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Design Through Knowledge. Knowledge Through Design

Skou, Niels Peter

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INTERNATIONAL DESIGNCAMP2011
**FROM INTANGIBLE
TO TANGIBLE
FROM TANGIBLE
TO WONDERFUL**



COLOPHONE

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FROM INTANGIBLE TO TANGIBLE. FROM TANGIBLE TO WONDERFUL
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RESPONSIBLE: Project Manager Mette Mikkelsen
EDITING: Kirsten Bohl
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INTERNATIONAL DESIGNCAMP2011
**FROM INTANGIBLE
TO TANGIBLE**
FROM TANGIBLE
TO WONDERFUL

Liebes Designcamp,
seit ich dich kenne, ist nichts mehr
wie es einmal war.
Dank dir habe ich erfahren, wie schön
es sein kann.
Die letzten zwei Wochen haben mich
zum Nachdenken gebracht – über mein
altes Leben und meine alte Beziehung.

Deine Freunde sind meine geworden,
übsatt wurde ich mit offenen Armen
empfangen.

Du hast mich inspiriert und auch gefordert.
Deine 6 Kraft-Tage und die dazwischen
getragenen Vorträge haben mich in meinem Denken
beflügelt und mir neuen Input gegeben.

Das Thema Elektrizität ist durch dich
greifbar und wunderbar geworden.
Trotz einiger Tiefpunkte ist unsere
Beziehung immer stärker geworden und
hat mir gezeigt, dass es gut ist, auch
mal kompromisse einzugehen.

Du bist ein zu großer Teil für mich geworden
um dich loszulassen. Ich bin in Gedanken
immer bei dir.

In Liebe und danke für alles,
Alexandra & Lisa

LOVE LETTER TO THE DESIGNCAMP FROM GERMAN LISA FEE PAURA AND ALEXANDRA HERBERT, PFORZHEIM UNIVERSITY.

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BY // ELSEBETH GERNER NIELSEN,
RECTOR, KOLDING SCHOOL OF DESIGN

HOW DO WE MAKE ENERGY BE ABOUT THE HEART, NOT JUST THE MIND?



“It takes more than a Christmas tree, food and gifts to make a Christmas party. In much the same way, it takes more than electric cars, wind turbines, and great charging stations to make a green future. Traditions, values, habits, and dreams – everything that makes being a human being meaningful – must be integrated in the technical solutions. That’s what the DesignCamp2011 was about.”

ELSEBETH GERNER NIELSEN,
RECTOR, KOLDING SCHOOL OF DESIGN

At Kolding School of Design we’ve decided to address the problem that, to most of us, kilowatts are an entirely abstract concept and something we take for granted. As long as users feel this way, creating an emotional link between climate and individual behaviour is difficult. This means that electricity suppliers can only really compete on costs. The message hasn’t come across that some electricity is better, healthier, greener, or something else.

If we compare the field of electricity to that of water, we might be able to learn something. Ten years ago, water was just water – in Denmark at least. Today, water is a differentiated commodity, and we’re more than happy to pay through the nose to get water from a particular spring; or for bottled water if the design supports our identity in relation to friends and surroundings; or just looks good sitting on the table even. How can we translate this to the field of energy? How can environmentally aware drivers be sure that the energy they use to charge their car comes from renewable sources of energy?

Kolding School of Design didn’t have the answer. That’s why we hosted DesignCamp2011 with talented design students from across the world, our own students and staff! And that’s why we asked the business community and external researchers to contribute to solving this design challenge – that is: How do we add emotional value to energy?

How do we make energy be about the heart, not just the mind?

It takes more than a Christmas tree, food and gifts to make a Christmas party. In much the same way, it takes more than electric cars, wind turbines, and great charging stations to make a green future. Traditions, values, habits, and dreams – everything that makes being a human being meaningful – must be integrated in the technical solutions. That’s what the DesignCamp2011 was about.

Design helps make things and processes meaningful and comprehensible. Actually to people, having a sense of meaning is more important than having food. That’s why we need to enter relationships and surround ourselves with things that bring meaning to our lives. In other words, we don’t stop driving conventional cars just because the future of the Planet depends on it. We only stop if it brings meaning to our lives. The climate issues will not surrender to finger-wagging. However, finding the ways into the hearts of the users and making what is right meaningful, will take us where we want to go. We must make eco-friendly living irresistible. During the two camp weeks we got some very good proposals for solutions. Proposals that make it easier for us to connect emotionally to the energy issues.

I hope you will enjoy meeting the students and their thoughts in this report – and that you can get inspired and make use of their ideas yourself.

FROM INTANGIBLE TO TANGIBLE FROM TANGIBLE TO WONDERFUL

Kolding School of Design and etrans used the DesignCamp2011 to zoom in on the ability of design to transform electricity from being intangible to being tangible. Participating in the Camp were 30 students from some of the top design schools in the world, 15 Kolding School of Design students as well as researchers, business representatives, and trained designers. Their assignment was to come up with suggestions for how to add emotional value to energy; that is, make consumers relate to energy with care, circumspection, humility, or joy rather than as a matter of course.

Three Power Days framed the DesignCamp2011; they contributed with a combination of knowledge loading and knowledge sharing to the process. To load knowledge were a series of experts working with energy and design from different commercial and theoretical viewpoints. During Power Research, all participants took part in condensing the insights into a series of points and recommendations which we ambitiously labelled "Recommendations to the World" to underline the scope of the problem.

10 RECOMMENDATIONS TO THE WORLD



1. DEMOCRATIZE INNOVATION

A new energy system must engage the users as co-creators and encourage ownership.

2. FIND THE RIGHT BALANCE BETWEEN AUTOMATIC REGULATION AND USER INTERVENTION

An energy system with fluctuating energy sources cannot work without mechanisms of automatic regulation. But for this to be accepted and to appear sensible the regulation needs to be balanced with opportunities for user intervention.

3. MAKE A NEW WAY OF MEASURING ELECTRICITY

Measuring electricity in Kwh is too abstract to be related to any everyday experience. We need a measuring unit that makes sense to us.

4. BUILD COMMUNITIES

Future architecture should create and support communities rather than separate people in isolated boxes.

5. THINK DIFFERENTLY ABOUT ELECTRIC INNOVATIONS, AND NEW SERVICES AND BUSINESS MODELS WILL EMERGE.

If we stop thinking of for instance the electric vehicle as a 'vehicle' and stop comparing it to existing vehicles, it will change communication, services and business models related to it.

6. MOVE ELECTRICITY FROM THE REALM OF UNLIMITED SUPPLY TO THE REALM OF LIMITED CONSUMPTION

We need to understand and manage electricity the way we manage limited resources like time and money. We should among other things make electricity budgets.

7. LET THE USER EXPERIENCE LIMITS AND REALIZE CONSEQUENCES

In order to change behaviour, we need to experience the limitations in the system and realize that our actions have consequences.

8. LET THE USER EXPERIENCE REWARDS AND JOY

An energy system with renewable energy sources does not only lead to periods of scarcity but also periods of abundance. We need to be rewarded for managing our electricity consumption sensibly but we should also make use of and enjoy excess production.

9. SHAPE CLIMATE-SMART IDENTITIES

If climate responsible choices become a mark of an attractive social identity, it can lead to sustainable consumption and overrule price concerns.

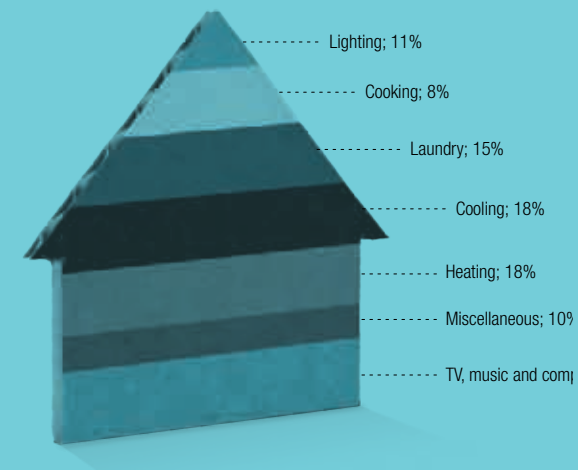
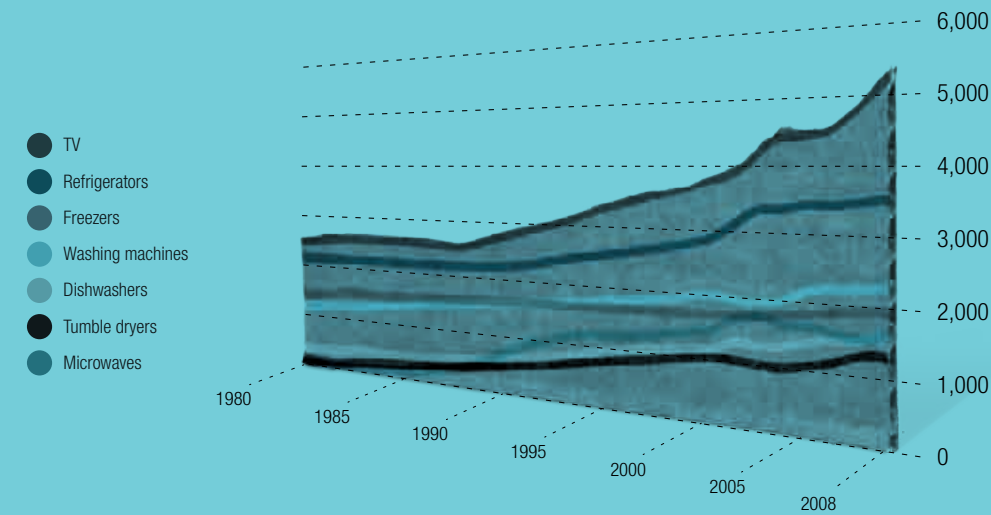
10. THINK GLOBAL – ACT LOCAL, THINK LOCAL – ACT IN PRIVATE.

The sense of shared responsibility must be extended to the private home. Global consciousness must be transformed to local actions.

Please go to the back of the report to see an extended version of the recommendations.

FACTS ABOUT THE DANISH CONSUMPTION OF ELECTRICITY

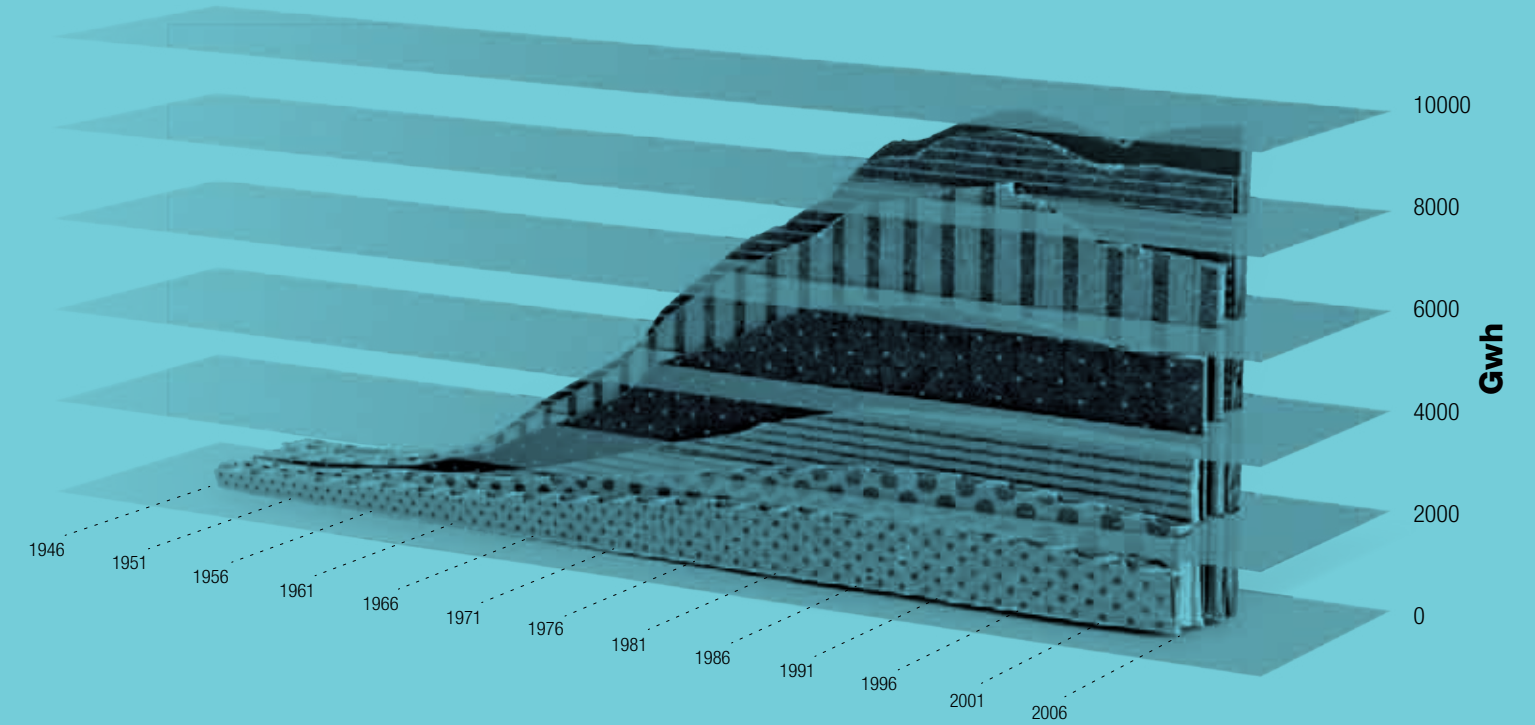
PRESENTED TO THE STUDENTS BY ENERGY RESEARCHER TOKE HAUNSTRUP CHRISTENSEN FROM THE DANISH BUILDING RESEARCH INSTITUTE, AALBORG UNIVERSITY



Model 1 // REASONS BEHIND INCREASE // Household stock of electrical appliances (in thousands)
Source: Energy Statistics 2008, Danish Energy Agency

Model 2 // HOUSEHOLD ELECTRICITY CONSUMPTION // Danish household electricity consumption distributed by final uses (2006)

- TV
- Refrigerators
- Freezers
- Washing machines
- Dishwashers
- Tumble dryers
- Microwaves



Model 3 // INCREASE IN ICT ELECTRICITY CONSUMPTION





CHAPTER// 01 DESIGNCAMP 2011

”

DesignCamp is a crazy intense two week adventure where you can have your mind challenged and expanded in new and exciting ways. The experience of working with large groups of international students is a fantastic way to push you out of your comfort zone and into areas where you learn things about yourself, about each other and about the world that you wouldn't have otherwise. It is a great design lesson.

