Kari-Hans Kommonen
Media Lab, University of Art and Design Helsinki UIAH
Finland

Introduction

Design and designers are facing an opportunity and a challenge of unprecedented proportions, because the society is being transformed in design processes that are much more rapid, comprehensive, pervasive and driven by humans and their systems than ever before in history. This is the context for the future of design, whether the design field or the society in general perceives it or not.

We tend to see the world according to categories we have defined or grown to respect. If we have learned that design is a certain kind of thing, it will be hard to see it differently. But we owe it to future designers to have an open mind and be prepared, and prepare them, to work in a new landscape of design, with a much broader diversity of design problems to deal with, and with a growing arsenal of new kinds of materials for design to know and utilize.

My views are based on the work we have been doing in the Media Lab at the University of Art and Design Helsinki UIAH in the ARKI research group (http://arki.uiah.fi), in order to develop an understanding of how digitalization may influence the society, and what that means to design.

I do not know what the most important new areas and expertises will be, or how their teaching should be initiated, but I want to present some indications of future directions and propose some points of view to take into account when designing design education.

The issues I will bring forth will clearly touch those who are in some way directly involved with new technology and computers, and might be of interest to those who want to explore new areas, but I would propose that the globalized, integrated, design and technology intensive, market driven circumstances make it necessary for all design to make the effort to see the larger picture and establish a position or accept that it very likely will find itself furthering questionable developments in society.

Design is a universal, ubiquitous phenomenon

Design has been defined in a variety of ways, but none of these seems to capture the idea in a way that would persuade a dominant following. Instead of presenting here a gallery of examples, I will just quote Richard Buchanan, who discusses this phenomenon in his very inspiring and insightful reflection of the idea of design and design thinking in an article titled "Wicked Problems in Design Thinking":

"Despite the efforts to discover the foundations of design thinking in the fine arts, the natural sciences, or most recently, the social sciences, design eludes reduction and remains a surprisingly flexible activity. No single definition of design, or branches of professionalized practice such as industrial or graphic design, adequately covers the diversity of ideas and methods gathered together under the label."

...

"There is no area of contemporary life where design the plan, the project, or working hypothesis which constitutes the "intention" in intentional operations is not a significant factor in shaping human experience."

...

"The challenge is to gain a deeper understanding of design thinking so that more cooperation and mutual benefit is possible between those who apply design thinking to remarkably different problems and subject matters." [1]

All human beings design, and the ability to design is one of the fundamental things that differentiates us from other animals. Also culture and everyday life is permeated by design, and it is impossible to impose a tightly defined view over such diversity. Given the ubiquity of design, the cultivation of this pluralism is beneficial and even essential. For a designer it is important not to surrender to this apparent difficulty of defining design. I believe that it is a designer's responsibility to develop a personal understanding of the field of design, as well as to be able to elaborate and explain this view to others. The characteristic of tolerating and even cherishing such a subjective freedom is one of the strengths of the field.

This essay relies on such a subjective view.[2] I believe that the difficulty in defining design results from the desire to find clear and indisputable boundaries; because design is such a broad phenomenon, this pursuit generally leaves large areas of design outside of the boundaries. My concern is to study design wherever it can be found, and hence this definition may seem vague, open, and broad; however, I have found it useful and eye opening for my own needs and in facilitating work with colleagues and students from many disciplines.

I propose that design means the set of characteristics that more or less essentially defines the structure and functioning of something. We differentiate things from one another by their design. The activity of designing is to intentionally create designs.

 Designer is an expert role in design processes - an expert person who designs. Some people design intentionally without calling it design or identifying themselves as designers. Some people identify themselves as designers, and a subset of those has been educated as designers in a design institution. In this article, I will use the word designer to refer mainly to those who identify themselves as designers.

But designs are created in a variety of design processes and many, if not most, designs result from processes that are not intentional and do not employ human designers. For example, evolution has produced uncountable designs that existed before humans appeared.

Design operates within an evolutionary framework

Evolution did not stop designing when humans developed the ability to design. Instead, humans have increased the speed of evolution by introducing intention and conscious evaluation into the selection process. The human mind, society and language created a platform for cultural evolution, a process that produces immaterial design artifacts, or ideas, as well as material artifacts, which embody or materialize some of these ideas.

The interaction of cultural and social evolution has led us to the world we have now, and in the process we have created an appreciation for the ability of individuals to contribute to the evolution by introducing new ideas and practices.

Unfortunately, a concept of design that emphasizes individuals and their creativity and innovations often overlooks the evolutionary and societal framework and the multitude of processes that actually influence and determine the success of designs. This may give well earned respect for inventors and designers and their skills, but fails to bring forth a more comprehensive, useful and fair picture of design in society.

