once we request information about nearby restaurants. And as people are identified from their walking style on the street, we will get plenty of direct marketing anyways. Hence, we will see 'iFolio' services, which filter all spam, noise and let you get relevant knowledge on time and walk anonymously. Rich will be able to walk freely, poor will be interfered all the time, unfortunately.* [38]

Value changes are also taking a form of socio-cultural microtrends. There are some microtrends that require attention (Gratton 2011) and service designs must be carefully planned in relation to these microtrends:

1. Families become rearranged.
2. The rise of reflexivity.
3. The role of powerful women.
4. The balanced man (money vs. family time).
5. Growing distrust on institutions.
6. The decline of happiness.
7. Passive leisure increases.

Focused Trends of Innovation – Focus on Service Innovations

Collecting and analysing affecting trends is often a starting point for other foresight analyses. It is important to identify the main trends prior to the use of more sophisticated foresight analysis methods because trends show the path dependences within the domain and therefore describe the overall future landscape of the business.

As already mentioned, the focus of this article is on the business of service design. The development of service design is closely connected to service economy and service innovations. Therefore, this section pays special attention to some key trends regarding innovation, especially service innovation. First we shall discuss the findings of *Wired* (Goetz 2012). Eight experts of innovation research presented seven rules which help us spot the future through identifying the trends, technologies, and ideas that change the world:

1. Look at cross-pollinations. Cross-pollination can be potent enough to generate entirely new disciplines.
2. Surf the exponentials. Exponentials, it turns out, are everywhere. Just choose one, and take a ride.
3. Favor liberators. For example, some liberators recognise an artificial scarcity and move to elimate it by creating access to goods. Secondly, some are turning scarcity into plenty. These liberators are using the advent of powerful software to put fallow infrasructure to work.
4. Give points for audacity. Our times call for more than mere incrementalism. Willingness to take a chance and be early is what keeps the world moving.
5. Bank on openness, not closeness. True openness requires trust and that's not available as a plug-in.
6. Demand deep design. Excellent design is an essential issue for success in local and global markets. Clear, elegant form and design are worth of investment.
7. Spend time with time wasters. Where there is waste, there is opportunity. Good ideas and inventions take time. If you do not have enough time for reflection, you are not finding good ideas for agile implementation.

These seven rules for spotting the opportunities of the future are important background information for service design professionals. Professionals working with service designs and architectures need to understand the basic rules of innovation management. These rules encourage service designers to think big – not only to make tiny improvements. Sometimes tiny improvements are enough, but in many cases radical new ideas are needed for successful results.

What Next?

The research revealed that design communities both in Estonia and Finland are quite unanimous where the means and direction of change in their domain are concerned. Drawing on the conclusions of the abovepresented analysis, it seems that the most relevant trends designers have to continously monitor are technological development, globalisation, and changing values. These trends bring along a lot of changes to designers' work and to their roles in the economy; the trends influence the future products and services, they change the way designers work, and they also give rise to new areas of design work that are not even imaginable today. Globalisation is a trend that brings both threats and challenges to the design market – its major impact is related to the division of market shares. Will designers go to China or Chinese designers conquer the design world? These are a few questions European designers have to solve within the next ten years.

At least we can say that educational super houses will change the labour markets of designers in many ways. One thing is clear: designers have to become more and more flexible. They have to become "T-people" as Tim Brown of IDEO has described:

> *[T]he vertical shaft of the "T" represents the depth of expertise/skill that a person exhibits, while the crossbar of the "T" represents the amount they are willing and able to collaborate. People who are T-shaped are well-rounded and versatile. They are better able to contribute their ideas to a discussion and are able to take on a variety of roles.* (Wheeler 2010)

We might say that Estonian and Finnish designers are more or less aware of what competence needs they have to prepare for.

What does all this mean to future design education? The educational system has problems to fully realise the potential of role-based work "as we are caught in a web that pays and promotes people based on such criteria as degrees, years of experience, time in the current position, and so forth. T-shaped people, free to take on different roles as work changes, are far more valuable than those trapped in rigid silos of scope and responsibility." (ibid.)

The world and therefore also the design fields are in the middle of accelerating changes. This places great pressure on educators. Hence, the education of educators should be likewise developed. In other words, design educators have a great urgent puzzle to solve.

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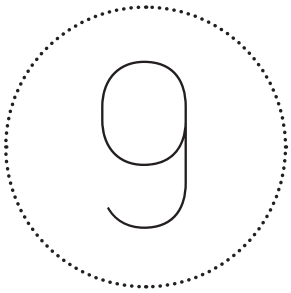

Digital Evolution – From Information Society to Ubiquitous Society

Leo Westerlund
Jari Kaivo-oja

Digital is the means, not the end. Technology sometimes obscures this ultimate truth [...].
– Ahmed & Olander (2012, 148.)

Introduction

This article describes an on-going transformation that is inherent to the development of our technologies and tries to shed light on the underlying social and societal changes that a progression towards and the emergence of ubiquitous society entail. Special attention is given to the implications this shift has on the design of services.

Generally speaking, the cyber infrastructure of future service economy will base on ubiquitous technologies. Thinking on information systems has tended to conflate data, information, and knowledge. Intelligent agents convert data into information and thence into knowledge through a two-step filtering process. Human agents, however, have finite brains and intelligence, often encountering more data and information than they can process or store. Digital and ubiquitous technologies as well as new artificial intelligence (AI) innovations will help human agents in these filtering processes.

Albeit ubiquitous computing and related terminology are mentioned and described quite often in public media, popular culture, and the academia, even basic concepts and terms have remained unclear to many and in-depth discussions on the topic are few and far between. This is the case, at least in part, because the terminology has not solidified. In fact, it seems like every other author is keen to introduce yet another term to describe the futures of technology, work, or society in general. Hence it is appropriate to define and describe related terminology and concepts. All in all, the language game surrounding futures technology and society plays a surprisingly big role in the direction technological development takes.

Much of the vagueness and ambiguity surrounding essential concepts is due to the fact that the terms used to describe different steps in the digital evolution, such as *information society*, *knowledge society,* and *ubiquitous society*, do not form a chronological continuity, but they more or less describe different and (at least in the future) co-existing layers of technological, communicative, and societal development.

In short, *information society* refers to the increased and increasing importance of information technologies in our societies. On one hand, *knowledge society* refers to the essential need for knowledge to operate (successfully) in the world of immense data and information and, on the other hand, to the idea that there are multiple ways of knowing, for example, in the form of different contexts, languages, and cultures.

Finally, *ubiquitous society* refers to the societal change that the maturity of the two "previous steps" of digital evolution entail; the abundance of information about the world and people around us, the possibilities of creating new knowledge from the information regarding the connections between objects, locations, and people, and the implications such free flowing data about everything and everybody have on our privacy, security, and freedom. In the ubiquitous society data, information, and knowledge are everywhere. Services are also available regardless of location. In addition, the borderlines between virtual reality and the physical world are vague or almost non-existent.

It is of great importance to understand and accept that we already live in the information society and that ubiquitous computing is a part of our futures. This article puts forth the idea of knowledge society as the factor that *defines whether our future societies turn out to resemble utopias rather than panoptical, corporatocratic dystopias*. In other words, the knowledge society can by no means be considered as a prerequisite for the ubiquitous society, although it most definitely can be seen as a necessary step in creating a ubiquitous future worth living in.

Providing a conceptual and terminological framework offers many possibilities to discuss the social and societal dimensions of technological development; after all, *the move towards ubiquitous computing presents merely a logical step in a technological sense, but a huge shift where the structure and cohesion of our societies are concerned*. For example, the conventional concepts of nation states and markets will be re-defined in the ubiquitous society.

This article argues that our ubiquitous futures need to be designed — not merely engineered — to ensure freedom, privacy, and (digital) security. Further, this article provides insight into the different domains of existence, the *multiverse*, to underline how the limitations of space, time, and matter change when moving from one domain to another and how this can be taken into consideration in creating and designing services. Finally, this article urges (service) designers to take an active role in the creation of our ubiquitous tomorrow. Ideas such as *co-creation*, *design activism*, and *design democratisation* portray potential futures where design can act as a driver of technological development and societal progress.

The authors consider this article a success if it 1) sparks genuine interest in at least a single designer to affect the changes technological progress and development have on our freedom, privacy, and (sense of) security, 2) acts as a wake up call for the "technologically religious" about the importance of design expertise in the creation of our futures, or 3) manages to inspire someone else to achieve either of the previous goals.

Language Game and Term Considerations

The on-going societal transformation takes multiple forms. Different aspects of this development have been given a multitude of names, depending on the viewpoint and focus of attention; *information society* (see e.g. Machlup 1962; Porat 1977), *knowledge society* (see e.g. Stehr 2002), *service society* (see Malaska 2003; Kuosa & Koskinen 2012), *super-industrial society* (Toffler 1970), *post-industrial society* (see Touraine 1971; Bell 1974), *network society* (see Castells 2000), *participatory economy* (see Hahnel 2005), *telematic society*[1] (see Nora & Minc 1981), and *ubiquitous society* (see Greenfield 2006; Stappers 2006) have been used, alongside an array of other more or less descriptive key words, to highlight the ways in which our societies have changed and continue to change. Albeit each of these concepts describes a slightly different sphere of the society or a different point along a chronological line of development, the terms are definitely not mutually exclusive.

Discussing the technological and business aspects of this development, we are faced with yet another array of concepts: *everyware* (Greenfield 2006), *anywhere*

[1] http://en.wikipedia.org/wiki/Telematics

revolution (Green 2010), *Web 1.0, Web 2.0* (see e.g. O'Reilly 2009; Gehl 2011), *Web 3.0* (see Antoniou & van Harmelen 2008), *Web 4.0* (see e.g. Kiehne 2012), *pervasive computing* (see Hansmann et al. 2004), *ambient intelligence* (see Weber et al. 2005), *Semantic Web* (see e.g. Berners-Lee et al. 2001), and *ubiquitous computing* (see e.g. Weiser 1991) belong to the relevant vocabulary. Even further, discussing the objects of the ubiquitous world brings forth another list of terms: *the Internet of Things* (see Ashton 2009), *things that think*,[2] *computer haptics* (see e.g. Srinivasan & Basdogan 1997), and *physical computing* (see O'Sullivan & Igoe 2004), to name but a few.

Ronzani (2007) has done interesting research into the usage of the terms 'ubiquitous computing,' 'pervasive computing,' and 'ambient intelligence' in mass media. His study "suggests that by and large the three concepts are described by the same attributes." (ibid., 9)

In general, we claim that the shift towards ubiquitous computing and society requires some sort of a language game. According to Wittgenstein, the world consists entirely of facts (see Wittgenstein, Tractatus 1.1). Secondly, human beings, in general, are aware of the facts by virtue of our mental representations or thoughts which are most fruitfully understood as picturing the way things are (see Wittgenstein, Tractatus 2.1). Thirdly, these human thoughts are, in turn, expressed in propositions whose form indicates the position of these facts within the nature of reality as a whole and whose content presents the truth-conditions under which they correspond to that reality (see Wittgenstein, Tractatus 4).