DARCY GREINER,
EMILY CARR UNIVERSITY, CANADA



BY // METTE MIKKELSEN,
PROJECT MANAGER, ETRANS, RESPONSIBLE FOR DESIGNCAMP2011

WATTS WONDERFUL

“One of the students at Kolding School of Design comes from a small village in India. There, they have one generator producing the electricity of the entire village. The generator is switched on when the village council decides that the village needs electricity. Thus, everyone has to prioritise their activities due to the limited resources and adjust their consumption according to the commune.

This story inspired the solid design challenge of this year’s international DesignCamp: To transform something as intangible and distant as electricity into something tangible and concrete and even fantastic. To establish proposals for how users / consumers can acquire a more clear perception of energy; a perception marked by care, reflection, submissiveness, joy, and pleasure rather than indifference where electricity is only experienced second hand through the myriad of devices that need it to function.”

METTE MIKKELSEN,
PROJECT MANAGER, ETRANS, RESPONSIBLE FOR DESIGNCAMP2011

Once, someone told me that “a home is not a home until it is switched on”.

Taking me as the example, he is right. When I get home from work late in the afternoon, I switch on the lights in the living room, the hallway, and the bathroom without giving it much thought. I turn on the music and the computer and charge my phone. Then I go into the kitchen to start dinner. I’m not aware of the amount of energy consumed by this behaviour – and I actually don’t know how much it costs either. I have no idea what a kilowatt hour is, or how long you can keep your oven turned on for DKK 20.

However, I have been taught to save energy and turn off the lights when I leave a room. And I do think that I do; yet, there is no question that every year, my electricity consumption goes up, and I take for granted that the grid will supply me with the amount of energy I need.

ENERGY SHOULD BE USED WITH CIRCUMSPECTION AND CARE

I’m not the only one with this attitude towards energy in Denmark. Yet, considering the lack of resources and the climate changes, one can only but agree with experts that we must start using energy with far more circumspection and care; we must become aware that we need to use green energy rather than black energy.

One of the green energies in Denmark, wind energy, is available like the wind blows, and this requires more flexible consumer behaviour. Against this, there is the fact that long-term technological advancements enable a better dialogue between the user and the energy system making the consumer able to decide when he/she wants to use electricity. One option is to automatically switch off the electricity supply for the freezer around dinner time; during this time, electricity consump-

tion is huge, and society could save billions on reducing it. Another option could be for the consumers themselves to put a timer on their washing machine and their dishwasher so they will only run during the night when there is plenty of low-cost electricity. The challenge is to change the electricity system from a closed technological system to an open communicating system. Kolding School of Design believes that we can use design and design thinking to constructively help this process along.

DESIGNCAMP – DESIGN THINKING

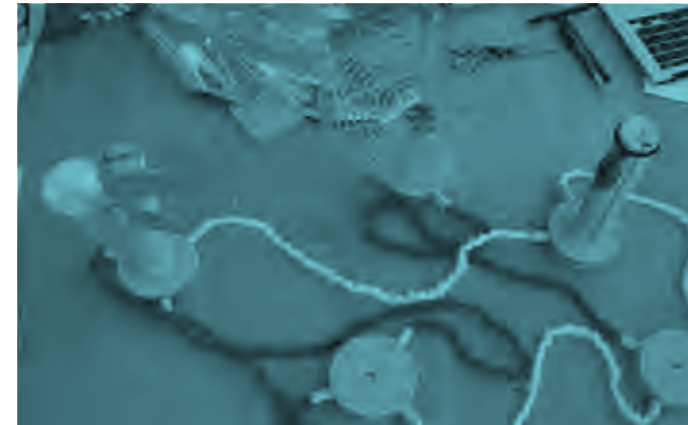
For the past three years, Kolding School of Design has organised and hosted the DesignCamp based on design thinking. The DesignCamp gathers students from all over the world. It focuses on the development of society in a broad perspective and is characterised as a cross-cultural collaboration between nations, institutions, and industry on

“design thinking ...a discipline that uses the designer’s sensibility and methods to match people’s needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity”.

TIM BROWN,

CEO of IDEO Design, Author and Designer in Harvard Business Review, June, 2008

meeting global challenges and solving common issues. At the same time, the DesignCamp functions as a window to the world with regard to a specific problem; this year, the use of electricity under the headline “From Intangible to Tangible. From Tangible to Wonderful”.



The DesignCamp represents a forum where design students learn to base their solutions on user-needs.

However, taking a serious approach to large-scale societal challenges such as energy consumption and renewable energy sources requires an understanding of the technological and societal or market construct that energy is supplied within. Therefore, the DesignCamp also includes presentations by, workshops with, and reality checks by researchers, business people, and technical forces within the field of energy.

However, the Camp is also a forum where we cultivate the students’ ability to visualise the future through experiments, drawings, prototypes, and models.

We consider this of value to society – and a broad range of resource persons from research, industry, and the energy sector participating in the Camp agree with us. It is clear to us that design thinking has a lot to offer in terms of inspiring private and public leaders.

The former Head of Research at Kolding School of Design, POUL RIND CHRISTENSEN puts it like this:

“Design thinking is thinking through design. That is, using design methods and a design mindset to come up with diverging but valid suggestions for future scenarios. The creative element of the design process often unfolds in the way the problem is presented; and different people view problems differently. The actual problem may not even be evident at the beginning of the process. New aspects emerge as the initial sketches are presented to e.g. production people, material suppliers, logistics people, and users. Design thinking can stimulate organisations to consider alternative approaches much sooner than they do now. This may result in significant innovation power and competitive advantages. Companies have to break with routines, concepts, and strategies. Design thinking can be used to create a unique market position.”

45 STUDENTS FROM THE WORLD'S TOP DESIGN SCHOOLS

45 design students from some of the world's top design schools participated in this year's DesignCamp. Coming from USA, Canada, India, New Zealand, Syria, China, Germany, Holland, Finland, Denmark, and England, the students used their individual and culturally inherited approaches towards electricity to kick off the process. For two weeks, they worked intensely on visualising energy, and one of the images that we presented as inspiration was that "Just like the iPod has had a decisive impact on how we understand and use music, we shall develop products, services, and systems that can make electricity consumption visible and create new kinds of meaning to consumers".

POWER DAYS WITH EXPERTS

In order to be able to solve this year's assignment, the Camp participants had to first learn something about the field of electricity. Therefore, the organisers had invited researchers and experts for two introductory Power Input Days. Professionals from Siemens Denmark, DONG Energy, TRE-FOR, and other electricity companies as well as a number of researchers from the Technical University of Denmark, the Danish Building Research Institute at Aalborg University, the Interactive Institute in Eskilstuna, and Kolding School of Design, among others, bombarded the students with knowledge of the energy systems of the future, about smart grids, and about the energy consumption of an average Danish household. Moreover, the students received input on how to work in groups. Indeed, intense group work is one of Kolding School of Design's specialities, and to many of the Camp participants this was a first-time experience.

ARTISTIC DNA CAN MAKE INTENSIVE KNOWLEDGE HIT YOU RIGHT IN THE HEART

This report contains project descriptions and short presentations by some of the researchers who participated in the Camp. The very condensed version of the DesignCamp output is that the Camp participants were able to prove that artistic DNA can transform intensive knowledge into something that hits you right in the heart instead of your mind. This is what can change the world. A few quotes by the Jury who provided the final Reality Check:

"Outstanding presentation of the concept; great micro and macro solution. I think it is amazing; I think this shows what happens when really intelligent people come together and actually also become more collective in intelligence".

ANNE SKARE NIELSEN,

Managing Partner of the innovation and futurist company Future Navigator

"When we are recommending issues for the new government to illustrate to the public how energy is to be used or saved or considered, examples like this one is very nice to have".

ANDERS TROI,

Head of Programme, Intelligent Energy System Programme, RISØ, DTU

From a design thinking point of view the Camp has been a huge success. We have received feedback from participants who have discovered new ways of working – among others Lasse Holm, Business Developer, responsible for innovation in business and public sectors, DONG Energy, stating that:



"We started the workshop by working on the concepts of "Magic" and "Love"; concepts that are not associated with electricity. We wrote down any association that came to mind and talked the associations over. We came to share some quite personal stories and in no time, established a close group relation. This was a fun experience; I stepped out of my usual role, and when we went on to work with the concepts in relation to electricity, I had a different approach. I like working with a clear focus. The workshop had one; it was very creative and rewarding."

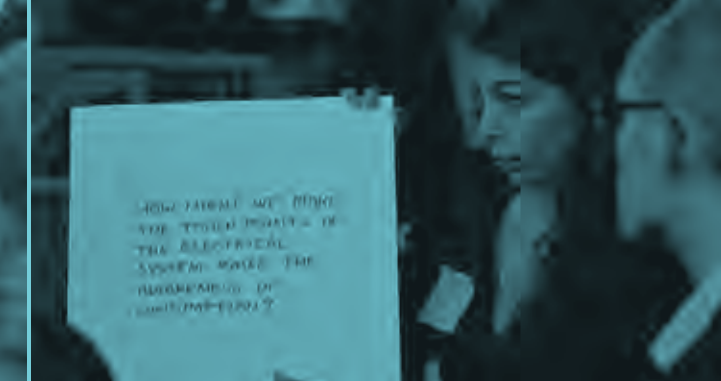
Students and teachers state that the knowledge intensive presentation by researchers and technical forces served as a positive and professional platform to design from – and the eight projects speak for themselves. Each contains, in particular, new aspects of the way we think about electricity. We look forward to sharing them with our collaborating partners so that, in the words of Poul Rind Christensen, we can stimulate organisations to consider alternative approaches much sooner than they do now.

And fortunately, TRE-FOR and DONG Energy, who co-funded the Camp, are ready to take these initial sketches of how to make the future visible

even further. During the Camp, researchers as well have decided to continue collaborating with us on articulating energy – just as more remote players in the field display an interest in future collaborations. However, the key element of the positive feedback is the interest that the Camp managed to attract to the issue of energy. Energy is indeed an important concern in a world that is running out of resources, and the Camp managed to put the topic on the agenda – and keep it there.

Thank you for that!

**INTERNATIONAL
DESIGNCAMP2011
STUDENT
PROJECTS**



ARTOVERPOWER

STUDENTS

ANNE GRØNLUND PEDERSEN,
LOUISE RAVNLØKKE MUNK PETERSEN AND
SILVIA BELLA

Kolding School of Design, Denmark

ARAM ABBAS

Damascus University, Syria

DARCY GREINER

Emily Carr University, Canada

HSIEH YI-TA

Aalto University, Finland

ARTOVERPOWER is a concept for an art movement which uses small works of art to occupy power outlets. The works of art increase awareness and make people think twice before consuming energy. The concept uses guerrilla marketing to create a movement that enables the power of community to reinterpret electricity. In order to create maximum attention, the movement is kick-started by world-famous artists. They will be the ones creating the very first works of art that will be secretly installed inside castles, parliament buildings, etc. – and then the news will spread in true guerrilla style. Subsequently, people will create their own "power outlet art" – and possibly start a business by selling their art to those who cannot/ will not create their own.



#ARTOVERPOWER

MAKE ART. OCCUPY POWER OUTLETS.

"Maybe you can bribe Björk, or maybe you can have Matthew Barney, her husband, make one – your initial one. But beautifully done; I love the fact that you took it to children and had them riff on it. Great exercise in design, prototyping, and behavior change"

CORDY SWOPE,
INNOVATION LEADER, MEMBER OF THE JURY

"Combining art and electricity outlets is definitely a good idea; interesting to look at while creating awareness at the same time"

ANDERS TROI,
HEAD OF PROGRAMME, RISØ, DTU, MEMBER OF THE JURY

"I really love it. You took an idea and you cleaned it out; you did what you set out to do and you really took it to the max. That deserves credit because you can easily get caught in the mainstream and be like and think like the others; so being able to hold on to your own, basic ideas is really important"

ANNE SKARE NIELSEN,
FUTURE NAVIGATOR, MEMBER OF THE JURY

MANIFESTO:

HUMANS CONSUME MASSIVE AMOUNTS OF ELECTRICITY OUT OF IGNORANCE, HABIT, SLOTH, VANITY AND GREED. WE WANT TO INTERVENE. WE WANT TO CREATE BEAUTIFUL OBJECTS THAT CONFRONT THE FLOW OF POWER. WE WANT TO USE ART TO BLOCK ELECTRICAL OUTLETS EVERYWHERE FROM OUR PALACES TO OUR LIVING ROOMS. WE BELIEVE THAT ART HAS THE POWER TO STOP THE POWER.

- > USE GUERRILLA MARKETING TO CREATE A MOVEMENT THAT ENABLES THE POWER OF COMMUNITY TO REINTERPRET ELECTRICITY.