One source of this trouble is our reluctance to accept that complex and functional designs can emerge without the intentional designer. In spite of the fairly common acceptance of Darwin s evolution as the process that created the diversity of life on earth, we still always attempt to identify the intelligent being who masterminded the things we think exhibit design and intention.[3]

But if evolution designs, what is the role of the designers? I propose that designers should not be seen as the individualist creative heroes that single-handedly change the world. Instead, the human mind and culture form an amplifier and extender that makes the design processes and the emergence of new designs dramatically more efficient. In

this view, all people, and designers especially, act as agents of evolution — but within its constraints — when they design.

Wicked problems demand design expertise

There are many areas in society where designs are created in ways and processes that could benefit from the kind of design expertise that has been developed in the fields of design. But because the designs created in these new areas are not labeled as "designs", and because there is no design education for those fields, the fields are not generally connected to design.

However, I believe that this is changing now, and the change is driven by the parallel and interconnected developments of increasing convergence, globalization, and the imperative of sustainability.

Convergence of our technology, infrastructures, businesses and cultural conditions connect and combine things in new ways, and makes new interactions between surprising elements suddenly essential. Globalization grows the scope and impact of design and introduces completely new kinds of concerns for cultural and ethical issues. Demand for expertise of a new kind that was not even envisioned a little while ago, suddenly pops up. The society grows more and more "wicked problems" for which it desires to develop comprehensive, systematic solutions, as opposed to one-off improvised solutions.

Buchanan brings up the concept of the wicked problem, as introduced by Horst Rittel. Rittel argued that most of the problems addressed by designers are wicked problems: they are, according to his formulation, a "class of social system problems which are ill-formulated, where the information is confusing, where there are many clients and decision makers with conflicting values, and where the ramifications in the whole system are thoroughly confusing."[4]

Buchanan goes on to propose that design problems are indeterminate and therefore wicked, because "design has no special subject matter of its own apart from what a designer conceives it to be. The subject matter of design is potentially universal in scope, because design thinking may be applied to any area of human experience."

Another interpretation I would like to offer is that design deals with wicked problems because it has evolved for that purpose. Design as a field has evolved, and design expertise has been developed, because people and the society have always had wicked problems to deal with, and this requires approaches that some other disciplines are not willing to accept. Thus, to be able to address wicked problems is a special characteristic of design, very intimately connected to its identity and the justification of its existence as a field of its own.

The issues for society are not running out, and their wickedness is increasing, because we are realizing that we must take the whole of the world more and more into account in everything we do. As the wickedness and scope of issues grow, more design expertise is needed. And as Buchanan also says, design thinking can be applied to any area.

Digitalization breeds new wicked problems

One of the key activities that is teaching us a lot about the relationship of design and society and the future, is software related design. It is tied to the technological revolution that is enabling the global changes. This gives it a privileged ringside position in the development of new design approaches that become necessary because of, and benefit from, the emerging technological possibilities.

Software design gives us new ideas about the world and the potential for design, because one of its essential tasks is to create abstractions of the real world. Software designers must try to analyze patterns that make up human activities and social systems, and model them, or systems that complement them, in software. This is very interesting right now, because the whole society is being transformed by a process of digitalization[5], in which software design plays a very influential design role.

As more and more of social and cultural activities become mediated by digital software systems, the more social and cultural concepts, characteristics, structures and systems need to be understood and to some extent modeled by designers. While most social and cultural phenomena can't

be reduced to software, and many important areas of our life might even deteriorate from growing efficiency, many more or less significant areas remain, which can gain tremendously in efficiency through networking and digital software. This will generate a strong, irresistible drive to digitalize many aspects of our everyday life.

For example, our food or our friends will not become digital, but some digital tools may form a very important part of our food-related social activities. We might use digital, efficient tools to find what we want, to be able to hold on to our demands concerning its quality, to negotiate a reasonable price, and to arrange our schedules so that we can eat in peace. While most people do not wish to be more efficient in everything, there are numerous practical and boring functionalities they do want to make more efficient. The changes these digital, networked designs infuse into society are so powerful that they have a dramatic effect. They influence the ways we communicate, trade, make a living, make agreements, form communities, make decisions, participate in decisionmaking, get information and so on. The changes will touch all people in all societies, because many digital ways of doing things will replace old, non-digital ways. This makes us all eventually dependent on digital technology. Anyone who is involved in the buying or selling anything; in using money or credit; in communication; in passing through locks; in travelling or staying in foreign places; and so on - will be touched by these changes, whether they want to or not.

My motivation in pointing out the likely extent of the impact of digitalization is not to glorify nor condemn it, but to suggest that it is something that we all must take seriously into consideration in the long run, and the sooner the better. People everywhere would benefit from a better understanding of what is going on, but designers who do play a more active part in the making of our common future should make it a point to make sense of the this development, because of its influence on any area of life, but also because of the new areas of design it reveals to a perceptive observer.