Everything that is true – that is all the facts that constitute the world – can in principle be expressed by atomic sentences.[3] We can imagine a comprehensive list of all the true sentences. They would picture all of the facts there are, and this would be an adequate representation of the world as a whole. Are we able to create a functioning language game regarding the ubiquitous society? There are vital needs to discuss the key concepts of the ubiquitous (r)evolution. We can expect that the most successful innovators are also able to play the language game.

Most of the abovementioned terms and their definitions escape attempts to tie them to a specific area of human activity or to a point in time. In fact, it is easy to say that all the terms describing the conditions and qualities of the contemporary or future societies are used in a vague and over-lapping way, often synonymously. Hence it is wise to decide which terms to use, and to define the used terms *an sich* as well as in relation to each other in order to create a basal terminological framework upon which to build. For this end, three terms – *information society*, *knowledge society*, and *ubiquitous society* – have been chosen.

Information Society

Wikipedia defines information society as a "society where the creation, distribution, diffusion, use, integration and manipulation of information is a significant economic, political, and cultural activity."[4] On first glance, this definition seems sound, but if we look

[2] ttt.media.mit.edu/
[3] http://en.wikipedia.org/wiki/Atomic_sentence
[4] en.wikipedia.org/wiki/Information_society

at the past development of human societies and civilisations, this has been the norm: the exchange of ideas and technology, i.e. exchange of information through cooperation and competition has always been the driving force of the humanity as a whole (see McNeill & McNeill 2003). This definition does not seem to provide a sound basis for comparison with other key terms. Indeed, in the contemporary discussion the term is mostly applied to the manner in which technologies have impacted society and culture.

Network society, on the other hand, has been used to describe a society that increasingly organises its inner relationships in media networks that by and by replace or augment the social networks based on face-to-face communication (van Dijk 1991) or as Manuel Castells put it in an interview (Kreisler 2001), the network society is "a society where the key social structures and activities are organized around electronically processed information networks." Even though van Dijk (1991) and Castells (2000) differ in their approaches to what counts as the basic unit of modern society — for Castells it is the network, for van Dijk it is the individual — their definitions of network society provide a framework that enables even casual readers to understand what is meant with the concept.

For the purposes of this article, it is perhaps wise to use the term *information society* to stress the importance of information instead of the structure, the network wherein the information flows.

Feather (2002, 2) describes the various levels by which computers and explosively increasing amounts of information affect our societies by presenting a hypothesis of the origins, development, and implications:

> *The information-dependent society that is emerging from our revolution — the post-industrial revolution as some analysts call it — combines both profound change and fundamental continuity. It can only be understood in context. Part of this context is historical: the development or writing, printing and systems of communication. Part of it is economic: the means by which systems for the communication of information have become enmeshed in general systems of social and economic organization, so that information and the means of its storage and transmission have been commodified. A third part is political: commodified information is valorized by more than merely the cost of its production and distribution, for there is real power to be derived from its possession and a loss of empowerment caused by its absence.*

With some degree of simplification, one can state that the information society is built out of 1) the availability of data and 2) the ability to process it.

Knowledge Society

Whereas the information society can be defined through the importance of information and the way it flows, the knowledge society is a term used to underline the paramount importance of knowledge as the ultimate instrument of subtracting value out of information. However, the concept is often used to describe a future characteristic of our societies and not their contemporary everyday. Hence its definitions are often projections or goals rather than realities. For example, the UNESCO World Report (2005, 17) states that:

> *The idea of the information society is based on technological breakthroughs. The concept of knowledge societies encompasses much broader social, ethical and political dimensions. There is a multitude of such dimensions which rules out the idea of any single, ready-made model, for such a model would not take sufficient account of cultural and linguistic diversity, vital if individuals are to feel at home in a changing world. Various forms of knowledge and culture always enter into the building of any society, including those strongly influenced by scientific progress and modern technology. It would be inadmissible to envisage the information and communication revolution leading – through a narrow, fatalistic technological determinism – to a single possible form of society.*

Elsewhere, the concept is used to describe an economic reality, the need for knowledge in order to create revenue:

> *The digitisation of information and the associated pervasiveness of the Internet are facilitating a new intensity in the application of knowledge to economic activity, to the extent that it has become the predominant factor in the creation of wealth.*[5]

The contemporary world is filled with data and information, neither of which are sufficient enough to create any great value without the knowledge of how to apply said data and information. This article leans towards a broader definition of *knowledge society* because a limited focus on the economics of knowledge is better described as the *knowledge economy*, which can be viewed as the economic counterpart of information society.[6]

However, it is wise to point out that the "broader social, ethical and political dimensions" entailed by UNESCOs outline above are all, at least to some extent, dependent on the economy and the ways in which we do business. In this respect, it is perhaps relevant to refer to the increasingly knowledge-driven nature of business; one topical theme being *knowledge-intensive businesses* (Toivonen 2004; Strambach 2008).

Key processes of knowledge-intensive business are codification, abstraction, and diffusion. Knowledge assets are created in these processes. Embodied knowledge has a very low level, narrative knowledge has a higher level, and finally, formal knowledge has the highest possible level of codification and abstraction (Boisot 1995; 1998). Embodied, narrative, and formal knowledge can be stored, exchanged, and sold in various markets and businesses.

It can be stated that the prerequisites of knowledge society include 1) the availability of information and networks, 2) the ability to exploit information, and 3) respect for different ways of knowing.

Ubiquitous Society

Ubiquitous society is a term describing a world where computing is *present everywhere simultaneously*, where it *exists everywhere at the same time*. In this context,

[5] Wikipedia attributes this quote to a 2002 publication, Building the Knowledge Society. A Report to Government by the Information Society Commission, Ireland http://en.wikipedia.org/wiki/Society#Knowledge_society

[6] see http://en.wikipedia.org/wiki/Information_society

it is wise to note that computing does not necessarily equal computers as we know them. In other words, the ubiquitous society is a future where computing is *everywhere but nowhere in particular*.

The possibilities and risks related to the ubiquitous revolution can be attributed to (almost) every sphere of human activity. However, it is easy to underline two main questions dominating the contemporary debate: future business models and the relationship between the individual and the society at large. Design Tree (2012) links ubiquitous society to *participatory economy* and suggests that the increasingly democratic approaches towards design, such as co-design, will gain new ground due to the development of ubiquitous technology and media.

In the ubiquitous society, things are going to be connected. Not only are networks, markets, and crowds connected, but also human beings, machines, robots, and media are going to be interconnected in complex ways. Ubiquitous society includes elements of a trans-mediated reality. It is noteworthy that ubiquitous computing and the ubiquitous society takes, at least technologically speaking, many forms. Greenfield (2006, 15) explains:

> *The many forms of ubiquitous computing are indistinguishable from the user's perspective and will appear to a user as aspects of a single paradigm [...].*

He goes on and explains that it "appears not merely in more places than personal computing does, but in more different kinds of places, at a greater variety of scales" (ibid., 46). Hunter (2002, xxii) paints a scarier picture of ubiquitous computing:

> *[W]e'll be living in a man-made environment of intelligent machines that are capable of seeing, hearing, and understanding most of what we do. Everything's recorded. Nothing's forgotten.*

Ubiquitous computing will drastically change our societies — that much is certain. We should not let technological development dictate this development. Instead, we should concentrate on building such a knowledge society that is capable of producing a preferable ubiquitous tomorrow instead of a dystopian one.

Towards Web 4.0

Web 1.0 was the first phase of the Internet, spanning approximately between 1993 and 2001. The Social Web, i.e. the era of Web 2.0 development began in 2004 and is still continuing. This development step is characterised by social media and the development of new digital technology services and dynamic start-ups. Web 2.0 can be loosely defined as an intersection of web application features that facilitate participatory information sharing, interoperability, user-centred design, and collaboration.

The evolution of the Web has been widely discussed in recent years. In this discussion, a lot of different ideas and definitions for Web 1.0, Web 2.0, Web 3.0, and Web 4.0 have been presented.

A typical Web 2.0 site allows users to interact and collaborate with each other as creators (i.e. prosumers) of user-generated content in a virtual community, in contrast

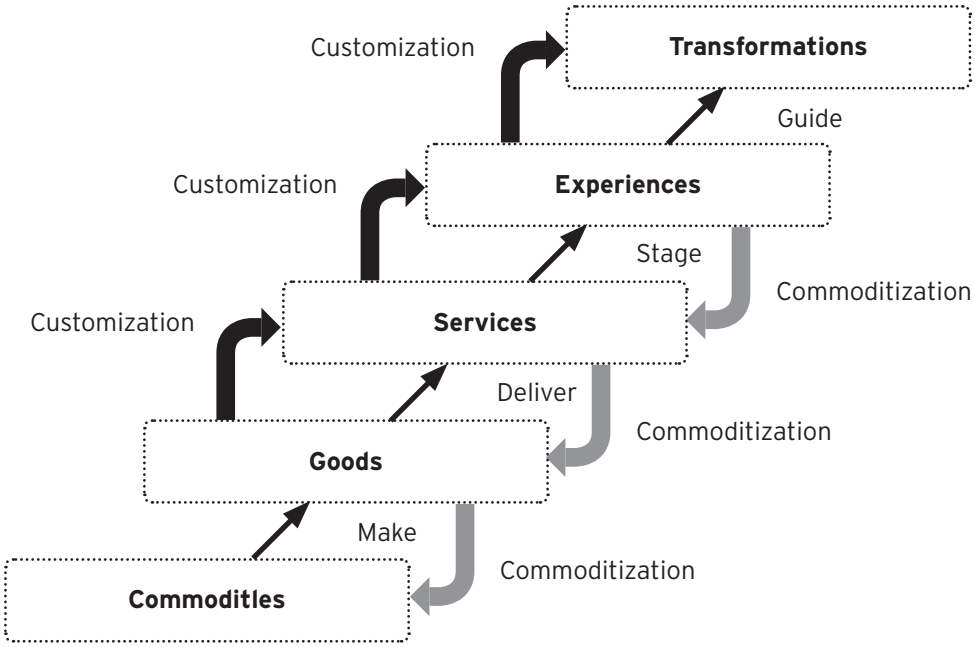

Figure 1. The progression of economic value (adapted from Pine II & Gilmore 2011, 245).

to websites where users (consumers) are limited to the passive viewing of content that was created and tailored for them. Typical examples of Web 2.0 include wikis, blogs, social networking sites, music and video sharing sites, hosted business services, web applications, mash-ups, and folksonomies. (O'Reilly 2009; Gehl 2011).

The progression of economic value is described in Figure 1. Today, the Internet and Web 2.0 in particular are elementary parts of customisation and commoditisation. That is why new Internet solutions support the creation of economic value and wealth. Service design must support such customisation and commoditisation processes.

It is essential to note that the web and the network are changing as production and consumption structures are shifting. The Internet can be seen as an infrastructure of service economy. The web and associated networks also enable crowdsourcing and provide hyper-interactive media solutions. The future of media and media houses is based on the developments of the Internet. In the future we perhaps discuss trans-media houses.

It is important for decision-makers to understand what kind of a network and what kind of economic environment we are moving towards. We can summarise the four different development phases of the Web in the following way:

- Web 1.0: Reading and information distribution,
- Web 2.0: Social media participation, differentiated read-write operations,
- Web 3.0: Co-operation and co-production (co-creation), reading and writing with more co-ordinated actions,
- Web 4.0: Web services integration, both reading and writing seamlessly integrated and linked to ubiquitous technology solutions.