We want to create a movement, established in art pieces that plug into power outlets. We want to engage people in creating art that occupies outlets and to initiate a dialogue about energy use and how electricity has become intangible and taken for granted.



ISPEAKELECTRICITY.DK

STUDENTS
 ANNE GRØNLUND PEDERSEN,
 LOUISE RAVNLØKKE MUNK PETERSEN AND
 SILVIA BELLA
 Kolding School of Design, Denmark
 ARAM ABBAS
 Damascus University, Syria
 DARCY GREINER
 Emily Carr University, Canada
 HSIEH YI-TA
 Aalto University, Finland

I think I
 deserve more
 attention...

I'm a bit afraid
 of heights ...

No, he's
 not.

He's my
 brother

I need to blink 20,000
 times per day.
 That's not a message
 of I love you



Ispeakelectricity.dk uses humour to create awareness of electricity consumption. The concept evolves around black boxes located around cities. The boxes intend to picque people's curiosity and draw them in. Once inside, they will be greeted by complete darkness and a single switch. Turning the switch creates a shock effect of light and sound. Trying to turn the switch again results in an audio message telling you that there is no more power available to illustrate the fact that electricity is not an inexhaustible resource. The concept also includes stickers shaped like speech bubbles. The idea is to write a message inside the bubble and then place it in a relevant spot somewhere in the city. The affiliated website has an online community where you can upload images of the bubbles you encounter. The best images/bubbles will be awarded a prize. The group has decided to let the streetlights state that they are "a little afraid of heights", and the neon-light teasingly says that "although I need to blink 20,000 times per day, that's not a message to say I love you".



“Wauw! You’ve engaged in a really interesting process around guerrilla marketing. You’ve created an entire journey, and you completely rearrange everybody’s neurons in their heads when they walk into that black box with that experience of energy”

CORDY SWOPE,
INNOVATION LEADER, MEMBER OF THE JURY



THE ELECTRO STARSHIP TROOPERS

STUDENTS

ANNE SCHÖN

Bauhaus-Universität Weimar, Germany

DAVID AUSTIN

Unitec, New Zealand

DEEPAK MALLYA

Srishti School of Art, Design and Technology, India

EMMA ERSKINE-OMIGIE

London College of Fashion, England

LEA KIRSTINE MØLLER

University of Southern Denmark

PAULINE JOY RICHARD AND SARA HARDY GRAVERSEN

Kolding School of Design, Denmark



The Electro Starship Tour is an interactive experience for children intended to be implemented in primary schools as an educational system, making the world of energy tangible for children through a universe of new metaphors.

The idea is to engage children through play, and continue the interest by handing out a 'token'; a symbol of the conservation of energy, and through interaction with the token, conversation in the class room and conversation with family, engage in future interest in and understanding of energy. The Electro Starship Tour is based on three elements; educate, connect, play.

EDUCATE

The education system is built up of three main elements. The first element is the bus; an interactive mobile class room which will provide the children with the knowledge needed to understand the intangible concept of energy. The children are encouraged by the facilitators, the Electro Troopers, to engage physically in the activities, creating new metaphors for the world of energy.

CONNECT

The second element of the system is the tangible touch point; the token. This is introduced in the bus and through the storytelling made into

a tangible symbol of energy. A token is given to each of the children participating and represents the connection between the bus experience and their everyday lives. The idea is that the children will have to store solar energy in these tokens, giving them a sense of responsibility, as the Electro Troopers will come back to 'collect' the stored energy. The token will light up when all lights are switched off, creating little 'stars' in a dark room, adding an element of 'magic' to the experience.

PLAY

The third element is the gameplay. This is where the knowledge learnt in the bus will be implemented in the everyday lives of the children.

The children are encouraged by the Electro Troopers to play with the token every day for seven days, collecting as much energy as possible.

The idea of community is also implemented in the games as the tokens have a better effect when put together. The gameplay will engage the children to take good care of the token, giving them a sense of responsibility. When the bus comes to 'collect' the energy saved by the children, the gameplay will continue in the homes of the children, encouraging them to include their parents, making the children ambassadors for being responsible for the use of energy.





"I basically love the idea, and I think there is a huge market for more intelligent toys. I'm a mother of four, and the load of crap that we can bring into the house is never-ending; so if you can actually get a quality toy that you can learn something from that would be fantastic in itself"

ANNE SKARE NIELSEN,
FUTURE NAVIGATOR, MEMBER OF THE JURY



TURBINO

STUDENTS

BEN JARRET

Unitec, New Zealand

CHRISTOFFER H. HJELM-HANSEN AND LAURA LOCHER

Kolding School of Design, Denmark

JEPPE JEPPESEN

TEKO, Herning, Denmark

LISA FEE PAURA

Pforzheim University, Germany

TUOMAS SAHRAMAA

Aalto University, Finland

PAULINE JOY RICHARD AND SARA HARDY GRAVERSEN

Kolding School of Design, Denmark

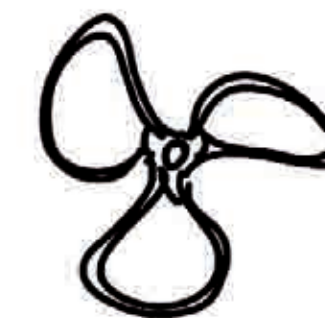
“Is electricity infinite? Of course it's not. Though for children aged 5-7, understanding this isn't easy.”

Turbino combines the familiarity of the classic toy pinwheel with a little bit of electricity education to teach children that electricity does indeed have its limits.

Action is energy. Energy is electricity. Turbine works when you move, and doesn't when you don't or just hold it to the wind. It is that simple. This teaches children that without action there is no reaction, in this case electricity.

THE FUN SIDE OF LIGHT

By allowing unrestricted, free play and by encouraging imagination and make-believe, fun is at the centre of the Turbino design.



turbino

1) A small hidden generator collects energy created by movement.



2) The energy is converted into electricity activating the small and efficient LED light.



3) The light then travels down Turbino's stem illuminating the stem along the path.



4) From the stem, the light travels further down a bundle of fibre-optic cables, which is protected by a textile.



5) A toy allowing fun, unrestricted play, children learn to understand electricity and the system behind it.





The group behind the Turbino design paid several visits to a kindergarten to test their designs and even had one of them rejected by the children who referred to it as the dumbest toy they had ever seen. However, the group ended up presenting a product that the children both understood and used.



You achieved something really, really wonderful. Very simple, beautifully simple. I don't even need to talk about the concept because I get it, and I want it for my daughter, and I think it's great. I'll buy one of those!

CORDY SWOPE,
INNOVATION LEADER, MEMBER OF THE JURY

The direct link between illustrating the energy together with the wind turbine is a really great message

ANDERS TROI,
HEAD OF PROGRAMME, RISØ, DTU, MEMBER OF THE JURY

The idea is so amazing that you can even have grown-ups play with it; you could use it for scout camps and flashlights and for NGO projects. It could really be fantastic

ANNE SKARE NIELSEN,
FUTURE NAVIGATOR, MEMBER OF THE JURY

ELECTREE

STUDENTS

HANNE FYRDE NIELSEN

University of Southern Denmark

HARRY SKINNER

Kingston University, England

KARMA OJJEH

Damascus University, Syria

MATHIAS BOTTFELDT AND OSMOND OLSEN

Kolding School of Design, Denmark

RAGINI LALL

Srishti School of Art, Design and Technology, India



“How might we enhance user awareness about energy consumption by using a simple, beautiful object that translates the smart meter measurements into an exploration for the user?”

ElecTree

“Transforming your way of living into a new language.”

ElecTree is a small installation which resembles a tree and presents a visual overview of the current household electricity consumption.

ElecTree hangs as a work of art inside the home, and the branches and colours change according to how much electricity is being consumed by the washing machine, the television, the computer, and the rest of the household appliances.

If the consumption is excessive, the branches of the tree will spread. A sensible consumption will bring the branches together to display balance. Movement, shape, and colours of the ElecTree will increase consumer awareness of household electricity consumption.

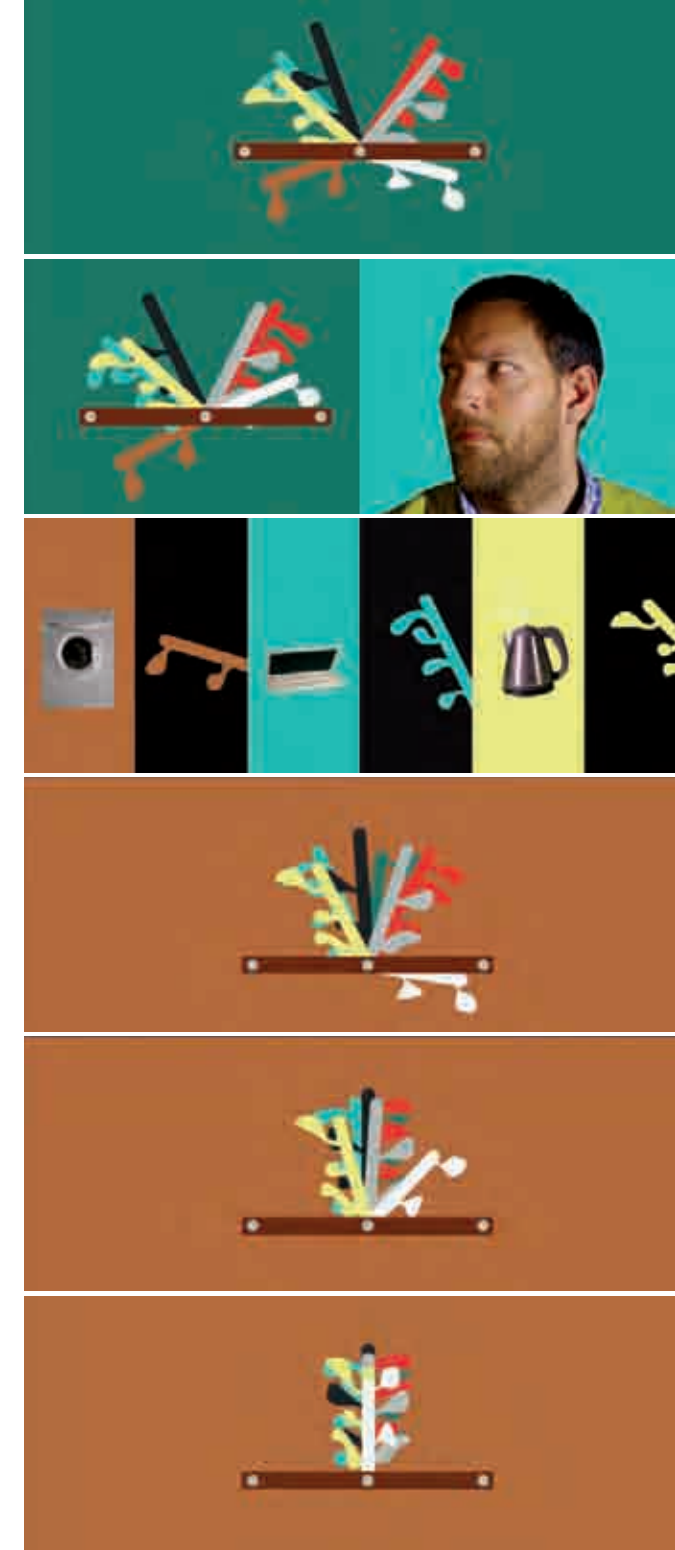
BACKGROUND FOR THE ELECTREE

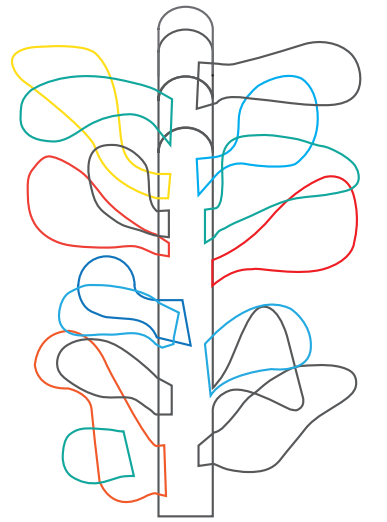
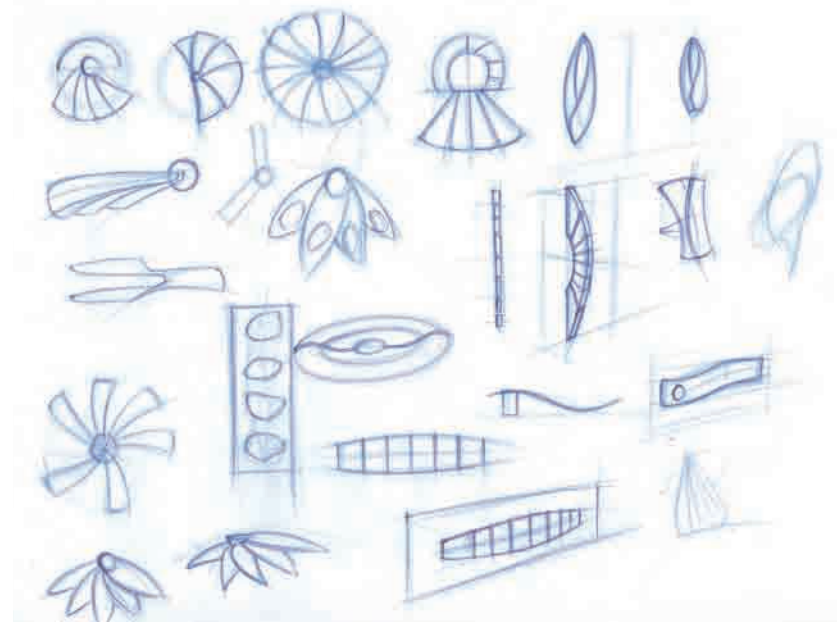
The EU has issued an obligation for member states to prepare ten-year plans for implementation of smart meter systems. However, within 18 months from the coming into force of the regulation, member states can assess the economic feasibility of smart meters.