But what the techno-economical actors who are driving this development are beginning to see is that software and technology expertise is not enough for success. Many technologically advanced products have completely failed in the market. The failure of the dot-coms testifies of grandiose expectations that were completely unfounded. Why?

Technology develops much faster than its applications, because technological problems are not wicked while application problems usually are. People and organizations do not have direct demand for technology - they need benefits. These benefits do not result from consumable products, but from changes in the practices, activities and products which technology makes possible. The success of new technology is not possible without social and cultural evolution and innovation that can take advantage of it. Therefore, even though software design is at the core of this development, and its needs are pushing many of the new ways to think about design, the most important design issues technological development bring forth do not really belong to the technological realm. Software can not serve people if it does not enable new social and cultural innovation. Software expertise will be needed for the software problems, but expertise about the whole diversity of life is needed in order to enable the technology to become material people can use to construct their own ways to apply it.

The ecosystem we design for is now always global

Another great challenge is to deal with the responsibility of attempting to create fair and sustainable designs. We can't escape globalization any more, in any field. Globalization creates a global market, which brings benefits but also makes problems global. Within economies, polarization grows - the rich get richer, and the poor poorer. Growing efficiency means that production does not need as many people as it used to, while the production that is still necessary tends to move to locations where it is cheapest. In the wealthier economies, this development marginalizes many people and creates new poverty, crime and instability.

These economies have built that wealth through exploitation of other economies over the past centuries. This exploitation

now continues in new forms, for example through the utilization of cheap labor (which is cheap because of the lack of investment in the kinds of societal services and infrastructures that the workforce in the wealthier economy enjoys), and continues to create responsibility to those who benefit, for its consequences.

Design decisions can make a difference in influencing, for example, whether the potential of new means will be used to increase the efficiency of the exploitation, or to increase the fairness of trade.

Designs can create structures of exclusion. For example, although a credit card seems to be designed for a certain purpose, it is being used as a general measuring stick of the holder's reliability. A number of products and services can't be bought if you don't have a credit card - regardless of whether you have the money or not. In many countries, it is not possible to rent a car or reserve a hotel room without a card. Internet payments are almost impossible without one. Subtle, but powerful and cumulating details that often are overlooked. Convenience and efficiency creates dependency and new structures with implicit, often at least seemingly unintended power.

Growing efficiency, scope and speed mean that the consequences of actions and decisions can have much more devastating and irreversible consequences than ever before. If we find that some design was not good, it may already have destroyed the structures that existed before, and this may have taken place in a global scale. In design, we need to pay much more attention to issues of sustainability before we make the changes, and consider economical, social and cultural aspects as well as environmental ones. Societies are wholes, and individual people live in them whole lives. Even though our designs play only a part, that part interacts with these wholes, and we need to be aware of these possible interactions.

While the basic situation is not new, what has changed is the scale, speed and efficiency, and that through the global media network we have access to any information we might want, any time. People will be unable to claim that they did not know what was happening; their only excuse can be

that they did not understand how it works and how they were responsible. But designers, as the experts who must be able to assess the characteristics of the designs they help to create, can't hide behind such an excuse. They can't blindly rely on a superficial understanding of a static world, because they are creating new circumstances in a changing world. They must define for themselves what it is that they should know about the context of the things they design, and take that responsibility seriously, as part of the ethical foundation of the profession.

I am trying merely to point out that as we follow some of the threads such as these a little deeper, we find that there is almost a new world of design problems waiting to be taken into account. It used to be so that we could judge that many of these concerns would be out of scope, but in a global, converging scene, this is no longer true.

Challenge to design

The challenge to the field of design is to deal with the dramatic changes in society and the new responsibilities that result from growing design intensity combined with new pervasive technology and the global scope of everything. The best way to do that is to embrace the demand for new, unpredictable kinds of design expertise and find ways to develop the education to respond to this demand, thereby realizing an important opportunity to increase the significance of design in society.

And while the drivers that bring this opportunity forth relate to technology and economy, the relevant response to this challenge should address social, cultural and political areas of design, but be very thoroughly fluent with the emerging technological means, in order to be able to use them as material.

This situation of increasing demand has an interesting characteristic: neither the design institutions nor the society at large have yet really identified its nature appropriately as a specific challenge for the field of design.

The categories we like to use to clarify the structure of the world often become barriers instead of facilitators. As the world is converging, and everything is interacting with

everything else, design institutions may become prisoners of the boundaries they have defined for themselves if they take them too seriously and allow them to be too rigid.