Web 3.0 is a phase that can be defined as the *Semantic Web*. Its main purpose is to drive the evolution of the current Web by enabling Internet users to find, share, and combine information more easily and economically. The semantic web provides a common framework that allows data to be shared and reused across applications, enterprises, and community boundaries. The key to the semantic web lies in that machines become able to perform more of the tedious work involved in finding, combining, and acting upon information on the Web. Sir Tim Berners-Lee invented key concepts and ideas behind the semantic web (Berners-Lee et al. 2001; Antoniou & van Harmelen 2008) and defines the semantic web as "a web of data that can be processed directly and indirectly by machines."

Web 4.0 means an era where technology and human become one. Web 4.0 includes better integration of digital technologies and new innovations. Web 4.0 can be described as the *Symbiotic Web* where metadata are prearranged like in Web 3.0. In Web 4.0, the human mind and smart machines (in binary language) can interact in symbiosis using integrated Web 3.0 and 4.0 technology concepts. (Larson 2012).

Simply put, a smart machine can be clever; read contents and animations, and react by making decisions on what to execute first to load the "website" fast with superior quality and performance and build more commanding interfaces. It has to be stated that Web 4.0 is still a subversive thought in progress: there is no simple or clear definition for it. However, we are very close to the future web technology called "Web 4.0" (Kiehne 2012). The vision for Web 4.0 is:

Web 3.0 + Artificial Intelligence = Web 4.0 technology.

Thus, Web 4.0 requires new developments of artificial intelligence (AI) to be combined and integrated into Web 3.0 solutions.

Service Designs and Architectures for the Multiverse

Ubiquitous computing and trans-mediated reality create a special challenge for service design and architecture planning, because we do not need to design various services only in the "real world," but also services for different realms of the multiverse.

It is safe to say that, in the future, technological developments such as ubiquitous computing, nanotechnology, robotics, and smart materials change our relation to time, space, and matter. This process will lead us to different realms of multiverse. It is relatively simple to distinguish between eight realms of multiverse, as showcased in Table 1.

Ubiquitous revolution and other key technology waves (genetics, robotics, informatics, and material technology) will dramatically change our decision-making and planning environments. For service design, this kind of radical technological progress means new challenges as well as new possibilities. The debate is not about service design and architectures of and for a single reality but for eight different realms of multiverse. There are infinite possibilities for creating social, customer, and business value in the digital frontiers of the ubiquitous revolution.

Table 1. The eight realms of multiverse (Pine II & Korn 2011, 17).

VARIABLES			REALM
1. Time	Space	Matter	Reality
2. Time	Space	No-matter	Augmented reality
3. Time	No-space	Matter	Physical Virtuality
4. Time	No-space	No-matter	Mirrored Virtuality
5. No-time	Space	Matter	Warped reality
6. No-time	Space	No-matter	Alternative reality
7. No-time	No-space	Matter	Augmented virtuality
8. No-time	No-space	No-matter	Virtuality

Designing (in) the Ubiquitous Society

The impact of the ubiquitous society on design — and vice versa — can be roughly divided into two distinctive questions. How to design the ubiquitous society? How to design in the ubiquitous society?

The first question is more than relevant now; it is of paramount importance. Our technologies advance at an enormous pace and design expertise is needed not only in embedding the technologies into everyday objects or in creating services that make good use of the full potential of the emerging possibilities; design must also play a significant role in the wider discussion regarding the development of our societies.

In the ubiquitous society, connectivity is ubiquitous and connected devices are many. Media is digital; news and information flows are on-demand utilities, payments are done through mobile means, services are mostly personal, and social interactions are constant. (Green 2010, 47.) The relationship between service design and these functions is depicted in Figure 2.

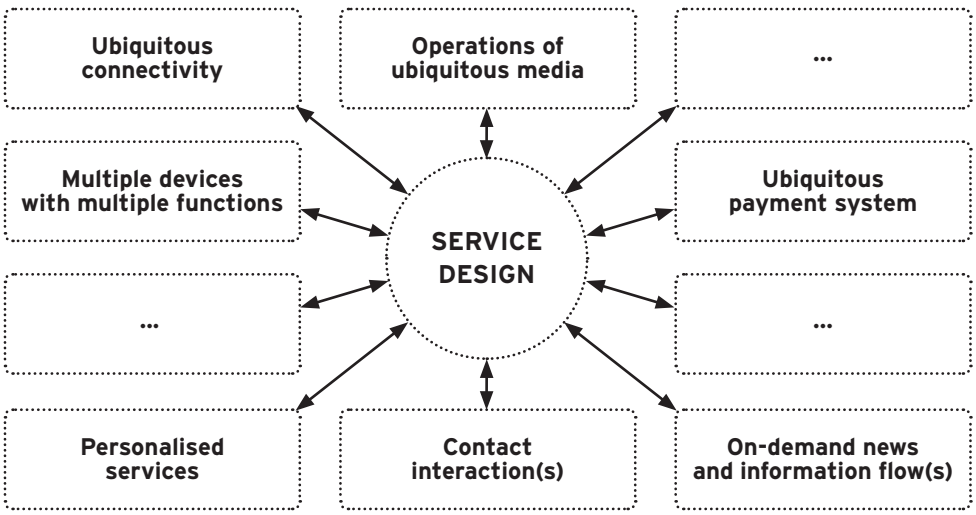

Figure 2. Service design in the ubiquitous society.

It is safe to say that service design is greatly affected by the dawning ubiquitous society. In addition, it is reasonable to expect service designers to take part in choosing what direction ubiquitous development takes.

Hunter (2002, 87–97) refers to an interview with Eric Raymond, one of the main figures of the *open source movement*, stating that all great designers – regardless of their specific field of expertise – have the ability to concentrate on the detail and the big picture simultaneously. This idea cannot be stressed enough when discussing the ubiquitous society, because the ways in which emerging technologies are applied and implemented need not only to be engineered – they must be designed.

The concept of ubiquitous society carries along a multitude of risks and fears. The dystopian notions of *panopticism*, *plutocracy*, and *corporatocracy* must be understood, discussed, and duly addressed. Responsibility for recognising the risks and potential of technological development cannot be attributed solely to the realm of engineering or political decision-making. The creation of a better future must be the responsibility of all occupational groups, expertise areas, and scientific disciplines. Designers must assume an active role in driving technological development into a preferable direction. The challenge posed by ubiquitous computing is aptly described by Howard Rheingold (1994) in a review of David Rothenberg's book *Hand's End: Technology and the Limits of Nature*:

> *We must see our own human ability to transform the 'natural' environment into an 'artificial' one as something that exists within nature, Rothenberg claims. We cannot find a home in the natural world until we see the way our technologies influence our vision of all-important non-technical issues. We must acknowledge and understand the true power of technology as part of the natural world before we can ameliorate its destructive tendencies. We must perceive and treat technology as an extension of our humanity before we can effectively guide its use according to moral decisions of about the kind of world we want to leave our grandchildren.*

There are a great number of design and design-related initiatives and openings trying to fill this role, such as *design futuring* (Fry 2008), *co-futuring* (Fuad-Luke 2009a), *design as activism* (Bell & Wakeford 2008; Fuad-Luke 2009b), *ambience design* (Koskinen 2009; 2012), etc. Where cooperation between technological development, hard sciences, and the design realm is concerned, these potential development paths have to find solutions for at least one substantial problem.

Namely, designers can be characterised as hands-on people; their approach to thinking and linguistic expression is intuitive by nature. Philosophy, psychology, and business – even engineering to some extent – are built on analytical thinking. Martin (2009, 171) describes these two ways of thinking and expression and notes that

> *[A]nalytical thinkers and intuitive thinkers speak different languages. Analytical thinkers speak the language of reliability, because they put a high priority on the production of consistent, predictable outcomes. They frequently use words such as proof, regression analysis, certainty, best practices, and deployment. Intuitive thinkers speak the language of validity, because they put a high priority on the production of outcomes that delight, whether or not they are consistent and predictable. They frequently use words such as breakthrough, new to the world, and, yes, awesome.*

The road to better futures is filled with risks and the troubles ahead are likely to prove many existing (and dominant) business models outdated and unprofitable if not altogether obsolete. For example, It is easy to anticipate that the value of digitally reproducible content will fall dramatically. Some implications of this change are currently visible in, for example, journalism, music, cinema, and mobile communication; old revenue streams are slowly drying up and there are fierce battles underway all around the world on intellectual property rights. However, the problems media companies and the entertainment industry are facing do not mean worse times for *performers* such as musicians or (theatre) actors, quite the opposite. As Hunter (2006, 176–177) notes,

> *[t]o work for the artist, the distribution doesn't have to be paid. In that sense, [...] the interests of the performing artist are arguably more closely aligned with the interests of the audience than they are with the interests of a recording company.*

The ideas of ubiquitous computing and the eight realms of multiverse provide companies (and designers) significant possibilities to create new models for revenue creation. Indeed, where service design and related business are concerned, the ubiquitous revolution opens up huge possibilities.

New Approaches and Solutions

Literature regarding ubiquitous computing provides an abundance of examples of technology and software solutions for the ubiquitous society. Two interesting concepts are *Privacy-Enhancing Technologies* (PETs) and *the event heap*. These two are chosen as examples because they highlight the necessity to identify and recognise potential problems – a necessity that encompasses all design work.

It is easy to say that in a world where the physical objects around us create data and information about us – even without our knowledge or consent – our privacy and freedom are at risk. Thus, focus on openings such as PETs is of paramount importance. PETs refer to "a coherent system of ICT measures that protects privacy by eliminating or reducing personal data or by preventing unnecessary and/or undesired processing of personal data, all without losing the functionality of the information system." (van Blarkom, Borking & Olk 2003, 3) Even though the concept is of great importance, its name gives rise to a question regarding the nature of privacy. Can privacy be "enhanced" or is it merely *enabled* or *disabled* according to context?

Clay Shirky (2008) discusses privacy and notes that the whole concept has assumed whole new dimensions already today. He uses Facebook's privacy preferences as an example of how we are moving from an evolved framework of human interaction towards engineered interfaces of social interaction. He humorously states that "prior to the present day, the only person any of us could name that had anything you could call 'privacy preferences' was Greta Garbo. Privacy is a way of managing information flow."

Besides the societal dimensions of the ubiquitous revolution, also technological aspects need to be engineered and designed to create a functional and feasible framework for human-machine, machine-machine (and machine-mediated human-human) interaction. Greenfield (2006, 13) refers to a research team at Stanford University who "addressed the absence [...] of a [sic] infrastructural model appropriate

for the ubiquitous case." In essence, a working model of a new infrastructural model is the event heap. He explains this change in the structure of computation (ibid., 77):

> *with so many things happening at once [...], the traditional event queue – the method by which a CPU allocates cycles to running processes – just won't do. [...] Without getting into too much detail, the event heap model proposes that coordination between heterogeneous computational processes be handled by a shared abstraction called a 'tuple space.' [...] In this model, events expire after a specified elapse of time, so they're responded to either immediately, or (in the event of a default) not at all. This keeps the heap itself from getting clogged up with unattended-to events, and it also prevents a wayward command from being executed so long after its issuance that the user no longer remembers giving it. Providing for such expiry is a canny move; imagine the volume suddenly jumping on your bedside entertainment system in the middle of the night, five hours after you had told it to.*

Conclusions

It is obvious that we are on our way towards the ubiquitous society. The many concepts connected to ubiquitous (r)evolution create the language game of ubiquitous society. We can say that information society exists "before" the ubiquitous society and that the knowledge society is a prerequisite for a ubiquitous future worth living in, but time horizons of these development phases are interconnected and unclear. Figure 3 presents a simplified outline of the requirements for the emergence of the three development phases.