The goal is that by 2020, 80% of those customers for whom smart meters are economically feasible should have them installed.

“When we think about information design we immediately make the assumption that it is going to be a screen based app or a screen based gismo with a bunch of data on it and a bunch of numbers. You’ve taken a completely different approach, and I think that that was a really brilliant decision”

CORDY SWOPE,
INNOVATION LEADER, MEMBER OF THE JURY





“It’s ready to go out and be made. It can be used for information but also for controlling something such as reducing a quantity level”

ANDERS TROI,
HEAD OF PROGRAMME, RISØ, DTU, MEMBER OF THE JURY

“I have only one comment: I think Anders Troi should buy it and take it home to Risø DTU as a showpiece”

ANNE SKARE,
FUTURE NAVIGATOR, MEMBER OF THE JURY

COMMUNERGY

STUDENTS

CAITRIN B. WOOTON

Emily Carr University, Canada

METTE SØNDERGAARD NIELSEN

University of Southern Denmark

STEPH STEELE

London College of Fashion, England

TENNA ELISABETH JACOBSEN

Kolding School of Design, Denmark

TIMO DE WINTER

Utrecht School of the Arts, Holland

VAIBHAV PAWAR

Case Western Reserve University, USA



community + energy communergy

Communergy aims to make people aware of their electricity consumption and as a result anticipates that people would save money by being more energy efficient. This saved money could then be invested in renewable energy projects like wind turbine farms, solar panel fields, or wave energy plants.

The campaign attempts to sell ownership and energy to consumers. By making it a community wide, the people within the community would be enticed to own their own energy, and at the same time, achieve a clean and healthy environment for their future generations.

“It would be great to create a pilot of this and try it in a small community to test if something like this could actually work”

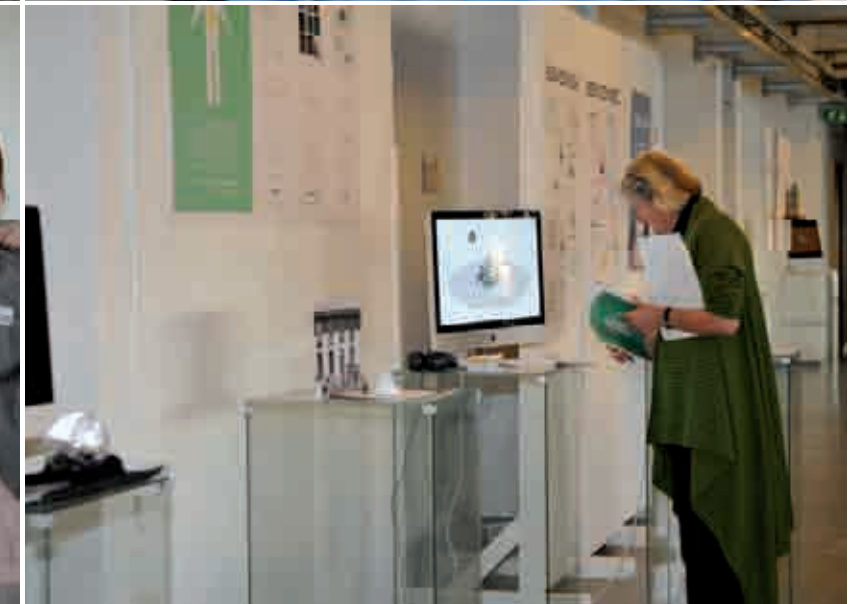
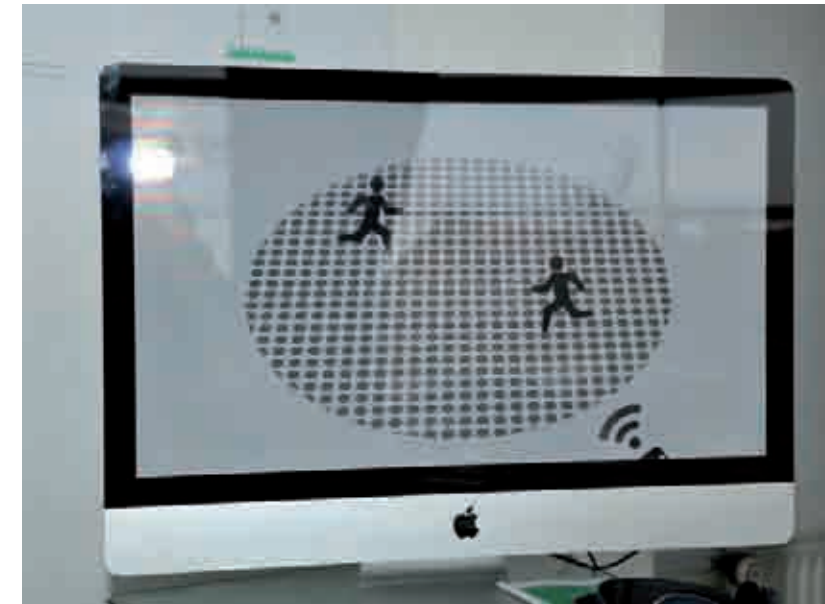
CORDY SWOPE,
INNOVATION LEADER, MEMBER OF THE JURY

“When we are recommending issues for the new government to illustrate to the public how energy is to be used or saved or considered, then examples like this is very nice to have”

ANDERS TROI,
HEAD OF PROGRAMME, RISØ, DTU, MEMBER OF THE JURY



**“If people take ownership of their electricity, it becomes of more value to them than any tangible product.
If communities take ownership of their electricity, making changes in existing systems becomes everyone’s value.”**



EXCESS ENERGY

STUDENTS

ALEXANDRA HERBERT

Pforzheim University, Germany

ANJA CLAIRE CRABB

London College of Fashion, England

JING ZHU

Tongji University, China

LONE AABRINK AND TOBIAS TØSTENSEN

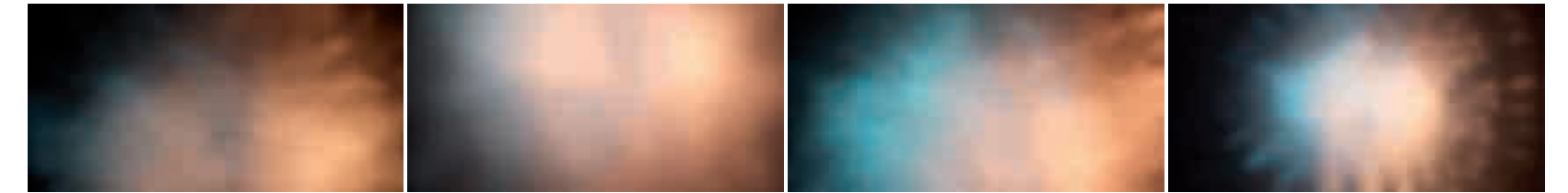
Kolding School of Design, Denmark

METTE STAVAD KØSTNER

University of Southern Denmark

SIGNE LOUISE HYTTE CHRISTIANSEN

TEKO, Herning, Denmark



”How might we take advantage of excess renewable energy to create an emotional, communal experience through the medium of light and increase awareness of electricity and its use? “

Excess Energy combines a work of art with a smartphone application. The work of art lights up when there is excess green electricity within the system, and the smartphone application informs the users of the excess energy and the fact that if they need to use energy, now would be a good time!

The concept is a framework that can be used all over the world. It is to be adapted to its surroundings. The source of energy is also the source of inspiration for the installation.

“What I really loved about this is that you took energy on its own terms and sort of played it back to us, rather than put a screen in front, more math, charts, or graphs or giving us some other kind of association; you actually kind of brought it back to us”

CORDY SWOPE,
INNOVATION LEADER, MEMBER OF THE JURY

“The basic message is absolutely very good. Maybe the way of getting the message out needs to be elaborated on but basically, it’s a very good idea”

ANDERS TROI,
HEAD OF PROGRAMME, RISØ, DTU, MEMBER OF THE JURY



LUNA+ELECTRICITY

STUDENTS

GREGORY SMITH

Kingston University, England

IDA BURCHARDI, LUCIANA WRAAE AND

SIDSEL WITTENDORFF SØRENSEN

Kolding School of Design, Denmark

SJANINE M. HENDRIKX

Utrecht School of the Arts, Holland

OBINNA MUOH

Case Western Reserve University, USA

XINWO FAN

Tongji University, China

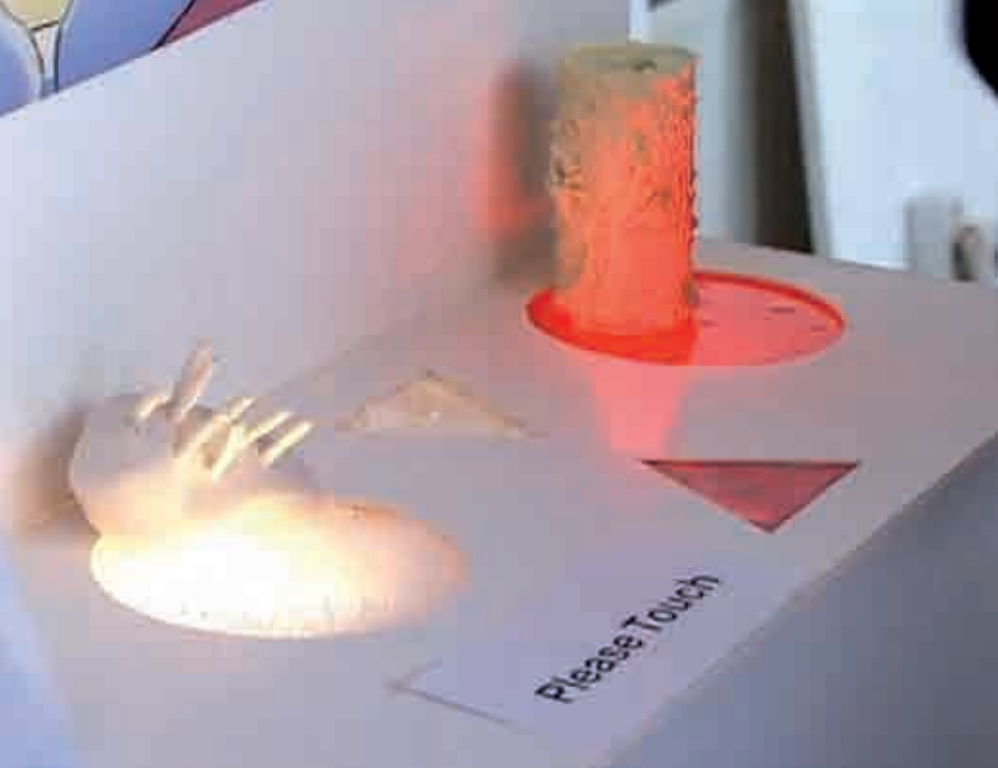


**“Saving electricity becomes more than just saving money.
It becomes an integral part of your daily life.”**

Luna is an ambient technology product which embodies household electricity consumption. The shape invites you to interact with it. It is abstract but draws references to sea anemones which look like plants but are actually animals. Luna relates to both children and adults.

Every time an electrical device is switched off in the home, the Luna reacts in a subtle way (a vibration, a small sigh, a pulsation of light, a woosh). This adds an ambience to the presence of electrical equipment and makes you aware of the electricity consumption in the home.





ELECTRICITY



ElectriCITY is an online community and service which increases awareness of household electricity consumption.

The service aims to incentivise families to adopt new habits in order to save electricity. Among other things, visual statistics displaying household electricity consumption encourages electricity savings. The savings award points which can be exchanged into discounts in fitness centres and the zoo. For the community part, you can decide to compete for points against other families.

Via easily accessible usage information, an inverse points system, benefits and recognition within a community, the experience of saving electricity becomes more than just saving money. It becomes an integral part of your daily life. "Friendly competition among families," is the idea.

"Bravo for actually doing a macro and a micro solution and being able to put a business model behind it"

CORDY SWOPE,
INNOVATION LEADER, MEMBER OF THE JURY

"It could be made into a product right away. Put in a little zigbee communication in one of these small devices and a battery and off you go. Could be fun!"