In spite of the different ideas about specializations and boundaries of validity, there are many people who nevertheless cross them; the problems and designs do not have any respect for boundaries. For the design institution, it is probably smart to design a flexible and enabling organization which can react quickly and support people who come with a capacity and vision to develop new activities, even if they were not envisioned by the institution, rather than make a long term plan with very specific fields and profiles, and then try to find people who fit the profiles.

1) Buchanan, Richard, "Wicked Problems in Design Thinking", *The Idea of Design*, Victor Margolin and Richard Buchanan, (eds.), The MIT Press, Cambridge, MA, 1995. P., 3.

2) This subjective view is obviously inspired and influenced by numerous authors whom I am not able to credit properly in this space.

3) Dennett, Daniel C.: *Darwin's Dangerous Idea: Evolution and the Meanings of Life*, Touchstone, New York, NY, 1996: An enlightening explanation of the relationship between evolution and design. PP. 64-73.

4) Buchanan, R., "Wicked Problems in Design Thinking".

5) Technology development is turning all electronic devices and communication systems little by little into components of a seamless, global digital platform, a digital dimension. This, in turn, forces all content on that platform to become digital as well. The digital platform is a network of computers, and the computers are all controlled and directed by software, which all has to be consciously designed by humans. For a more elaborated description of the development of the digital dimension, see http://arki.uiah.fi/concepts/digitaldimension

from gadgets to digthings
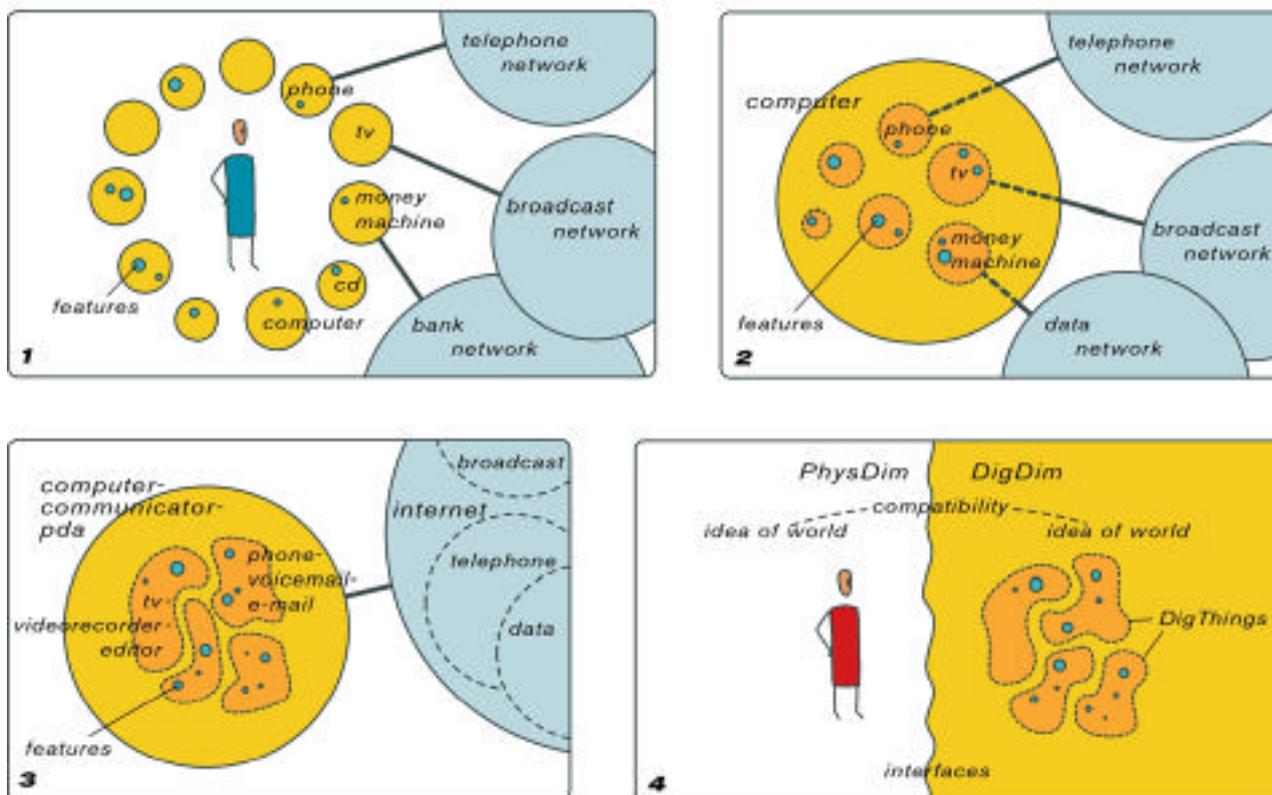
© 2000 Kari-Hans Kommonen / visualization Matti Arvilommi; Future Media Home, Media Lab UIAH