Knowledge society can be understood as a necessary step in a progression towards a preferable ubiquitous tomorrow. Knowledge has always been a key issue for decision-makers. Embodied knowledge, narrative knowledge, and formal knowledge are knowledge assets whose scope and scale will be broader in the ubiquitous society because technological solutions are everywhere. For (service) designers, this kind of complex and interconnected system will be a challenging "work environment."

Current struggles over waning business models and revenue chains inflict enormous pressure on decision-makers to protect existing solutions. This is particularly the case with digitally reproducible content and services such as music, cinema, or phone calls. Westerlund (2012) states:

> *New legislation regarding electronic surveillance and control of Internet usage is pending or on the drawing board in many countries all over the globe. Building up a technological utopia under the name of ubiquitous society hand in hand with dystopian legislation that enables authorities to follow who does what and where is most definitely not a road to follow. We need thorough, wide-ranging, and far-reaching discussion on how to prevent these fears from materializing, and perhaps we are able to solve some of the problems on the horizon. We need to reach beyond and see through the deceptive benefits of [...] technology in order to ensure that we do not, in trying to create a society that functions better, create inequality and limit freedom instead; thereby destroying the very corner stones our societies are built on.*

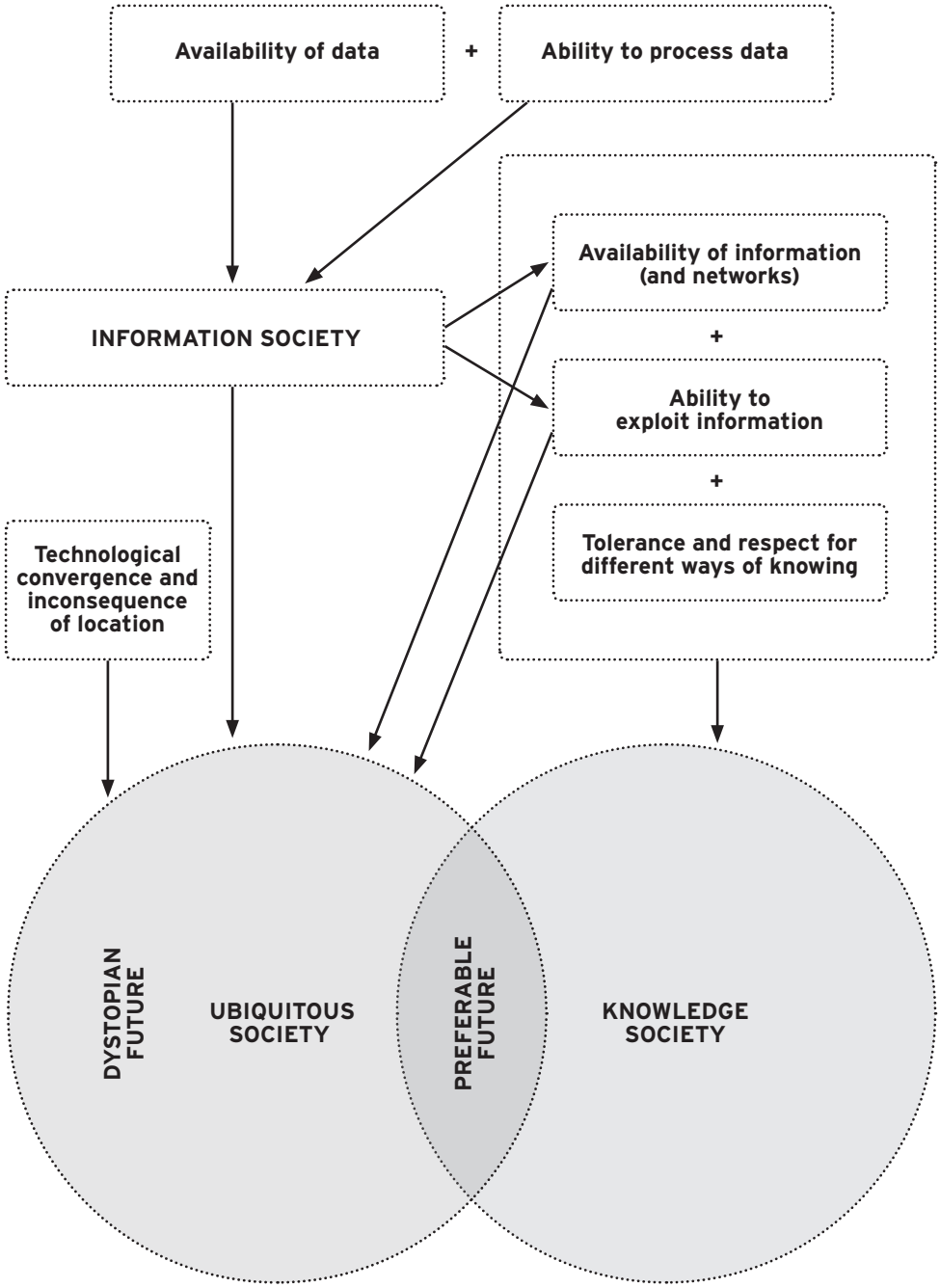

Figure 3. Road to ubiquitous society.

The dawning ubiquitous society definitely opens up new kinds of possibilities for (service) design. However, designers must assume a far greater role in the creation of our ubiquitous tomorrow to ensure that technological development creates a better future instead of a dystopian one.

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10

Ambience Design Notes

Jari Koskinen

Prologue

It is not easy to understand what is happening in the design world at the moment. Accelerating changes and working in-between disciplines create a blurred image on current developments. This article illustrates fragmented notes made during the ServiceD research project and combines the author's conceptual innovation *ambience design* with the findings of the foresight and research project.

Service design and ambience design are close relatives. Ambience design aims to answer some of the questions arising with the emergence of the *ubiquitous society*: it forms a human-centred approach that takes well-being seriously and combines cross-disciplinary expertise with ubiquitous technology.

There are growing expectations to put an end to tech-savvy approaches and concentrate on co-designing a better ubiquitous society and better standards of living for everybody.

Background

Bureaucracy and top-down management are still very much the reality in big companies. Steinberg (1997) notes that some of corporate R&D staff can be seen as corporate rebels — independent thinkers who see old problems with fresh eyes.

> *Inflexible bureaucracy, top-down management, tightly regulated industries, monopoly — these are the tired remnants of the old corporate world order. The new economy demands new thinking [...].*

The early days of the Xerox Palo Alto Research Center (PARC) belong to the Silicon Valley folklore. Howard Rheingold (1994) illuminates those times:

> *I managed to get a job at PARC writing articles for a Xerox in-house magazine. A year before the first Macintosh computer was sold, I commuted 45 minutes to PARC's rural campus to type on an Alto — the first true personal computer. My job was to interview PARC researchers about their work. They talked about bit-mapped screens, languages. All those futuristic experiments they showed me have diffused so widely (and profitably) during the past ten years that it is easy to forget they were once confined to that building on a oak-spotted hill above Silicon Valley. [...] Having already invented the future twice, then squandering its advantage, could Xerox still have stories to tell? In the fall of 1993, I returned to Xerox PARC for another chance to go back to the future. [...] Video windows and audio communications are built into workstations. Desktop screens have evolved into wall-sized screens, clipboard-size screens, and pocket-size "tabs." The place is still an intellectual wonderland.*

Mark Weiser coined the term *ubiquitous computing* in 1988–1989. He was working as Chief Technologist of PARC. It has since become one of the key approaches towards the futures. Ubiquitous computing "is linked to other concepts such as pervasive computing, ambient intelligence, internet of things, and even real-time Web" (University of Tampere 2011). In the near future, ubiquitous society and smart and mediated spaces could be the playground for service designers:

> *Ubiquitous computing names the third wave in computing, just now beginning. First were mainframes, each shared by lots of people. Now we are in the personal computing era, person and machine staring uneasily at each other across the desktop. Next comes ubiquitous computing, or the age of calm technology, when technology recedes into the background of our lives. (*Mark Weiser)[2]

Weiser was describing the world of computing without computers. In his mind, desktop computers disappear as the tiny, cheap microprocessors fade into the built environment. Adam Greenfield (2006, 11) illuminates the phenomenon: "In this context, 'ubiquitous' meant not merely 'in every place' but also 'in every thing.' Ordinary objects, from coffee cups to raincoats to the paint on the walls, would be reconsidered as sites for the sensing and processing of information [...]."

The ServiceD research project (ServiceD 2011) shows that only few designers are talking about technology and ubiquitous society. There is a serious threat that we are entering the ubiquitous society without understanding what it means to us all or what kind of contents can be created. Technology itself is not enough; we need human-centred approaches.

In any case, ubiquitous society could offer great possibilities to service development. Can you imagine a world without visible technology? Samsung Smart TV already has voice and gesture control, so it is easy to imagine futures of smooth control in smart and mediated build environments.

The discussion around ubiquitous society suggests that *adjustability*, *modifiability*, *modularity*, and *individuality* become the new norms. Stagnant products, services, spaces, and brands are not completely disappearing, but the era of *changing identities* is about to emerge. Ubiquitous society is the narrative of this change: from intelligent windows to interactive screens and from location-based services to interfaces such as *Google project glass* (see Project Glass 2012) where physical spaces, virtual spaces, social (media) spaces, and mobile spaces merge. The development of real-time data and communication leads us to a world where real-time expertise plays an important part of everyday life.

The ubiquitous future of service design could turn out to be ambience design.

Design Discussions

Ubiquitous society could take most designers and architects by surprise. However, there are some very good articles that are preparing the paths for cross-disciplinary approaches. Jacob Voorthuis (2012) writes:

> *The model offered here as an alternative does not prohibit us to see music and architecture in the old way. That would reinstall the famous* paragone*, a conversation game based on a playful rivalry between disciplines demanding skillful and opportunistic border controls and military prowess that, however, inevitably partitions the continuity of human experience in order to control and rule. From point of view offered here, that becomes unnecessary. The difference is now constituted in the way that, for example, different*

[2] see http://www.cs.berkeley.edu/Weiser/bio.shtml Retrieved 12-06-25

kinds of tools and their particular uses develop to work together at something that is the product in which they all play a part. Tools, material, knowledge and expertise assemble around challenge [...] and are then all used by a person according to their abilities or suggested possibilities.

It is not easy to connect different disciplines. Service design has a cross-disciplinary nature and ambience design goes even further in that direction. My personal experience shows that extra push is needed when, for example, medicine, psychology, sociology, and ethnography are combined in the name of service design or ambience design. One can only imagine what happens when sound environment design, lighting design, scent design, etc. are mixed with ubiquitous technology in order to create a new discipline. The task is difficult but certainly feasible.