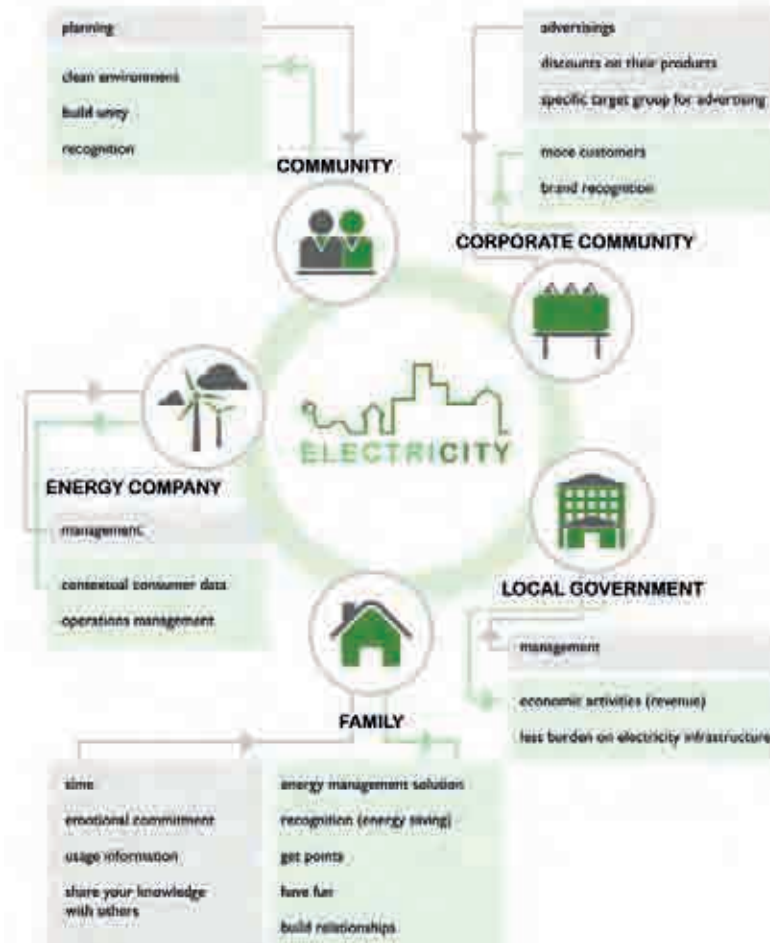
ANDERS TROI,
HEAD OF PROGRAMME, RISØ, DTU, MEMBER OF THE JURY

"Outstanding presentation of the concept; great micro and macro solution. I think it is amazing; I think this shows what happens when really intelligent people come together and actually also become more collective in intelligence"

ANNE SKARE NIELSEN,
FUTURE NAVIGATOR, MEMBER OF THE JURY



BUSINESS MODEL



SERVICE MODEL



PRESS RELEASE FROM TRE-FOR

TRE-FOR FINDS INSPIRATION FOR CREATIVITY AND INNOVATION AT KOLDING SCHOOL OF DESIGN

KOLDING SCHOOL OF DESIGN AND MULTI-ENERGY COMPANY
TRE-FOR HAVE ENTERED A COLLABORATION AGREEMENT TO
INSPIRE EACH OTHER AS WELL AS EMPLOYEES AND STUDENTS
IN A MUTUAL ENVIRONMENT OF DEVELOPMENT AND EDUCATION

- Kolding School of Design is one of Denmark's most innovative educational institutions, and the school's students are known for their ability to think out of the box concerning design, usability, and communication. We would like to be even closer to these processes, and I'm confident the new collaboration will benefit TRE-FOR and our customers, says Helle Damm-Henrichsen, commercial director at TRE-FOR, and adds:


- We have an overall strategy to centre the customer, and I'm sure that collaborating with Kolding School of Design will support this strategy and develop our understanding of the potential of design. The objective of the new collaboration is to make TRE-FOR's customers even more aware of their energy consumption in order to create lasting energy saving and more efficient energy utilisation.

- We expect that our company and our employees will be considerably inspired; an inspiration which will hopefully become evident in our products and the way we address our customers due to a more creative approach to design and information, says Helle Damm-Henrichsen.

Source reference: Danish Energys Newsletter, October 13. 2011

“Design helps make things and processes meaningful and comprehensible. Actually to people, having a sense of meaning is more important than having food. That’s why we need to enter relationships and surround ourselves with things that bring meaning to our lives. In other words, we don’t stop driving conventional cars just because the future of the Planet depends on it. We only stop if it brings meaning to our lives”

ELSEBETH GERNER NIELSEN,
RECTOR, KOLDING SCHOOL OF DESIGN



CHAPTER// 02 INNOVATION & DESIGN

”

Working with people from different cultures can be quite challenging. One learns to be very flexible in his designing. One has to think not only about his perspective but also about where the others are coming from. But the design process we followed was quite radically brilliant. Looking back at it, I realized that even though we were people from different backgrounds, our motives, and solutions were all the same. And this process helped us design from our subconscious and come up with the answer quite organically

DEEPAK MALLYA,
SRISHTI SCHOOL OF ART, DESIGN AND TECH., INDIA

BY // ANNE SKARE NIELSEN,
MANAGING PARTNER, FUTURE NAVIGATOR

FROM MORE TO BETTER

“Yesterdays’ success was about more: More employees, more money, sales increases, large editions, higher viewer ratings, owning more, talking more, accomplishing more. The future’s success will be about better: About getting not more out of ourselves, our time, the world’s resources, and each other – but something better”

ANNE SKARE NIELSEN,
MANAGING PARTNER, FUTURE NAVIGATOR

The party’s over. For some time now, the Universe has been trying to call us to tell us that there’s something fundamentally wrong with the way we’ve been conducting our lives. What we really need is a new paradigm. A new way of thinking. Another approach to life that isn’t about more.

BUT ABOUT BETTER

Our parents and grandparents lived within a mechanical, industrial paradigm. It made us think in terms of processes, systems, methods, administration. Within the mechanical paradigm, everything is measured in terms of time and money, and success is automatically associated with being the biggest, the first, number one, winning, or out-competing others. In the Western hemisphere, we’ve reached the end of the line for the mechanical paradigm!

Even managers keep telling us they’ll find it increasingly difficult finding arguments to motivate nothing but growth, money-making, and market shares. In the West, we’re simply not hungry anymore. A change of paradigm occurs when we reach the bullshit tolerance limit. People will change once they’re sufficiently fed up with their situation and circumstances, and their world views will change once we run out of arguments for yesterday’s beliefs. The very realizations which it took previous generations a lifetime to acquire, nowadays dawn upon most younger people at about the age of 35, simply because they experience more in a shorter time. Parents of today find it quite surprising that their children don’t want a driver’s license. Why not? Because they don’t want a car. Cars are something they associate with pollution, stress, and improper values. And look, dad’s got a nice big car – but is he happy? Is he healthy? Is it sus-

“Any day, during which something ”a little better” has been made, is a good day – be that a relation, a method, a thought, an act, a provocation, an innovation.”

ANNE SKARE NIELSEN,
MANAGING PARTNER, FUTURE NAVIGATOR

tainable? Also, the price of buying, owning, driving, and maintaining a car will buy you a whole lot of cab fares.

THE ORGANIC PARADIGM – SUCCESS IN THE SHAPE OF BETTER

The new paradigm is an organic paradigm. Organic means “that which relates to the living”. Here we concern ourselves with meaningfulness, people, and possibilities. The organic paradigm regards people as potentials rather than resources. Managers don’t say “we’re short on hands” because it’s all about personalities. Leadership’s finest task is to create vision, ideas, inspiration and excitement, and to encourage employees so they dare to experiment, make mistakes, and be wiser for it. We prefer the words of an experienced traveller over those of people who’ve read it all in a book. Growth is replaced by development,

because the only thing in nature that grows with no regard for the feedback provided by their surroundings, are cancer cells and bacteria. In the mechanical paradigm, people must conform to the organization – they must think, speak, and look a certain way. In the organic paradigm, the organization never stops adjusting itself to the people within, rather than trying to adjust them. It’s a paradigm which builds on trust, consideration, intuition, and passion. Here, it’s important to know how to let go – of prejudices, old habits, control, and expectations. Because nothing new will emerge until we relinquish the old.

WELL SUITED PARADIGM

This paradigm is well suited for a world becoming more mature and less selfish, more interdependent, more listening and learning, that respects

experience. Whatever the vision, we must all every day have worked just a little bit better, shown a little more trust, and brought about a little more quality. Any day, during which something ”a little better” has been made, is a good day – be that a relation, a method, a thought, an act, a provocation, an innovation. And it’ll be even better if we’ve been searching for the same in others and shared it with those near and dear to us. Even if this ”better” is just another half inch further on the tightrope.

READ MORE IN ANNE SKARE NIELSENS BOOK
“En linedans fra ide til succes”
- out in English early 2012
Both versions can be ordered/preordered by writing to info@futurenavigator.dk



The model shows the transformation from more to better. In this shape it’s generic but you can copy it and work on adapting and translating the terminology to make the most sense to you. For politicians, for instance, adding “from growth to development” could be of interest, public health professionals might want “from patient to health project”, whereas marketing people might find “from marketing to market creation” inspirational. This way, a useful overview can be acquired for, as a minimum, adjusting the course toward future success.

BY // CORDY SWOPE,
MANAGING DIRECTOR EUROPE, FAHRENHEIT 212

FOR DESIGNERS PROTOTYPING IS A WAY OF THINKING



“Prototyping in business works best under a remarkably simple, yet often disregarded principle: develop ideas in the form in which people will ultimately experience them. This means that Powerpoint and Excel should for the most part be banned from idea development. Customers rarely if ever experience a product or service in such media. The other danger is that companies who typically communicate with each other only through presentations and data often make poor decisions when it comes to innovation. Companies like Apple and BMW who communicate with a lot of prototyping tend to get innovation decision-making right.”

CORDY SWOPE,
MANAGING DIRECTOR EUROPE, FAHRENHEIT 212

In the past 15 years, we have seen aspects of design practice increasingly woven into normal business practice. This is because companies can only grow consistently if they innovate consistently. And design offers many useful tools to help businesses innovate. Prototyping is one such tool.

Prototype comes from the Greek combination of two words, *πρῶτος* protos meaning “first” and *τύπος* typos, meaning “impression.” Some terms thrown around in current business parlance to describe prototyping activities are: modeling, visualizing, testing, refining, piloting and beta testing. There are also rapid prototyping and agile software development - systems that can be characterized by a “build first, refine later” approach. If Charles Eames’ definition of design as “a method of action” holds true, the act of making something first and responding to it takes precedence over thinking out every detail completely before setting out to make it.

FOR DESIGNERS PROTOTYPES ARE FRIENDLY OUTPOSTS

For designers, prototyping is simply a way of thinking, much the same way a writer takes notes, or musicians jam. Prototypes are friendly outposts along an arduous development journey between idea and realization. They guide us, support us, and give us something interesting to talk about when our successful ideas have become part of larger culture.

Prototyping in business works best under a remarkably simple, yet often disregarded principle: develop ideas in the form in which people will ultimately experience them. This means that Powerpoint and Excel should for the most part be banned from idea development. Customers rarely if ever experience a product or service in such media. The other danger is that companies who typically communicate with each other through only presentations and data often make poor decisions when it comes to innovation. Companies like Apple and BMW who communicate with a lot of prototyping tend to get innovation decision-making right.

As such, any organization owes it to itself to develop some level of skill in prototyping. Whether that means hiring designers or having designers facilitate idea development, there are many successful models of companies who engage designers in different ways. The next step is only to stop thinking for a moment and go make something.



THE SIX DISTINCT WAYS

In practice, there are probably six distinct ways that prototyping can be useful in business:

1. TO CLARIFY COMPLEXITY

– New ideas for new experiences have to work within complicated, overlapping eco-systems of stakeholders, regulations and often, competing interests. Sometimes this complexity can be crippling. What if financial products like derivatives had been prototyped?

2. TO ASK QUESTIONS

– A new idea can be endlessly thought about in the shower, talked about in meetings - or even hashed out in the pub. Prototyping a new idea and showing it to people for whom it is intended can answer a lot of questions right away like, "How would people want to use this new idea? Would they?"

3. TO FAIL FAST, CHEAPLY, EARLY AND TO LEARN FROM IT

– It can be ego deflating to find out that people hate your idea, but it is much easier to find this out early on and cheaply, before any significant investment. This is preferable to the heartbreak and reputation damage of an idea failing in the market. Learn quickly from what people love or hate about your idea.

4. TO SIMULATE A NEW EXPERIENCE

– Often if a new idea is something intangible like a service, a prototype (like a scenario rendered in video) effectively demonstrates how life would change if your new idea existed.

5. TO ANSWER QUESTIONS

– Once an idea has been repeatedly prototyped, shown to others, refined and iterated, a final prototype is often necessary to answer the "how" questions – namely, "Here is the way to build this new idea."

6. TO INSPIRE OTHERS AROUND A VISION

– Designers are trained to communicate in the media in which people will experience the final idea. Therefore it makes sense to engage designers at critical development milestones, particularly the milestone whose goal is to have senior management and colleagues alike say, "WOW! We must produce this!"

BY // RUNE NØRAGER, DESIGN PSYCHOLOGIST, ASSISTANT PROFESSOR,
DEPARTMENT OF COMMUNICATION AND PSYCHOLOGY, AALBORG UNIVERSITY

PUSHING PEOPLE WITH DESIGN

“From the most basic parts of how humans naturally interact with the real environment thus comes a number of ways that design may curb, twist, regulate, affect, etc. robust behaviour”

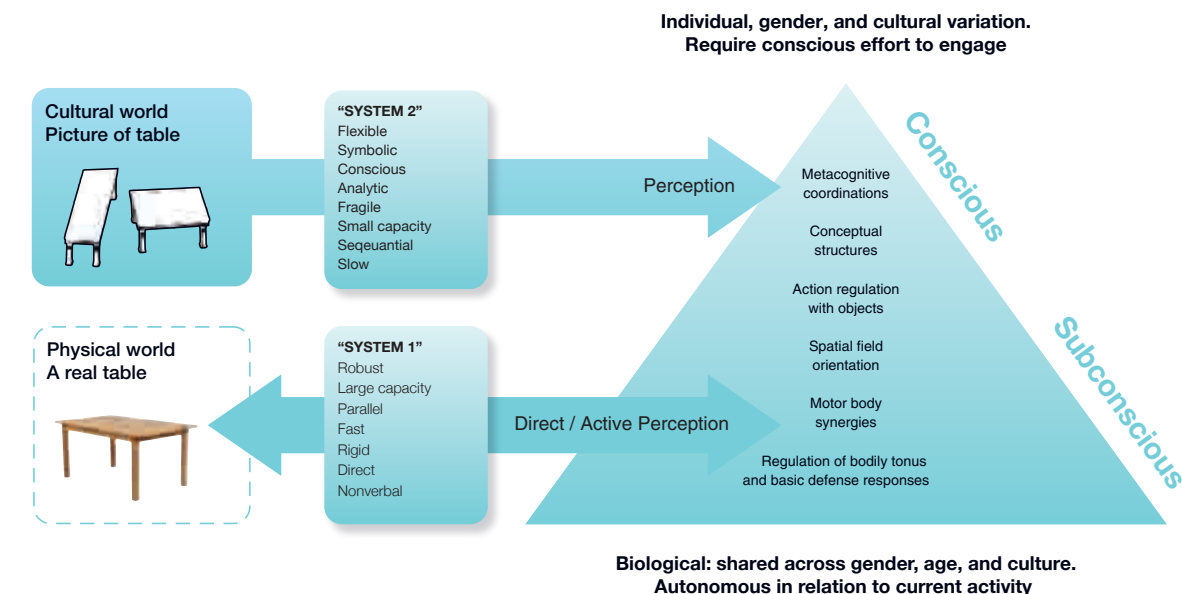
RUNE NØRAGER,
DESIGN PSYCHOLOGIST, ASSISTANT PROFESSOR,
DEPARTMENT OF COMMUNICATION AND
PSYCHOLOGY, AALBORG UNIVERSITY

Design can push people if the deep nature of human drives and basic cognitive dynamics are carefully considered and incorporated. Ideally, such behaviourally vectored design may shape and animate desired behaviours in subtle ways and hereby supplement the strengths and weaknesses of traditional means for behavioural change that assumes a rational human agent. The psychological field is highly influenced by a fundamental and pervasive idea about the human mind which is reflected in notions like mind & body, software & hardware, mind & heart, perception & thinking, rational & irrational, etc. While such distinctions are necessary for any scientific field to make in order to study parts of the whole, they share a deeper problematic construal about the nature of human thinking. These misunderstandings are pervasive and unfortunate dualisms both in academic thinking and in the general folk psychological awareness. Although this debate is not new within psychology, it becomes very manifest when psychology is applied to the design of technology. When these dualisms and problematic

approaches are applied to the research and understanding of everyday human behaviour, they generate findings that lead scientists to conclude that our senses are easily fooled, biased, not accurate, etc.