Ambient Design or Ambience Design?

The author coined the term 'ambience design' over ten years ago, but has ever since tried to find more collaborative forms of developing the ideas presented over the past years. (Koskinen 2000)[3] At first, in 1997, the idea had the name 'ambient design'. Since, the topic has been presented in seminars, articles, books, and on web forums. The name 'ambient design' was abandoned for two reasons. Firstly, it did not describe the contents of the conceptual innovation accurately enough. Secondly, the concept was constantly mixed up with ambient music, ambient advertising, and ambient intelligence. Since 2004, the name has been 'ambience design.' Ambience refers to all-encompassing atmosphere and environment; something that surrounds us.

Ambience design, thus, was under development long before Martin Lindstrom (2004) touched the theme. Internationally, however, the concept was not introduced until the summer of 2005 in a paper presented in the HAAHAMA conference by Karjalainen, Koskinen, and Repokari (2005).

The first comprehensive presentation on ambience design, reminiscent of the contemporary concept, was done by the author (Koskinen 2006) who later presented an even more holistic approach (Koskinen 2009).

One important milestone of the conceptual innovation was a research project conducted seven years ago. The *Ambience Design* research project, originally funded by the Finnish Funding Agency for Technology and Innovation, Tekes, was built around the idea of incorporating the multi-sensory experiences of human beings into comprehensive environmental design. Ambience design has been a cross-disciplinary approach that anticipates a *paradigm shift* in the planning processes related to architecture, design, communication, and marketing.

The development of the concept is an outcome of a series of articles, innovations, experimental work, and literature from various branches of science and business. The basic idea has been to gather a cross-disciplinary team to undertake actual design work and fuse scientific knowledge and expertise from various fields with the design process. The know-how created as a result will be accumulative in a scientific way, presented in scientific articles, and available for further use in similar projects.

[3] The article was published in www.m-cult.net in the year 2000, but is now removed.

Ambience design has been influenced by a large number of people from various fields of design and research. Special thanks go to the research community of the Finland Futures Research Centre and the cross-disciplinary development team involved in the project realised seven years ago.

Lately, conversations with ServiceD project team members Jari Kaivo-oja, Tuomo Kuosa, Leo Westerlund, Sam Inkinen, Sami Makkula, Hannu Kaikonen, and Jukka Oresto as well as other experts, such as Mika-Ilari Koskinen, Tuomo Tammenpää, Tapio Mäkelä, Minna Tarkka, Marita Liulia, Heimo Langinvainio, Olli Hakanen, Roope Siiroinen, and others have particularly influenced the development of the concept.

The aim is to create a new design paradigm where culture driven merely by aesthetics and emphasising the importance of a designer's personal style is replaced with one that combines various types of expertise. In the first phase of the project, two multisensory spaces were designed in the usability laboratory of Helsinki University of Technology: one that aims to relax and the other to stimulate. Then, using research methods from medicine and psychology, we studied how successful the test subjects felt the relaxing and stimulating ambiences had been. The idea is to develop versatile design expertise so that, for example, relaxing ambiences could be designed based on research data acquired in experimental projects.

The project's degree of difficulty is increased by the requirement of adjustability. According to the informed view of the project team, mediated environments that increase well-being are characteristically adjustable. Since the beginning of the first ambience design project, the aim has been to develop design expertise that enables (with the help of a mobile phone or other terminal device) the adjustment of the mood and communicative identity of the space(s) according to the needs of the individual, group, or context. In addition, the mediated and adjustable environment requires in-depth knowledge of technologies, applications, and user interfaces. Ambience design is a complex form of design due to the interactive element factored in.

Ambience Design Explained

No single part of the following concept is entirely new, but the whole description is a fresh mixture.

Ambience design consists of new combinations of views and skills:

1. Cross-disciplinary communication with researchers
Ambience design represents a new kind of design culture; it could even be said that it represents a paradigm shift in design. Ambience design's working culture is *cross-disciplinary*. The one major invention of ambience design is that designers from different working areas *communicate with researchers*. As such, ambience design is not built on the personal touch and style of the designer, but based *on the knowledge of the effects a multi-sensory environment/atmosphere has on people*.

In effect, know-how in an ambience design project is meant to be developed through interaction with professionals and researchers from various fields of science

and business. Then the research results are accurately documented using various types of media.

2. Co-design
Ambience design has a collaborative nature. *Co-creation* with end-users, representatives of clients, cross-disciplinary experts, and researchers is at the core of conceptual innovation. *Co-design, prosumerism, customer-driven innovations, crowdsourcing*, and *DIY* (Do-it-yourself) are important aspects of ambience design.

3. Multi-sensory communication
Ambience design *develops and moves our visually emphasised design culture towards an increasingly multi-sensory design environment*. It does this by using the language of shapes, soundscapes, scent worlds, textured contact surfaces, lighting, colour worlds, and even the world of taste (this is by no means an all-inclusive list). Ambience design also means new forms of distinguishing and recognising: fresh methods utilising our sensing abilities. This involves scent signs, sound logos, and designed lighting and colours as symbols of organisational identity. Ambience design combines spatial design, service design, graphic design, and multi-sensory means of communication.

4. Atmosphere design
Ambience design is about *atmosphere design*, i.e. it affects people through the creation of a psychophysical entirety. In practice this means putting focus on *experiences* and *phenomenality*.

5. Capitalisation of ubiquitous technology
Ambience design *utilises smart environments and materials*. The use aims to *increase interaction in mediated and social environments*. We are entering the ubiquitous society where coffee machines and fridges are connected to the *Internet of things*. Ambience design is an alternative approach to the technology-oriented ideas currently under debate. Ubiquitous society needs more good content and human-centred viewpoints instead of high-tech savvy hyperventilation.

6. Adaptive and adjustable
The central themes of ambience design are *adjustability*, *modifiability*, *modularity*, and *individuality*. These themes are connected with the changing and transformable communicational identities of different built environments, products, services, and brands. For example, rooms become more usable when individual people or groups are given the chance to adjust them according to their changing needs (DIY decoration). *Adaptive systems* are part of ambience design thinking.

7. Location-based services
Ambience design has a contextual nature. Real-time information, real-time communication, real-time statistics, and real-time expertise are parts of ambience design thinking. In the near future, physical spaces, virtual spaces, social (media) spaces, and mobile spaces will merge resulting in new kinds of location-based services.

8. Narrative approaches
Some people have difficulties understanding statistical data, but all of us enjoy good stories. Ambience design utilises *narration*, *dramaturgy*, and the *competence of drama experts*. The challenge is how to relate changing narratives to spaces with dramaturgical and multi-sensory applicability, and a link to, say, GIS systems (Geographic Information System).

9. Adaptive, adjustable, and multi-sensory branding
Ambience design can be connected to *brand building*. Multi-sensory marketing which uses things such as distinctive sounds and scents can be employed in brand development more than ever before. The advantage of ambience design is that it connects multi-sensory interior design to multi-sensory marketing and communications. The result could be adaptive, adjustable, and multi-sensory branding with other ambience design qualities attached.

10. Human-centred, ecologically aware, and ethically-oriented: aiming at well-being of the users
Ambience design is ethically and environmentally aware. All activities are guided by an ethical code. A key objective of an ambience design team is to increase the *well-being* of people through cross-disciplinary design and research. The future of design is hopefully *human-centred*, *ecologically aware,* and *ethically oriented*.

The Futures of Design Education

Michael Bierut (2007) *wonders why designers can't think*. Designers have been somehow incapable of communicating literally and their visually oriented language game is not easy to understand:

> *Nowadays, the passion of design educators seems to be technology; they fear that computer illiteracy will handicap their graduates. But it's the broader kind of illiteracy that's more profoundly troubling. Until educators find a way to expose their students to a meaningful range of cultures, graduates will continue to speak languages only their classmates understand. And designers, more and more, will end up talking to themselves.* (ibid., 17)

Bryan Bell (2008, 14–17) thinks of the society at large:

> *To make design more relevant is to reconsider what "design" issues are. Rejecting the limits we have defined for ourselves, we should instead assume that design can play a positive role in seeking answers to many different kinds of challenges. We have limited our potential by seeing most major human concerns as unrelated to our work.*

The core of service design and ambience design lies in *asking the right questions* to find the right answers and therefore the right results. That is why philosophy, aesthetics, sociology, psychology, medicine, and ethnography should be parts of the imaginative syllabus we are currently talking about. To be more precise, *thinking* forms the core of both service and ambience design. Usually recognised truths and ready-made

answers should not be good enough for educated service designers. Our clients pay us for alternative thinking and alternative results. Challenging the socio-cultural atmosphere is not easy, but the most courageous service designers are bold enough to challenge their clients. Inventing the futures should not be distracted by the cultures and procedures of the past.

However, the mindset and tools for our imaginative syllabus come from design. Co-design processes where we move quickly from ideation to evaluation and from concept design to prototyping and testing are the starting point. Increasingly democratic design processes involve representatives of clients, end-users, and cross-disciplinary experts. The best idea could emerge anytime during the process and the inventor could be the least expected voice from the corner of the workshop space. Heading such workshops requires holistic expertise as well as control of design methods (such as instant visualisation of ideas).

The era of omnipotent star designers is slowly coming to an end as more collaborative forms of design gain ground. We are entering a participatory economy and the ubiquitous society. No more stagnant services: adjustability, modifiability, modularity, and individuality are the new rules of service development when designing smart and mediated environments. *Prosumerism*, *customer-driven innovations*, *crowdsourcing*, and *DIY* should be vital parts of service design thinking. The changes discussed here should also be visible in our imaginative service design syllabus.

The results of the ServiceD project clearly show that the futures of service design need to be invented. There is an open mental space for *alternative design thinking*. Ambience design could be one important piece in the enrichment processes currently taking place.

Next steps in ambience design concept development could be:

- alternative design thinking (foresight and design combined: searching alternatives),
- ambience design management (how to manage cross-disciplinary expertise),
- ambience design thinking (holistic approaches and cross-disciplinary combinations, researchers working closely with designers),
- business development (creating content to the ubiquitous society: well-being services, etc.),
- cross-disciplinary research (creating a research base for ambience design: what kind of effects multi-sensory, adjustable, and smart and mediated spaces have on people),
- etc.

Epilogue

> ***Inferno Canto XXIII: 58–81 The Hypocrites***
> *Down below we found a metal-coated tribe, weeping, circling with very slow steps, and weary and defeated in their aspect. They had cloaks, with deep hoods over the eyes, in the shape they make for the monks of Cologne. On the Outside they are gilded so it dazzles, but inside all leaden, and so heavy, that compared to them, Frederick's were made of straw. (Dante Alighieri)*[4]

Dante didn't much appreciate people who tried to create self-important brand images. Unfortunately, ignorance mixed with hypocrisy and the culture of star designers often results in such approaches. If you are only familiar with the *usual suspects* in the field of design, the lacking diversity of your knowledge may underline you being a designer, especially in academic circles. Educated design approaches are results of adventurous reading and hands-on expertise.

After such a manifesto-like chapter regarding the author's conceptual innovation, *ambience design*, there is a risk of falling down exactly to the same non-intellectual trap so heavily criticized above. Building a pompous image has not been the goal of this article. Let us leave blatant self-advertising for those who do not mind seeing themselves as stars. However, worst academic articles with endless citations bring nothing new to the design discussions. Indeed, creativity can be the most important asset even in the best academic design articles.

The evolution of design expertise and inventions has been the core of the ServiceD project. That is why having a discussion on design innovation is not prohibited.

This article is meant to be a prologue to further discussion on ambience design and service design development.

This article is based on the notions of my previous article *Ambience Design – Future-oriented Viewpoints, Service Development and Some Notions about Changing Communicational Identities*, published in 2009.

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[4] Dante Alighieri *The Divine Comedy*. Translated by A.S. Kline. http://www.scribd.com/doc/10849660/Dante-Divine-Comedy-Translated-English

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11

Art and Design in Dialogue

Jari Koskinen

Introduction

This article aims to shed light on the connections between art and design, to depict and shape the blurred borderlines and in-betweens of the two, and to describe the similarities and contradictions linking the fields together. The identities of and the relationship between these siblings are constantly changing.

However, art and design have a sustainable and long-lasting relationship. On the other hand, when discussing service design, art seems to have a very small or no role at all. Our research (ServiceD 2011) reveals interesting possibilities. The research included a large interview study regarding many aspects of the evolution of design. This article uses quotes from the respondents who remain unnamed. However, numbers in square brackets are used to distinguish between interviewees.

All in all, this article offers *fragments of reality* illuminating shadows of an interesting relationship, but the final conclusions are left to the reader.

On the Evolution of Art and Design

Whereas art is usually separated from design for being self-expression, design serves some kind of purpose or need. Etymologically, the concepts have interesting roots:

> *Design is a term that differs from, but often is confused with, planning. While planning is the act of devising a scheme, program, or method worked out beforehand for the accomplishment of an objective, design is a conceptual activity involving formulating an idea intended to be expressed in a visible form or carried into action. Design is about conceptualization, imagination and interpretation. In contrast, planning is about realization, organization, and execution. [...] Design provides the spark of an idea and the formation of a mental image. It is about primordial stage of capturing, conceiving, and outlining the main features of a plan and, as such, it always precedes the planning stage. [...] Etymologically, the verb 'design' is derived from the prefix de and the Latin verb signare, which means to mark, mark out, or sign.* (Terzidis 2007)

> *The question concerning the origin of the work of art asks about the source of its nature. On the usual view, the work arises out of and by means of the activity of the artist. The artist is the origin of the work. The work is the origin of the artist. Neither is without the other.* (Heidegger 2009, 284)

> *The origin of the word "art" can be traced back to the old English "thou art" which means "you are." Again, art as in "fine arts" owes its root to the Latin "ars" or "artis." However, in comparison to the dual meanings in which we may express the word, the second meaning has remained unchanged with the process of time. The word "culture" however originated from the Latin language. It said to have a Latin base "colere" which means to inhabit, to cultivate, or to honor. Broadly it can be said to be a human activity carrying several meanings and definitions.* (Jones 2011)

'Art' has a complex etymology: the word is derived from an Indo-European root -ar, which means 'to join', 'fit,' or 'put together.' Art is the application of practical skill 'techne' to the production of works of creative imagination. In addition, any human activity could be considered an art.

Art history is closely connected to crafts. Ancient Egyptian art had religious roots and functions. This is the case throughout history; from Stone Age to early modern times. Fine art emerged into discussions and public knowledge rather late.

Historically, well-known artists, designers, and architects have been stars. In Finland, Alvar Aalto, Tapio Wirkkala, and other design stars have long and effective shadows. Young designers have almost been suffocated by the dark shadows of old masters: they have to struggle their way to public attention.

Visionary Bruno Munari (2008, 25) wrote already in the 1960s that "today it has become necessary to demolish the myth of the 'star' artist who only produces masterpieces for a small group of ultra-intelligent people. It must be understood that as long as art stands aside from problems of life it will only interest a very few people."

It seems that the culture of celebrity designers is living well in the 2010s. *Wow architecture* gathers attention and many designers still act (and are treated) like stars. The spirit of public and media still supports the star image.

It is basically true that the roots of design are in arts and crafts, but it might be difficult to see the relationship between arts and service design. One of our interviewees (ServiceD 2011) may have provided an answer to this problem when talking about the future education of service design:

> *I'd make sure that all participants have a good enough background in both theoretical and practical aspects – lots of philosophy and arts (art productions). Arts enable designers to think about issues more widely. In the new media field everybody has to be able to code. Basic logic (a part of philosophy) should be studied and competence in research methods acquired. A scientific and systematic approach towards analyses has to exist – as does the ability to prepare for planning/design work.* [39]

The respondent's remarks on art and its role in service design education are very positive and take both practical and theoretical aspects into consideration.

The relationship between art and design has been somewhat complicated and there is no clear picture how the roles of art and design ultimately differ. Kenya Hara (2008, 24) provides very good analysis about the relationship:

> *Art is an expression of an individual's will to society at large, one whose origin is very much of a personal nature. So only the artist knows the source of his own work. This loftiness is what makes art so cool. Of course, there are plenty of ways to interpret the expressions that artist give birth to. Non-artist commune with art by coming up with interesting interpretations of art, appreciating it, commenting on it, re-editing art as in an exhibition, or using art as intellectual resource.*
>
> *Design, on the other hand, is basically non self-expression. Instead, it originates in society. The essence of design lies in the process of discovering a problem shared by many people and trying to solve it. Because the root of the problem is within the society, everyone can understand the plans for solutions and processes for solving the prob-*

lem, in addition to being able to see the problem from designer's perspective. Design is appealing because the process creates inspiration that is engendered by this empathy among human beings in our common values and spirituality.

Hara goes even further and states that "verbalizing design is another act of design." (ibid., 24)

How could we consider designers as auteurs when we talk about service design:

It's always easier to evaluate a creation in terms of its relationship to its creator. So what happens to the idea of authorship when many hands are involved in bringing something to life. [4]

Service design is cross-disciplinary; it is a collaborative form of work. Service design is often done anonymously, but sometimes there is an auteur or auteurs. One of the greatest missions of design educators has been to develop recognisable style for each of their students.

One's own style can be a very effective strategy for success. On the other hand, clinging to one's own style can be a very bad strategy. Clients want different styles for different purposes. And talking about service design, one's own style sounds weird all in all.

Contemporary art and artists (or more specifically media art and artists) could play important roles when cross-disciplinary design teams are creating smart, multi-sensory, and adjustable spaces and environments for a service. It seems that even some of the most business-oriented service designers could be more open as regards new approaches and experimental work.

Nowadays it is not always easy to say when a work of art is actually art and when it is architecture or graphic design. Borderlines are blurring and new mixtures of design and art are emerging.

Some say that if design is good enough it becomes art. Very good graphic design or lately also service design can be found from exhibitions. (Service Factory 2012).[1] When design becomes good enough it becomes art or it has art-like qualities.

Creative Process and Corporate Language Game

Artists and designers quite often fight for the underdog. They feel the injustice and can easily recognise rumpled, battered, and slightly tarnished fellow artists and designers who have a genuine concern for the world. Ethical and ecological approaches come naturally for the most. At the same time, the corporate language game has infected the world of service design.

The simple minded style of constantly repeating the word *business* does not help create fresh business ideas or develop existing services. Excessive playing with the numbers and straight-forward business talks are actually damaging for creative processes. When understood correctly, creative people are travelling to final frontiers and blurred in-betweens. Service co-creation with users and cross-disciplinary experts makes the creative journey even more rewarding.

Wow architecture and *star designers* co-exist with the more democratic co-creation processes. Service designers have not made themselves well-known stars or received public attention. Are service designers just dealing with audience needs or should they have a personal voice? What does it mean to be authentic? Service designers and their companies need to be authentic from the branding perspective. Service designers' works have to be authentic also from the clients' branding viewpoint: strong brands are at the core of the debate.

Service designers and organisations like SDN (Service Design Network) are trying to:

a) establish service design as a distinguished and well-known field of its own
b) explain why service design is needed in growing businesses or in developing business ideas

Trying to make service design known in the public eye and especially in the corporate world is one reason why the business-oriented language game has been adopted. At the same time, service design cultures are rapidly enriching and we should be proud of the expertise and tools we have to offer. *The highly conservative and often stagnant corporate world should adapt to creative working cultures from designers – not the other way around.* The best results of creative processes are always *pleasant surprises*. One should forget the numbers and relax; the creative process cannot be guided by power and pressure.

Some Notions on Customer Service

Price and Jaffe (2008) offer good insights on how to develop bad services from the customer perspective. They also offer terrible case examples: customers who made 37 fruitless calls to customer service without receiving any service, luxury goods without luxury service, etc. Have you heard about services that offer no answers for customers' questions or service providers who cannot be contacted in any way? It is a very irritating situation we all recognise.

Just recently, my Facebook account was infected by malware and the account was closed – or at least it seemed so. Facebook web site offered no helpful information on how to enter my account again, and there was no customer service email address where I could ask for help. I used several hours trying to find information from discussions groups etc. Finally I understood – or guessed – that by changing my password I might get in again. The point was that I couldn't understand where to contact. I'm afraid that is the case ever so often in the corporate world.

Another case is a local power company. A family tried to contact the customer service via phone, email, and web pages for a whole day as they had no electricity in their house due to a storm. After several days a person from "customer service" called them and said: "We have received your question via web pages, do you have electricity now?"

You might ask what all this talk about customer service has to do with the relationship between art and design. Firstly, it seems that customer service often turns out to be a bad accident while it really could be a happy one, a creative process where customers are served and even surprised. The customer journey could be a personalised

process and, if planned correctly, it could speed up customer-driven innovations. Secondly, service processes could have such a high quality that they become *art-like phenomenona*. And finally, *art is embedded in the creative processes and methods service designers employ*.

Is saving costs more important than serving the customers? How many times should you suffer bad service before changing to another brand?

Moreover, everyone wants to be treated as a *human being*, not as a consumer;

> *"I'm not much of a consumer." [...] People say that to me all the time. I guess nobody wants to define himself or herself as a 'consumer,' because it feels a little trivial.* (Walker 2008, xix)

The commercial persuasion industry and big corporations have to change customer talks and approaches: more sensitive connections between brands and users are emerging. The world is changing: customers are becoming prosumers or as futurist Paul Saffo (2010) puts it; we are entering the *creator economy*.

Inventing and Artistic Creation Are Siblings

> *The current economic, environmental and social climate is encouraging designers, planners, scientists, marketers and technology experts to invest imaginative and playful thinking.* (Rabia et al. 2010, 44)

We live in interesting times: our operational environment is changing so rapidly that almost anything could be expected. Or what can we say about the fact that a two year old, small company and app called Instagram was sold to Facebook with the amazing price tag of a billion dollars! And while reading this, a new speed record from 0 to 1 billion dollars could be born. The example underlines a new reality: *best new ideas and concepts are the most valuable assets*.

Then again, there are lots of people who appreciate aesthetics and nothing else. Usability doesn't come first for those individuals. Artistic style is a very important topic when discussing the selection of services. Visually oriented people look at life through visual glasses; almost everything has to have aesthetic value – for some other people price and discounts matter. Sometimes these world views are true at the same time. People are irrational and easily guided by contexts and emotions.