A way to address and overcome such dualisms is to work with models of human cognition which integrate both aspects. One such model is provided by Boris Velichkovsky in his 1990 paper “The vertical dimension of mental functioning”. Key to this model is the integration of basic cognitive functions with higher order cognitive functions that hereby effectively create a continuity between sensory-motor functions (body) and symbolic thought (mind). The vertical dimension is comprised of six levels that can roughly be considered as having either a biological background or a cultural background. The major advantage of this model is that it considers basic perceptual and cognitive processes in their own right, rather than as simple pre-processes to higher intellectual processes.

The pyramid model based on Bærentsen (2000) and Velichovsky (1990). The model is further explained in Norager 2009



In Norager 2009, I have attempted to operationalise this model within the field of human-technology interaction by relating the different layers to different aspects of user interfaces. In a broader perspective, the detailed description of the various layers allows for many different ways of working with behaviourally vectored design. Specifically this approach enables design highly optimized to the nature and dynamics of basic sensory-motor processes at the basis of the model. The following examples illustrate the dynamics of the lower and upper parts of the model – a rough distinction that comprises the simplest way of using the model.

ACTION REGULATION

Animal movement in the world is closely connected to the dynamic properties of the

physical surroundings. As an example, Gibson’s concept of visual flow patterns outlines how animal and human movement is guided and regulated by flow patterns (Gibson, 1986; Straw, Lee & Dickenson, 2010). While this flow pattern is normally an implicit consequence of one’s own behaviour, it can be artificially regulated externally in order to manipulate the movement of organisms (Straw, Lee & Dickenson, 2010). In a human technological context, this principle could for example be used to generate flow fields that guide the speed towards a desired optimum for bicyclists and car drivers. A similar example of motor regulation was seen with the London Millennium Bridge where resonant vibrations were amplified by pedestrians that locked into the same rhythm and thus caused a positive feedback.

A final example is illustrated with the Piano Staircase installation as part of The Fun Theory Project. Obviously, some people are lured onto the stairs because of the play factor. However, a more basic visual dynamic is also at play. Fundamental to human movement is the character and feasibility of the environment to support a given behaviour such as walk. Gibson termed this affordance (Gibson, 1986). In the staircase example, the remake of the stairs as a piano made them bright white compared to the dark escalator. As such, the staircase affords walking better than the escalator. This is similar to a lighted clear path in a forest. Thinking along those lines, the affordance concept provides a multitude of ways in which to direct behaviours. Wet patches in walkway layout or theme parks

“Metaphors and embodied knowledge are thus key tools that we can use to understand how people “are” in the world and thus the basis for their behaviour.”

RUNE NØRAGER,
DESIGN PSYCHOLOGIST, ASSISTANT PROFESSOR,
DEPARTMENT OF COMMUNICATION AND PSYCHOLOGY, AALBORG UNIVERSITY

may in a similar fashion guide pedestrians due to the lesser affordance quality of wet areas compared to dry areas. From the most basic parts of how humans naturally interact with the real environment thus comes a number of ways that design may curb, twist, regulate, affect, etc. robust behaviour.

METAPHORS / KNOWLEDGE

At the conceptual level, a recent study by Thibodeau & Boroditsky (2011) demonstrate the power of metaphoric conceptualisation that taps into the existing body of folk knowledge. In one specific case, the experiment presented a brief factual text about crime statistics in the city of Madison. In two places, the text either read “crime is lurking” + “beast” or “is an infection” + “spreading”. These two different formulations activated two very different knowledge bases in the readers, one about a beast and the other about a virus. From our everyday experience we know that a beast is hunted down and caged (or killed), whereas a virus is treated with medicine. In addition to showing how people of different political observation can draw conclusions that fit underlying metaphoric conceptualisation as it activates the relevant knowledge already present, the study also showed that this process is highly

subtle, automatic, and transparent. The latter was demonstrated when the participants were asked to indicate which parts of the text that had influenced their conclusion. Most pointed to the factual information and numbers. Metaphors and embodied knowledge are thus key tools that we can use to understand how people “are” in the world and thus the basis for their behaviour.

Take for example the case of compliance in health-care where people do not follow the prescribed treatment by healthcare personnel. Here, it is easy to say that people do not act in their own best interest. However, part of the explanation might be a fundamental incongruence between what patients are told and their metaphoric conceptualisation of the subject matter. If a patient is diagnosed with too high blood pressure, the image evoked by the words “high + blood + pressure” might be drawn from their immediate embodied daily experience. If this happens to be a water balloon, then we know that a water balloon needs to be handled with utmost care or else it will likely rupture. Rather than irrational non-compliance it seems completely rational with such a picture in mind not to follow the doctor’s advice to start jogging and otherwise engage in more physical activity that might rupture the blood vessels or the heart!

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BY // THOMAS LAGONI,
INTERACTION DESIGNER, KOLDING SCHOOL OF DESIGN

PHENOMENA AND REPRESENTATIONS



“Ceci n’est pas une pipe”; this is the inscription on what is perhaps one of the world’s most famous paintings: “La Trahison des Images”, painted in 1928-29 by René Magritte. The title translates The Treachery of Images. With this painting, Magritte conveys the realisation that reality and images of real objects are two different things. The same applies to the diagram. Magritte draws to our attention what we already know; that what we are faced with is not reality. However, whereas the pipe refers to itself, diagrams are schematic representations; representations of something that cannot be sensed in any other form but the diagram.

COMPLEX IDEAS IN A SIMPLE MANNER

Diagrams hold the ability to express complex ideas in a simple manner; they contain an intellectual and artistic beauty which has the power to inspire and change our perspective and perceptions; reveal parts of the mechanisms of nature and make them appear as phenomena*. They allow us to

travel places and experience things, first hand, which would otherwise be impossible.

Due to the advent of technology (in the broad sense of the word) into our lives, we have become aware that the world is so much bigger or smaller than we are able to sense directly. It is a fact that the majority of our knowledge of the world lies beyond the capacity of our senses. The world is complex, dynamic, and multi-dimensional; it unfolds over an incomprehensibly large amount of time or within a fraction of something we are not even able to conceptualise. Across scale, meso or micro lie far from our physical capabilities and our senses are either too crude or too delicate to perceive what goes on right in front of us. In other words, we are restricted by environment, scale, our perception of time, and our ability to sense.

In order for the diagram to create a successful representation, information needs to be transformed. We must deconstruct conditions

in a given state in order to reconstruct them into another state. Abstract information with no communicating volition must be re-established in a narrative context and also “play by the rules” in terms of meeting the recipient’s ability to perceive.

THE OUTCOME: INSIGHT AND NEW KNOWLEDGE

It is my conviction that this transformation and construction of narrative is purely a design process where limits and possibilities walk hand in hand in an attempt to change “something” into “something else”; where pieces of information are sensed, negotiated, and experienced in all their complexity; where new languages are used, correlations are rendered visible, and, hopefully, the outcome is insight and new knowledge.

*Phenomenon meaning: Incident or object which is concrete and can be sensed.

A teal-tinted photograph of a desk. On the left, a white electric fan is visible. In the center, a desk lamp with a white base and a dark shade stands. The desk is cluttered with various papers, some of which are pinned to a board in the background. The overall scene is dimly lit, with the primary light source being the desk lamp.

CHAPTER// 03 ENERGY & CULTURE

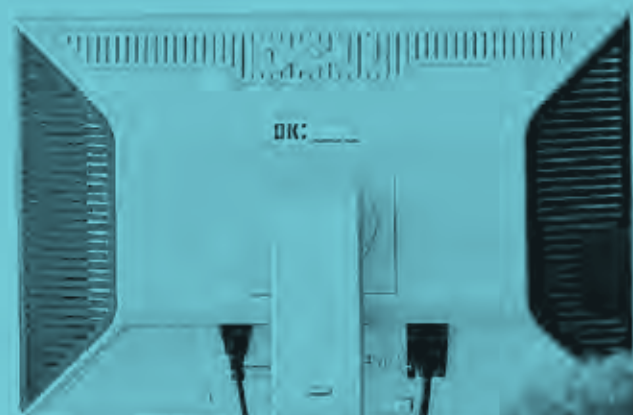
”First it’s a new way of discussing about using energy in a smart way. We pollute environment to produce energy for us to use, but we don’t use it in a smart way, we always waste it. So it’s time for us to change our mind and behavior, DesignCamp is the beginning of this topic but it’s not the end, we need to keep on working on this topic, especially in developing country. Second the way we doing during the camp is a quite efficient way to collect and create great ideas, I will introduce the principles of the group work (like no judgment, building new idea on the old one etc.) to my classmates”

CHRISTINE JING,
TONGJI UNIVERSITY

BY // NIELS PETER SKOU,
RESEARCH CONSULTANT, PH.D., KOLDING SCHOOL OF DESIGN

DESIGN THROUGH KNOWLEDGE KNOWLEDGE THROUGH DESIGN

BRINGING DESIGN AND RESEARCH
TOGETHER TO CHANGE THE CONCEPTION OF ELECTRICITY



“Generally speaking, research is interested in going from particular examples to general rules and insights while design is very good at embodying general knowledge in concrete products and concepts. While research constantly tries to gain distance to its subject, design tries to give it form and presence. By doing so, design can function as a kind of experiment, either as part of an on-going design process trying to find the optimal form or solution to a problem, or as a way of changing the social world by adding new objects to it.”

NIELS PETER SKOU,
RESEARCH CONSULTANT, PH.D., KOLDING SCHOOL OF DESIGN

Part of the project of DesignCamp2011 was to engage researchers and designers around a common problem. This problem was not only how to create a sustainable energy system, but to confront the perhaps most fundamental barrier for this development: how to change people's mindsets towards energy and energy consumption. The Danish energy strategy aims to use electricity for transport and heating and produce the electricity from renewable sources, mainly wind energy. Yet, this cannot be done without engaging the users as part of managing the system. Since you cannot control wind power the way you do with power plants based on fossil fuels and increase production whenever there is a demand, we as users have to be more flexible in our consumption and use the electricity when it is there. However, a fundamental prerequisite for this development is a process of rediscovering electricity as something that demands our awareness.

In nature we regard electricity as a wonder when it appears as lightning or Northern Lights. In the 19th Century, electricity became a powerful symbol of science and progress representing the chief example of positivist scientific knowledge replacing religion and superstition. Today, however, the modern world has become a natural environment for us to the extent that we do not even notice the omnipresence of electricity. Electricity is part of almost everything we do and experience but we no longer sense it. We listen to music, we see light, but we do not see or hear electricity. In the same way, we do not think of ourselves as using or consuming electricity – we use objects that consume electricity. This raises the problem that if the systems that sustain this modern second nature are no longer sustainable with regards to the first nature, how can we then reinvent or rediscover electricity as something with a limited physical presence in the

world that we need to manage and take care of? This problem is at its very core a design problem since design is occupied with creating physical and visual forms with the potential of making the intangible tangible.

RESEARCH AND DESIGN

During the two Power Days that officially opened the DesignCamp, designers, business people, and researchers working with energy and design from different perspectives were invited to engage in lectures, discussions, and workshops with each other addressing this problem from different angles. The purpose was twofold: To qualify the design process by introducing different kinds of relevant knowledge concerning the energy system, culture, human interaction with objects and language, etc.; and at the same time to challenge the researchers to put their knowledge into a practical context.

NIELS PETER SKOU

Niels Peter Skou works as Research Consultant at Kolding School of Design. His work is part of the school's participation in the national Smart Grid-project iPower funded by the Danish Council for Strategic Research. At Kolding School of Design he is associated with the

etrans project on electrical transportation and has been responsible for arranging the research part of DesignCamp2011.

Niels Peter Skou has a background in intellectual history and design studies.

Bringing research and design together becomes natural if we let the problem and not the institutions set the framework. Kolding School of Design is not the first to come up with this idea; there is a general movement giving research a stronger position on the design schools on the one hand, and asking academic institutions to work together with other parts of society to solve common challenges on the other. On Kolding School of Design we have tried to show how this can be done without sacrificing the qualities inherent in the separate traditions.