Cultural theorist Slavoj Žižek argues that "nothing is ever what it appears, and contradiction is encoded in almost everything" (Aitkenhead 2012). Contradictions are visible when talking about the people living hyperlocal life, growing their own food, recycling products, etc. and at the same time using latest technological devices, such as tablets and smartphones.

In the midst of accelerating changes, people cannot fully understand the pace of the (r)evolution. Futurist and inventor Ray Kurzweil states in an interview (Cadwalladr 2012):

> *Our problem with pondering the future is that our expectation is* linear, not exponential. *Things aren't going to change incrementally, they're going to change explosively.*

The futures we commonly think will become reality in a decade are often already here. One good example is Samsung's new Smart TV.[1] Voice and gesture control and face recognition sounded like sci-fi just a year ago:

> *Every technological change has the potential for being both cursed and praised.* (Petroski 1994, 237)

It is possible to distinguish between a variety of consumer groups when it comes to the pace in which they adapt new technologies (see Vejlgaard 2007). There are early adapters just as there are people who oppose every change. Just now we are entering the *ubiquitous society*, where we are faced with adjustable, smart, and mediated environments as well as the *Internet of things*. Accelerating changes are running over us whether we like or not.

Speaking about technological progress, one should notice that also *inventing* and *artistic creation* are siblings. *That is why art, design, and invention go together so well*. Accelerating changes whisper that it's more productive to invent the futures than to research them. Service design and co-design expertise offer a great mindset to invention in the form of co-creation, rapid prototyping, infographics, crowdsourcing, prosumerism, and customer-driven innovation.

The best futures of service design are about enriching design cultures and expertise. Art will play its part. We don't know exactly what that part is, but art will turn out to be an important actor.

Sub and Countercultures

Art is usually strongly connected to sub and countercultures. Today, the same goes with design as well because art and design can no longer be separated and sometimes these siblings have so similar faces that you cannot distinguish between them. On the other hand, "even the most rebellious subcultures are in some level consumption based." (Walker 2008). Indeed, it seems impossible to hop off the brandwagon.

Sub and countercultures are interesting playgrounds for artists and designers. There are lots of weak signals and rough intellectual material waiting to be found from the uncharted frontiers and blurred borderlines.

John Maeda's (2006, 53) "Law 6, CONTEXT: *what lies in the periphery of simplicity is definitely not peripheral*" is of value for this discussion. Maeda confesses that he "was once advised by my teacher Nicholas Negroponte to become a light bulb instead of a laser beam, at an age and time in my career when I was all focus. His point was that you can either brighten a single point with laser precision, or else use the same light to illuminate everything around you. Striving for excellence usually entails the sacrifice of everything in the background for the sake of attending to the all-important foreground." (ibid.)

Many artists, designers, and architects are in love with the tiniest details and the big picture at the same time. In cross-disciplinary service development, project leaders and designers have an even bigger universe to cope with. However, concept

[1] http://www.samsung.com/us/2012-smart-tv/

design brings the whole family together — art, architecture, and design. You may know many artists who don't want to hear this but *ideation and concept design form a common basis for all creative work*.

A fellow designer just recently noted that the "autistic coldness" of present-day design and architecture are results of failed attempts to remove emotion from the processes. Non-communicative design has no value for end-users. Many designers may have usability in mind but the results could be utterly cold. Unfortunately it seems that our education systems are to blame for the narrow-minded neo-modern style of many contemporary designers. Lately, cross-cultural design styles have been enriching, but the neo-modern approach is alive and kicking as a cultural symbol.

Sub and countercultures offer a richer view than the dominant, blatant, and ad-like atmosphere of neo-modern culture. One should also seek answers from contemporary art. For example, the CAMOUFLAGE (2012) exhibition offers new ideas about the relationship between art and design.

It is commonly understood that creative work often has surprising results. And when dealing with highly cross-disciplinary creative work, one plus one usually equals more than three.

> *German-born American artist Josef Albers (1888-1976) argued that "in design sometimes one plus one equals three," the implication being that sometimes the end product is greater than the sum of its parts. (van Gaalen 2009, 34)*

Do Good Ideas Dictate Our Futures?

> *Unless we invent a better future, we won't have one of any kind.*
> — Arthur C. Clarke

Ideation and concept design are key elements of service design. It is worth repeating that in the current socio-cultural and financial environment new ideas and concepts are the most valuable immaterial assets alongside competences and brands.

Many are willing to traverse the realm of blue ocean strategies (see Kim & Mauborgne 2005) — and it is easy to believe that new ideas and concepts are being created with little or no hindrance and child-like enthusiasm. However, this is not the case. Unfortunately, various mental hurdles and cultural limitations block creativity. Creativity has certainly been the theme and topic of gala performances and corporate speeches, but ever too often it is non-existent in the everyday reality of organisations.

Indeed, ideation and concept design are difficult to do in a result-oriented manner unless the related limitations and hurdles are dealt with openly. Issues blocking the creation of new ideas can include, for example, lack of courage or the need to "play it safe." It is easy to state that the tendency to avoid mistakes and to concentrate on grey everyday work is one of the key problems in contemporary Europe. A further universal problem is that of copying. Authenticity does not come easy.

Some of the limiting factors are unconscious. For example, our worldview, faith, or conviction can hinder ideation by allowing only such solutions and ideas that fit our own preconceptions of the world. Another unconscious factor could be the "not

invented by us" syndrome. Other sorts of cultural issues, such as the Finnish compulsion to use blue in all marketing and communication material due to it being a national colour and subjective conceptions about what is acceptable and what isn't, can form unnecessary and unconscious limitations for creativity.

Financial reasoning comes into play as well: ever too often new, original concepts are perceived as unprofitable expenses instead of as investments into the future. Other often stated reasons include "not in line with our strategy" or "someone else is responsible for this in our company" (a great example of silo-like thinking).

Free ideation is also restricted due to organisational culture and hierarchy; who is allowed to innovate and in what domain. Limitations caused by power structures are sometimes the most difficult to solve. However, it cannot be stressed enough that design thinking requires the empowerment of employees, clients, and customers: good ideas can and should come from all imaginable sources.

It is essential to openly discuss the restrictions and limitations that hinder creativity before moving on to ideation and concept creation. In workshops, for example, openness has provided mainly positive experiences. Another key issue that needs to be addressed immediately is to identify the actual challenge or problem that needs to be solved. It might be that such an identification process ends up finding a wider challenge or a more substantial opportunity than what the original starting point ever was.

The logic of continuous improvement (kaizen[2]) was the means of operation in the industrial era, but it is no longer enough to survive the competition. Nowadays the competition has to be beaten through innovation. There is a dire need for radical and systemic innovation.

There is no simple path to success. Life and the world are complex up to such a degree that success requires the right circumstances and timing just as well as precise and creative steps.

However, it can be noted that creative concepts that connect different competences and different viewpoints increase in importance all the time. I anticipate that the cases presented below constitute an early signal of what is to become more common in the future.

1. *Cirque de Soleil* reinventing circus.[3]
2. *Moto Restaurant* reinventing food, kitchen, and restaurant.[4]
3. Instagram, an economic speed record of value creation, less than two years to one billion dollars.[5]

Randomness, Irrationality, and Fuzziness

The transformation taking place in the world right now makes virgins of us all, and that's why Velocity *matters. We're living through a time of big and little changes in the way we*

[2] Japanese for 'improvement'.
[3] www.cirquedusoleil.com/en/welcome.aspx
[4] www.youtube.com/watch?v=47qgz4ToBfE
[5] www.instagr.am

> *do just everything and the only people and organisations guaranteed to make fools of themselves are the ones who think they have it all figured out.* (Branson 2012.)

Design people are unfortunately in the habit of oversimplifying the reality we live in. Many designers do not follow world news and are narrow-minded enough to concentrate on design issues only. Service design education should be intellectual, culturally rich, and cross-disciplinary because service designers have to cope with the rapidly changing and complex world. Service designers are working with societal issues. There is a considerable need for learned experts and wise approaches as our working environment is constantly changing and insecurity is here to stay.

Taleb (2005) explains the difficulty of foresight and how the foresight of, for example, financial markets is more dependent on luck than skill. Continuing in the same lines, he explains (Taleb 2010) that *black swans* mean extremely unexpected events that are difficult to foresee. Black swans of the past include, for example, the Internet and the rise of its importance, personal computers, WW1, and the 9/11 attacks. The term 'black swan' comes from history: the whole world assumed all swans to be white up until black swans were found in Western Australia.

Even though Taleb is one of the few who warned about the real estate bubble and the emerging economical crisis before the difficulties hit us, he states that black swans are not on the horizon because there is nothing in history that could enable foreseeing them. However, black swans have huge impacts. He refers to the much quoted decision theory which is based on a fixed universe or model of outcomes. Such models ignore or minimise the impacts of everything outside the model (such as the 9/11 attacks). The fixed models consider "known unknowns" but disregard "unknown unknowns." (ibid.).

One can state that there are certainties such as the increase of digital technology and automation or the increased role of GPS in service development (Schwartz 2009). These enable us to create a more accurate picture of the future. On the other hand, uncertainties include changes of the global economy, the pace of technological development, new business models, changes in national funding, etc. Gerald Zaltman, Professor Emeritus at Harvard Business School, states that

> *the world has changed, but our methods for understanding consumers have not. We keep relying on familiar but ineffective research techniques and consequently misread consumers' actions and thoughts. [...] So why don't we change our paradigm? Because it takes courage and patience to alter deeply entrenched existing paradigms.* (Zaltman 2003, x)

> *The most troubling consequence of the existing paradigm has been the artificial disconnection of mind, body, brain, and society.* (ibid., xi)

> *Consumers do not live their lives in silo-like ways by which universities and businesses organize themselves.* (ibid., xii)

Zaltman (ibid.) claims that the majority of customer thinking (up to even 95 %) is unconscious. Quoting brain research, he states that the human brain understands and adopts mostly narratives, and thus statistical information is, from the viewpoint of understanding, erroneously packaged.

Cusick (2009) supports these views. He bases his claims on neuroscience: we do not make logical decisions that could be accurately anticipated.

It seems that we live in a predominantly fuzzy reality where it is difficult to give either-or answers. 'Fuzzy logic' is a term coined by Professor Lotfi A. Zadeh (1965) who pondered on the many-sidedness and the multiple values of language(s). The subject at hand is multi-value logic as a counterbalance of the black and white either-or world. According to fuzzy logic, things are not necessarily entirely true or untrue; answers are not necessarily either yes or no, but a thing and its opposite can co-exist.

To use a simple example; my friend is 180cm tall. Is he a tall person or not? The difference between probability and fuzziness manifests itself mathematically so that probability is an additive measure whereas fuzziness is a subjective opinion. This said, my friend is simultaneously somewhat tall and not tall – there is no simple answer to the simple question. And of course the answer also depends on the cultural context.