To do so it is relevant to determine in what ways the design process and the research process are alike, and in what ways they supplement each other. Generally speaking, research is interested in going from particular examples to general rules and insights while design is very good at embodying general knowledge in concrete products and concepts. While research constantly tries to gain distance to its subject, design tries to give it form and presence. In doing so, design can function as a kind of experiment, either as part of an on-going design process trying to find the optimal form or solution to a problem, or as a way of changing the social world by adding new objects to it. An example was given on the DesignCamp by Cecilia Katzeff

from the Department of Energy Design at Interactive Institute in Eskilstuna, who showed how a clock mapping and showing patterns in people's consumption of electricity changed their consciousness and habits in relation to it. Testing design is not just about observing if and how things work but also about how things change practices involving social habits and mindsets. In this way, design can both embody knowledge and produce new knowledge in a two-way process. This knowledge is of course different from a positivist ideal of the researcher as a detached observer not influencing his subject. It is a knowledge that acknowledges that things are deeply interwoven with people's actions and beliefs as parts of their life-world. New things and concepts change the world, the way we act in it, and the meaning we attach to it. Integrating research and design is also a way of integrating observing the world and interacting with it.

TYPES OF KNOWLEDGE AND THE HYBRID IMAGINATION

The starting point for inviting researchers to the Power Days at DesignCamp2011 was the conviction that there is no type of knowledge that is privileged in relation to design. The field of design and design processes is so broad that it

can gain inspiration from a wide field of academic traditions. If the designer's work encompasses invention, visualisation, communication, interaction, testing, and social innovation, design can gain insights from physics and engineering as well as art history, communication theory, psychology, anthropology, sociology, and cultural history, among others. This way design spans the main division of the universities into natural science, social science, and humanities combining different kinds of knowledge in a practical oriented approach.

“Design as concept and approach may potentially play a central role bridging the cultural gaps between technology/system oriented professions and human oriented professions.”

NIELS PETER SKOU,
RESEARCH CONSULTANT, PH.D., KOLDING SCHOOL OF DESIGN

This cross-disciplinary approach can also be found in the concept of 'the hybrid imagination' described by Andrew Jamison elsewhere in this publication. The hybrid imagination combines technical and cultural knowledge and invests it in the democratic development of society. The obvious example in this context is the development of wind energy in Denmark starting more than a hundred years ago as part of the Danish agrarian movement and today, playing a crucial role in the national energy system and the development of industry.

FROM POSSIBILITIES TOWARDS THEORIES

During the Power Days, the presentations went from describing the possibilities and boundaries of the energy system through the cultural influence

on consumption and conceptualisation of energy towards theories of interaction and visualisation thereby combining technical and cultural knowledge with knowledge specifically oriented against communication and interaction design. In this way, the different angles were intended to foster a form of collective hybrid imagination. The current energy system is engineered to be self-sufficient distributing electricity as a welfare good meeting every demand of the user without demanding any reflection or interaction from the user side. Perhaps the most fundamental

systemic change that a sustainable transition generates is that this kind of self-sufficient system cannot be sustained. These types of closed systems are results of the division of labour and strong specialisation in the modern society. While it is the issue of sustainability that drives the systemic change concerning energy demanding a more flexible consumption and consumer, this is at the same time a general societal development changing organisations and demanding cross-disciplinary collaboration. During the DesignCamp, a lot of attention was oriented towards the cultural friction that occurs when you bring together different national and regional cultures. But another, not less important, cultural friction is created by bringing different professional cultures together. In this context, design as concept and approach may potentially play a central role

bridging the cultural gaps between technology/system oriented professions and human oriented professions.

FRUITFUL CONNECTIONS

In recent years, the concept of design has spread from the design schools to the universities both in the humanities and the technical subjects. While it may be in part an indication of the attractiveness of the concept, it is also a strong indication of the changes within the design concept itself and the general organisation of knowledge in society. The industrial society has historically been marked by the specialisation of knowledge and a strong belief in technical systems. During the process of reorganising systems and transgressing divisions of knowledge in the post-industrial society, design has evolved from being conceived mainly as an artistic trade to being the platform for developing new kinds of trans-disciplinary knowledge as well as transgressing the division of theory and practice.

This kind of process does not produce one single output but a number of different kinds of output. This book presents a series of short articles gathering different perspectives on the relationship between energy, culture, and design; it presents the ten recommendations that resulted from the cross-disciplinary discussions during the Power Days, and it presents the different student products and design concepts of the DesignCamp. Hopefully, the book by itself documents the variety of results that are produced by a problem based rather than a subject based approach as well as the, fruitful connections that can develop and be made between research and design.



BY // TOKE HAUNSTRUP CHRISTENSEN,
RESEARCHER, DANISH BUILDING RESEARCH INSTITUTE, AALBORG UNIVERSITY

TURN OFF THE ELECTRIC EQUIPMENT — NOT THE LIGHTS

“Designers and developers should focus more on creating design concepts that give people a friendly push in the right direction, i.e. that help people lower their electricity consumption”

TOKE HAUNSTRUP CHRISTENSEN,
RESEARCHER, DANISH BUILDING RESEARCH INSTITUTE, AALBORG UNIVERSITY

Electricity consumption is an invisible part of our everyday activities. The use of electricity has become an integrated component of almost everything we do at home: preparing meals, communicating with friends, playing games, doing homework, watching television, etc. During the first many years following the electrification of the Danish households, almost all of the Danish residential electricity consumption was related to lighting, and the total electricity consumption was more or less constant. However, from the mid-1950s and onwards, the household stock of electric appliances began to grow and, as a consequence, the electricity consumption increased dramatically. This trend is still continuing in relation to information and communication technologies (ICTs); although the increased efficiency of especially refrigerators/freezers, light bulbs, and fewer dwellings heated by electricity have partly outweighed the increase in other areas and ensured a more or less constant electricity consumption since the beginning of the 1990s.

Today, the major part of the residential electricity consumption is related to our use of ICTs such as laptops, tablets, TV sets, Internet access, mobile phones, etc. About 25% of the consumption relates to ICT, while only about 10% relates to lighting. In a sense, it has become much more important to turn off the electronic equipment than the lights in order to save electricity. Even laundering consumes much less electricity (15%) than ICTs.

SAVING ELECTRICITY INVOLVES CHANGES IN OUR EVERYDAY PRACTICES

Electricity consumption is woven into our daily practices. This makes it particularly difficult to save electricity because it involves changes in our everyday routines. For instance, ICT has become integrated in a wide range of practices like work and education, online shopping, banking and public services, or leisure activities like communication, entertainment, and games. Asking people to refrain from using their computer, television, or mobile phone would be problematic

as these technologies have become part of many meaningful and important everyday practices. In relation to this, it is important to understand that technology and everyday practices co-evolve. With new technologies comes new practices, and in most cases, these new practices contribute to an increase in electricity consumption. Therefore, designers and developers should focus more on creating design concepts that give people a friendly push in the right direction; i.e. that help people lower their electricity consumption. Could it, for instance, be possible to create Internet-based services with the specific aim of reducing people's need of transport in relation to e.g. shopping or communication with others? Or could designers create a TV set that reminds people to turn it off when it is not being used, or that helps the users consider whether the TV even needs to be on? Or what about a washing machine design that engages the user in a dialogue about the frequency of their laundering routines.



“I look for investment opportunities – it’s my job, and I look for it everywhere. I have seen new product opportunities here at the camp that I have not seen anywhere before. There is particularly one of projects that I keep thinking about. It is not yet entirely clear to me what it can become, but I am very interested in it .. It has been interesting to see to what extent the visibility of energy consumption can lead to behavioral changes, and it has become clear to me that we need to create a straight, logical line in the consumer awareness about the link between wind turbines and electric cars. The logic is there for us who work with it every day, but it must be communicated to everybody. And then I have realized that if we are going to be successful, the metaphors we use for electricity must be bright and lively, not dark and dangerous, as they often are now.”

JENS DAMSGAARD,
ENERGI INVEST FYN, DIRECTOR



“To me, it was very fascinating to listen to Cecilia Katzeff and her presentation on the link between design and end-user or consumer behaviour in relation to individual power consumption. It’s intriguing to learn more about the day-to-day actions of end-users and what it takes to change the behaviour of the individual consumer. There’s no question that the end-user stands at the centre of trying to reduce future energy consumption; not least if we’re to reach our goal of being fossil-free by 2050. Making electricity consumption relevant and interesting to the consumers is important, because it’s obvious that they don’t want anything thrust upon them – they want to be involved, and they want to have a “nice” experience. How to make the invisible electricity tangible is an important question to ask. It’s hard for individual consumers but we must start to introduce this line of thinking. The working method of the Power Day was challenging and inspirational. There isn’t much time, and you’re definitely challenged to think differently. I’m convinced that this is the way to creating interesting possibilities and solutions. Although having a little more time to discuss the thoughts and ideas would have been nice.”

PER SØRENSEN,
HEAD OF POWER SUPPLY, TRE-FOR ELECTRIC GRID

A man in a dark suit jacket and a light-colored striped shirt is speaking into a headset microphone. He is gesturing with his hands as if presenting. In the foreground, the backs of several audience members' heads are visible, looking towards the speaker. The background is a plain, light-colored wall.

BY // ANDERS TROI,
HEAD OF PROGRAMME, INTELLIGENT ENERGY SYSTEMS PROGRAMME, RISØ, DTU

HOW TECHNOLOGY TRANSFERS FROM COMPLEX TO TANGIBLE - THE PERSONAL EXPERIENCE

THE POWER DAYS IN KOLDING HAVE BEEN A PROMISING
EXPERIENCE IN BRIDGING THE GAP BETWEEN TECHNOLOGY AND DESIGN

“The primary learning from the Power Days is that it is definitely possible to communicate energy usage in numerous new ways and that a creative cooperation between design and engineering is indeed possible. Next step should be to integrate sociological studies on the interactions and allow designers, sociologists, and researchers to create common visions on energy”

ANDERS TROI,
HEAD OF PROGRAMME, INTELLIGENT ENERGY SYSTEMS PROGRAMME, RISØ, DTU

In the iPower research and innovation platform, the new element of consumer behaviour has been integrated because the future electricity grid is not only a technical solution but a paradigm shift in the way we perceive energy and electricity.

Today, in general, we do not reflect on the quality of life we obtain from the abundance of energy because this is relatively cheap and always present and has given us the freedom to act individually and independently of the resources. In the future, when energy prices will rise due to scarcity, and the natural resources will have to be our primary energy source, we will create a new concept for energy control and usage, and the consumption will have to follow production. In this process, items in ordinary homes as well have to become intelligent and support the grid in using the energy when it is available. Energy trading on a real time market place will generate the energy prices and transmit those to all consumers and devices. Systems and products will automatically react to the prices and daily life will change, just like it changed when television was introduced. Patterns

will change but we will experience the changes as steady improvements of our quality of life. The very important and crucial question in this transition is how to present the new technology and how response will appear?

POWER DAYS - NEW AND THRILLING EXPERIENCE

The Power Days concept on making the intangible tangible has been a new and thrilling experience. The efforts in exploring how to present the very “unsexy”, technical and normally invisible electricity have proved a great number of possibilities. My first challenge was to present the technical challenges and communicate the concept of SmartGrids, and what we, from the Technical University of Denmark, view as barriers in deploying the concept. The responses were definitely not as I had expected. The open-mindedness and curiosity regarding in-depth technical details was a great experience, and several of the groups created solutions that demonstrated a (perhaps too) complex understanding of the topic.

When reviewing the solutions on the last day, it became clear that two dimensions were addressed:

The art and design creativity ranged from a pure installation art piece that could be displayed in a modern art museum, to sculptures that could be installed in public space, to smoothly designed art/interior products nearly ready for production. The other dimension took the information and education path using different concepts to educate, instruct and create awareness about energy and its use.

THE NEXT STEP

The primary learning from the Power Days is that it is definitely possible to communicate energy usage in numerous new ways and that a creative cooperation between design and engineering is indeed possible. Next step should be to integrate sociological studies on the interactions and allow designers, sociologists, and researchers to create common visions on energy.

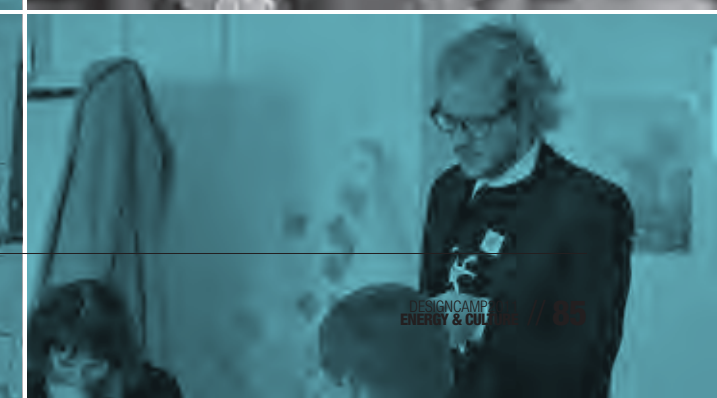
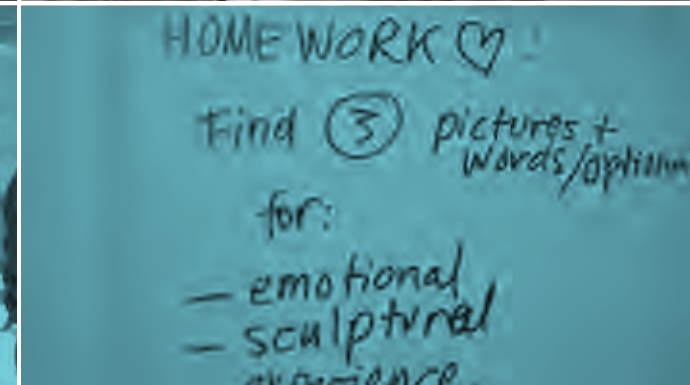


“I’ve come to see if maybe I can get some windfalls. The world needs good design solutions to meet the challenges of our time. Hopefully, we will turn out new generations that will challenge the world with a devil-may-care attitude in terms of what we really need and what we might be able to do without. From an engineer’s point of view, it’s obvious that design and engineering can benefit tremendously from each other in creating the eco-friendly solutions of tomorrow.”