A closer look at fuzziness shows that our languages – and thus our reality – include many contradictions where even antonyms or opposites (such as beautiful and not beautiful) are simultaneously true to some degree. The more complex the observed phenomenon, the more difficult it is to make any explicit statements about it. We are growing increasingly sympathetic of politicians who are demanded for simple yes or no answers when such answers do not exist. The complex and ever-changing reality predominantly reveals itself in subjective, i.e. fuzzy, terms. This is why narration and examples are the best ways to describe changes in human communities and societies – they are best suited to present ongoing changes in an understandable form.

Fuzzy logic can also be used successfully in equipment and information technology. In general terms, fuzzy logic applied in information technology provides a chance to mimic human deduction processes and to quantify and make decisions based on imprecise information. Nowadays, fuzzy logic is considered a part of soft computing.

Randomness, irrationality, and fuzziness are some reasons why service design is even more difficult that we could imagine. Carl Jung, renowned Swiss psychiatrist, stated more than 60 years ago (2011, 6) that

> *The distinctive thing about real facts, however, is their individuality. Not to put too fine a point on it, one could say that the real picture consists of nothing but exceptions to the rule, and that, in consequence, absolute reality has predominantly the character of* irregularity.

Service design is mostly about stories, feelings, and experiences. Service design is also about people using the services. That is why deep understanding of human nature as well as individual needs and desires is needed.

The Art of Making Money

The current cultural situation is yelling out that sustainability, corporate social responsibility, and other ethical and ecological aspects are parts of everyday business. A social enterprise is an organisation that applies commercial strategies to improve human and environmental well-being rather than maximises profits for

external shareholders. This is also called the *conscious economy*.[6] For example, ethical banks and social cooperatives aiming to make ethical business and fair trade are parts of this rising trend. One form of social business follows a principle where a company invests or donates a big share of its profits directly to a developing country's economy.

Luxury is becoming less about showing off, and more about the quality of materials and service, originality, uniqueness, personalisation, and ethical and environmental aspects. New York-based *Luxury Institute* has named *Bottega Veneta*, which prides itself on sporting no labels at all, the world's most luxurious brand. German-born Tomas Maier removed all labels and went back to the brand's original understated allure. Since then, he has been credited with defining luxury as discrete individualism. Unlabelling (see Nadeau 2007) can be strongly linked to the anti-branding movement (see e.g. Klein 2000) and anti-globalisation atmosphere, but unlabelling could also be understood as a purely aesthetic statement without any connections to ethics.

There are false gurus and fake brand images. It's increasingly difficult to dive deep into information and figure out the ever-changing and complex reality. The Online Journalism Blog (2009) states while reviewing a book by Chris Anderson that "however, here I find myself falling into the same trap [...], arguing with the content rather than viewing it as a promotional device for Anderson. Whilst I'm sure Anderson expects to make a lot of money from the book, he also has his eye firmly on the increase in his fee for public speaking, and as such the book does a great job of marketing Anderson as the guru of 'Free'." Indeed, *Wired* editor-in-chief Chris Anderson is very good in oversimplifying and sales. The scary thing, however, is that many people believe him without checking the facts behind his words.

Lucas Conley (2008, 62) discusses the same themes and states:

> *In the name of the brand, any idea can be defined as valid and any crackpot can assume the status of a guru. And when the snake oil salesmen roll into town shilling branding tonics and salves, anxious executives line up, their minions and dependents standing dutifully at attention. Branding now encompasses supply chains, partnerships and, in an especially unholy pairing, human resources. Corporate branding books dictate everything from language to dress to the fonts of internal memos.*

Despite the surprising and many-sided development paths of recent times, the most recognisable character in consulting, design, advertising, and communication is still the fundamentalist expert of a single method. Stephen Brown (1998, 88) discusses this state of affairs and says:

> *[...] my considered opinion is that the four most blood-curdling words in the marketing lexicon are 'I have a model'. Granted, the words themselves are fairly innocuous – beguiling even – but they are invariably announced with a tone of absolute assurance and accompanied by a look of such grim, gimlet-eyed conviction that you instantly know you are in the presence of a marketing fundamentalist.*

[6] http://consciouseconomics.org/

Sergio Zyman (1999, xii) writes: "There are still lot of folks out there in the marketing world pretending that they are magicians."

Marketing, consulting, and entertainment are undoubtedly surrounded with an air of artificiality and shallowness which affects the contemporary world in many ways. The logic of branding penetrates the whole global world.

In recent years, global business practices have received a lot of criticism. *No Logo* (Klein 1999) can be called a cornerstone of this wider societal criticism. Societal and ecological responsibility have been key themes during the past few decades. As showcased by Grant (2007), *green thinking* has entered the mainstream also in sales and marketing.

Rob Walker, a journalist with a background in marketing, wrote a (Walker 2008) great introduction to the theme. Walker presents a human being, *homo economicus*, who seemingly makes his consuming decisions completely rationally taking price, quality, usability, and other practical issues into consideration. Walker explains that there are so many high-quality products available in most product categories that brands have increasingly become the defining factor in our consuming habits.

He highlights a medical study conducted at the Baylor College about the superiority of Coke over Pepsi or vice versa. In the early phases of the project, a rerun of the well-known *Pepsi Challenge* tasting test was conducted. The researchers found the subjects favoured Pepsi slightly. In the next round of testing, *cultural brand identity information* was included in the test. This time around Coke won the test by a mile. The Coca-Cola brand proved to be significantly stronger than that of Pepsi and altered the research results to the favour of Coke — even though the blind test favoured Pepsi slightly. (ibid., 123)

The Era of Images and Video Clips

> *In our relation to things, in so far as this relation is constituted by the way of vision, and ordered in the figures of representation, something slips, passes, is transmitted, from the stage to stage, and is always in some degree eluded in it — that is what we call the gaze.* (Lacan 1994)

The gaze gives birth to images. Visual representation impacts our collective conscious and unconscious. The creator of a visualisation has his or her own interpretation of the subject; when someone else looks at the image, another interpretation is born. The world of images is ambiguous and ambivalent. However, good pictures have the ability to create and transmit feelings. Touching images have art-like qualities.

Images rule the world more than ever. Idea and image sharing firm Pinterest is one example of the rapid growth of visual communication. Other examples illustrating the change are photo apps like *Instagram*[7] and *PixIromatic*[8] gaining importance and popularity.

Infographics and signage are important aspects in service design. Data visualisation is a form of artistic creation and something that fuses art and design. Design

[7] http://instagr.am/
[8] http://pixlr.com/o-matic/

work has gained importance in data journalism because of infographics. Accelerating speed has shortened journalistic content and fancy visualisations attract readers.

We are entering a more visually functioning, *video-oriented society* where videos, pictures, figures, and real-time infographics are becoming not only *infotainment* but esteemed forms of data. One side of this development is the increasing role of real-time communication. Another is the importance of visual storytelling in communication. A message or ad becomes more easily accepted if a person who receives it establishes emotional ties with it. Appealing stories and videos that showcase the issue are not only good entertainment; they are powerful tools of communication.

DIY Artists and Designers

You can soon 3D print your own furniture and even your own home.[9] As *The Economist* (2011) puts it, "three-dimensional printing from digital designs will transform manufacturing and allow more people to start making things." Manufacturing (r)evolution brings the expertise and the tools to do-it-yourself people.

Crowdsourcing becomes a part of problem solving as well as service co-creation. Customer-driven innovations and prosumerism mark a new era where the user is the main brand instead of products, services, or organisations. We will see DIY digital graffiti, DIY digital decoration, machine and product hackers, and other ways to intervene and disturb well-planned services. DIY is here and it's changing the future landscape.

Epilogue

There is a common belief that the quality of design is somehow a matter of taste. It is utter nonsense, because if it were, competence development and design teaching, e.g. in the field of service design, would prove impossible.

On the other hand, users' opinions are extremely relevant where the quality of design is concerned. Consumers (and clients) can provide valuable feedback for service development. However, this doesn't mean that quality of service design could be measured in mere opinion.

> *If I'd asked my customers what they wanted, they'd have said a faster horse.*
> — Henry Ford

The above quote from the father of industrial car manufacturing describes the importance of vision in design. Ever so often clients and customers are unable to imagine a different kind of product or service — a different kind of world, if you will. It is the designers' task.

Flattening the quality of (service) design into a matter of taste is impossible also because designers — or in case of service design a multidisciplinary team of professionals — have to consider a multitude of different viewpoints and challenges in the design process. The criteria for good design cannot be limited to usability and aesthetics; it is

[9] http://weburbanist.com/2012/05/08/3d-printing-goes-giant-print-your-own-home/

easy to find dozens of viewpoints that need to be taken into account in assessing the quality of design.

> *People ask for criticism, but they only want praise.*
> — W. Somerset Maugham

Critique is a part of the everyday in visual arts, movies, and music, but design suffers from a lack of critique. Mainstream newspapers discuss design mostly through nearly ad-like articles, merely as *style*.

One reason for the lack of critique is the non-intellectual traditions regarding design. We are used to praising old stars and heroes and, at least in Finland, we feel a sort of national pride for their accomplishments. The long shadow of tradition has played its part in blocking development paths that might have promoted critique. We seem to operate by mere gut feeling, opinion, and intuition; what is said is irrelevant, what matters is who says it.

We live in a time where the artificial divisions between researchers, consultants, authors, teachers, and workers are becoming outdated. Service design is an example of a competence area where professionals from a wide variety of fields — from cultural anthropologists to theatre pros and from futures researchers to cartoonists — work together. Furthermore, the range of competences a service designer may (and should) possess is getting wider and wider. Service design is characteristically cross-disciplinary work where the extremes collide and merge; research transforms into strategies and again to new research, service ideation results in prototyping and pilots that are, in turn, fuel for new ideas and service concepts.

In addition, service design is complex and immaterial by nature, thus calling for analytical approaches. This is why everybody in service design should read literature of a variety of fields; not necessarily books that have the words 'service design' in their title.

The core to competence development in service design is advancing one's own thinking. Service designers and others working in and around the field should understand the various dimensions of the challenges their clients and customers are faced with and be able to illustrate and depict those challenges in different ways. In many ways, service design is close to design thinking. Currently it seems that design thinking methodology and service design viewpoints are merging into a competence field that is more interesting than ever before.

As a field, service design is amidst intensive development. This is why we need service analysis and service design critique. Who knows, we might even be able to pave way for analytic approaches and critique in other fields of design.

> *Language is the way we interact and communicate so, naturally, people use the means of communication to try shape attitudes and opinions and to include conformity and subordination.* (Chomsky 2006, 18)

One should grow to understand where and when one is being manipulated. That is why media education and design critique should be added to the syllabuses of service design. Experts working in service development should be conscious about the forces they are dealing with:

> *I write for a blog called* Design Observer. *Usually my co-editors and I write about design. Sometimes, we don't. Sometimes, for instance, we write about politics. Whenever this happens, in come the comments: 'What does this have to do with design?* (Bierut 2007, 11)

It would be useful to see designers and especially service designers grow less narrow-minded. Deep understanding and cross-disciplinary background is of paramount importance when discussing with executives and diverse group of experts. In order to cope with complex societal dilemmas, service designers should have an educated view on the problems at hand:

> *Good design has the potential to benefit many more people that it currently does. Design can play a direct role in addressing critical societal issues that we face.* (Bell 2008, 15)

Diversity is also needed when developing design critique and service design expertise. Service design has huge possibilities if we manage to take the right steps forward.

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