JACOB HARTMANN,
SENIOR ADVISOR, GRØNNE ERHVERV, COPENHAGEN MUNICIPALITY

“I’m an engineer. I have a technical approach. I focus on price and business, and it has brought great value to my work to experience things from a new angle. Sometimes it’s incredibly healthy to step out of your usual role and spend a day or two in a different setting such as this one. Sometimes you don’t see the wood for the trees. However, today, I was able to see the ideas, and I enjoyed working with so many people with other and different competencies on an issue as intangible as electricity. Joining so many forces is truly a gift.”

EVA SASS LAURITSEN,
BUSINESS DEVELOPER, SEAS-NVE





BY // ANDREW JAMISON,
PROFESSOR, TECHNOLOGY, ENVIRONMENT AND SOCIETY, AALBORG UNIVERSITY

ELECTRICITY AND THE HYBRID IMAGINATION: ENERGY BETWEEN CULTURE AND TECHNOLOGY

“I argue for the need for a third strategy that seeks to foster what I have come to call a “hybrid imagination”. A hybrid imagination can be defined as the combination of a technical problem-solving competence with an understanding of the problems that need to be solved. It can be thought of as an attitude of humility or modesty, as opposed to arrogance and hubris that is so common in engineering and design, both in regard to technological development in general, and the various forms of design in particular.”

ANDREW JAMISON,
PROFESSOR, TECHNOLOGY, ENVIRONMENT AND SOCIETY, AALBORG UNIVERSITY

It is possible to distinguish between three ideal-typical educational strategies that have been developed to meet the challenges facing designers in the world today: a market-oriented, or commercial strategy, an academic-oriented, or professional strategy, and a hybrid strategy, combining training in technical skills with cultural understanding.

As opposed to the “story-lines” of economic innovation and social construction that tend to dominate both the popular and scholarly literature on science, technology and society (or STS), I would like to offer an alternative approach, devoting special attention to the role played by social and cultural movements in the making of science and technology as we have done in the recently published book, *A Hybrid Imagination: Science and Technology in Cultural Perspective* (Morgan & Claypool 2011). Such an approach is especially relevant in relation to the energy and electricity fields where community-based, or “bottom-up” approaches contend with the dominant “top-down” approaches in business and government.

To rethink the role of the designer we should take our point of departure in three very different sorts

of challenges that confront engineering and design education:

- the sustainability challenge, or the overarching need for scientists and engineers – as well as for humanity in general - to relate to the problems brought to light in the debates about environmental protection, resource exploitation, and climate change,
- the technoscience challenge, the mixing in many fields of contemporary science and engineering of scientific knowledge and engineering skills in new combinations, and
- the various societal challenges, due to the permeation of science and technology into society, and calling for socio-technical competencies and a sense of social responsibility on the part of scientists and engineers.

The main response to the challenges has tended to be “market-driven” and has sought to convert the challenges into commercial opportunities. In regard to education, this strategy has meant that many engineering and design programs

have come to include courses and instruction in such areas as marketing, innovation and entrepreneurship, as well as various types of “on-the-job” training in an attempt to educate designers who can help companies compete successfully in the global marketplace. Other educators have tried to meet the challenges in a more detached, academic manner, which, in regard to design, has meant an emphasis on artistic techniques and theoretical knowledge to provide designers with a professional expertise as part of a more traditional design identity. I argue for the need for a third strategy that seeks to foster what I have come to call a “hybrid imagination”. A hybrid imagination can be defined as the combination of a technical problem-solving competence with an understanding of the problems that need to be solved. It can be thought of as an attitude of humility or modesty, as opposed to arrogance and hubris that is so common in engineering and design, both in regard to technological development in general, and the various forms of design in particular. A hybrid imagination involves a recognition of limits, both to those imposed by “reality” as well as those due to our own individual limits of capabilities and knowledge.

BY // NIELS PETER SKOU,
RESEARCH CONSULTANT, PH.D., KOLDING SCHOOL OF DESIGN

RE-DISCOVERING ELECTRICITY CULTURAL CONCEPTIONS OF ENERGY



If you go to the Tokyo Metro, you will find an information screen that does not only bring you the weather forecast, but also a power forecast displaying how much electricity is produced and the expected future production. Furthermore, the screen shows how much of the current production is consumed making it a collective responsibility to turn down consumption if the demand is reaching the maximum level of production.

The background for making these kinds of screens is of course tragic, since they have been installed in the aftermath of the great earthquake and tsunami in March 2011 that caused a general blackout and the accident on the nuclear power plant in Fukushima. This has made Japan take a big leap into exploring alternative energy sources. What the example illustrates is that the development of a new sustainable energy system has created a need for a new way of communication about electricity or rather the need to communicate about electricity at all; and that this communication marks a new dependency and need for adaption to natural forces that breaks with the modern dream of man's ever increasing liberation from the forces of nature.

The state of electricity being so natural, self-evident, and reliable that we do not even have to

communicate about it – which is the normal state for most modern Europeans – is neither natural nor very old. If we look at a poster produced by the Electricity Development Association in England in 1927, “For Health’s Sake – Use Electricity”, it tells us something about how electricity was conceived when the current systems was developed. Today, a similar campaign would be highly unlikely, and instead the poster might read “For Health’s Sake – Do Not Use Electricity”.

This demonstrates how electricity historically was connected to ideas of modernity and hygiene and how a ‘loss of innocence’ has occurred since then. The two examples put together also tells a story of electricity as something going in and out of the cultural consciousness following major changes in the working of the system. The task of making electricity visible is both a consequence and a challenge of the current changes in production and distribution.

As a piece of communication design, the poster from 1927 illustrates that the consequence of the intangibility of electricity is that in order for it to be explained, it needs to be visualised by metaphorical representations. Things that have no physical materiality are understood through the media of language and visual representations. In this case, electricity is pictured as a magical genie powering



Fig 1:
‘Denki Yoho’ Tokyo 6/9 2011,
Source: NihaoGirl/Fumiko Ichikawa



“Energy supply is no longer strictly a technical issue. If we are to succeed in meeting the energy challenges of the future, we need to work across different professions. SmartGrid technology will involve individual action, and the users might perceive this as a degradation if we fail to address the problem correctly. Power Days have provided me with an understanding of what designers are able to contribute. It has been a very valuable step towards establishing a positive future collaboration.”

PHILIP ANTON DE SAINT-AUBAIN,
PHD STUDENT, MATHEMATICS AND STATISTICS,
DTU

up the modern urban landscape, thus combining the image of electricity as a tool of urbanisation and modernisation with an image of electricity as a magical force. This way electricity is at the same time brought to our attention and pictured as a service which we do not need to offer any attention.

The essence of metaphors is, in the words of George Lakoff and Mark Johnson, “understanding and experiencing one kind of thing in terms of another”. (Lakoff/Johnson 1980: 5) Metaphors make sense of things that appear strange or intangible to us by comparing them to something known. This is especially relevant in connection with the introduction of new technologies. While developers of technology like to describe their inventions as ‘revolutionary’, the mode of language and conceptualisation is almost always evolution understanding new experiences in terms of what already exists.

In his book *Objects of Desire*, Architectural Historian Adrian Forty describes how electrical companies initially had a problem convincing some peo-

ple not to put plugs in the sockets to prevent the electricity from leaking out. (Forty 1992: 189) Why was that? It was because the system that electricity superseded was based on gas, so naturally electricity was conceptualised as a kind of gas which could leak out into the home. This example illustrates how metaphors not only structure language but also actions. The Electrical Development Association (EDA) therefore established a campaign directed at changing the conception of electricity from invisible and dangerous to a miraculous and helpful substance promising an illuminated and carefree future. Furthermore, in his book, Forty shows how the invocation of this image was moved from information campaigns to the values inherent in the connection of electrical devices with modernist design. The iPhone might just be the latest gadget using this cultural symbolism which could play a part in the explosive growth in information and communication technology described by Toke Haunstrup Christensen elsewhere in this publication.

What we often neglect to consider, however, is that energy itself is a metaphor. We use the term

to signify something biological inherent in our bodies and to signify something technological inherent in the ‘body’ of society. This way energy works as a kind of vitalist metaphor which is often found in the discourse of modernist architecture. On the other hand, there is also a strong modern tradition of conceptualising the body through mechanical metaphors interweaving biological and technical concepts.

It might make sense to distinguish between two layers of conscience; one being the individual thoughts and awareness present in our daily actions, the other being the culturally and biologically shaped metaphors inherent in our language. This way, language functions as a kind of collective consciousness. These metaphorical resources might be productive or counterproductive since the task facing society today is much more complex than the one that faced the electrical companies in the 1920’s. While they wanted to make electricity attractive to compete with the alternative technology of gas, today we need to make some electricity (the ‘green’ one produced from renewable sources)

attractive some of the time (during periods of low demand or high production). For this purpose, the image of electricity as miraculous and unlimited appears very much as an obstacle – even more since the whole modernist utopianism it is related to has lost much of its cultural legitimacy. On the other hand, the parallel between biological and technical energy might be useful. The relationship between working time and free time are presently becoming more fluent, and modern life has become all about distributing energy between work, family, and free time. When it comes to our personal energy it is perhaps the resource that we experience as the most scarce of all, and we are in fact used to managing it the way we need to manage the energy of society planning, saving, and using it when it is most needed.

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Fig.2:
“For Health’s Sake Use Electricity”,
Poster from EDA Campaign, 1927.
Source: Adrian Forty: *Objects of Desire*, p. 191





STUDENTS TEACHERS & JURY

STUDENTS

ALTO UNIVERSITY, FINLAND

Hsieh Yi-Ta
Tuomas Sahramaa

BAUHAUS-UNIVERSITÄT WEIMAR, GERMANY

Anne Schön

CASE WESTERN RESERVE UNIVERSITY, USA

Obinna Muoh
Vaibhav Pawar

DAMASCUS UNIVERSITY, SYRIA

Aram Abbas
Karma Ojeh

EMILY CARR UNIVERSITY, CANADA

Caitrin B. Wooton
Darcy Greiner

KINGSTON UNIVERSITY, ENGLAND

Gregory Smith
Harry Skinner

LONDON COLLEGE OF FASHION, ENGLAND

Anja C. Crabb
Emma Erskine-Omigie
Steph Steele

PFORZHEIM UNIVERSITY, GERMANY

Alexandra Herbert
Lisa Fee Paura

SRISHTI SCHOOL OF ART, DESIGN AND TECH., INDIA

Deepak Mallya
Ragini Lall

TEKO, HERNING, DENMARK

Jeppe Jeppesen
Signe Christiansen

TONGJI UNIVERSITY, CHINA

Jing Zhu
Xinwo Fan

UNITEC, NEW ZEALAND

Ben Jarret
David Austin

UNIVERSITY OF SOUTHERN DENMARK

Hanne Fyrde Nielsen
Lea Kirstine Møller
Mette Stavad Køstner
Mette Sondergaard Nielsen

UTRECHT SCHOOL OF THE ARTS, HOLLAND

Sjanine M. Hendrixx
Timo de Winter

KOLDING SCHOOL OF DESIGN, DENMARK

Anne Grønlund Pedersen
Christoffer H. Hjelm-Hansen
Ida Burchardi
Laura Locher
Lone Aabrink
Louise Ravnløkke Munk Petersen
Luciana Wraae
Mathias Botfeldt
Osmund Olsen
Pauline Richard
Sara Hardy Gravensen
Sidsel Wittendorff Sørensen
Silvia Bella
Tenna Jacobsen
Tobias Tøstesen

TEACHERS

KOLDING SCHOOL OF DESIGN

Helle Gråbæk, Senior Lecturer, Textile Design
Barnabas Wetton, Senior Lecturer, Interaction Design
Mette Mikkelsen, etrans Project Manager

EXTERNAL TEACHERS

Cordy Swope, Managing Director Europe
Mick Rose, Industrial Designer

THE JURY

ANDERS TROI,
Head of Programme,
Intelligent Energy Systems Programme, Risø DTU

ANNE SKARE NIELSEN,
Managing Partner of the innovation and futurist
company, Future Navigator

CORDY SWOPE,
Managing Director Europe, Fahrenheit 212



“It’s a great opportunity to meet a lot of interesting people from all over the world. You’ll work together very intense for two weeks to create a new ‘design’ idea. It’s a great opportunity to develop yourself and to work with people from different courses”

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HSIEH YI-TA
ALTO UNIVERSITY, FINLAND

“The teachers are just amazing. It’s as if they have a library of books and videos inside their minds; they tell you something, then they give an example, then a video. Finally, they look at you, and they know that you did understand something for YOUR project, even though the video they gave you does not apply directly to it, maybe it’s a song even. But there is a very small part in it, maybe two seconds, that, on a subconscious level, shows you two ideas for your project”

ARAM ABBAS
DAMASCUS UNIVERSITY, SYRIA

“Loved the Camp - it was simply awesome! A totally unique and brilliant experience and I think a very, very clever idea to utilise the focused minds of the Campers”

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UNITEC, NEW ZEALAND



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Intelligent Energy Systems Programme, Risø DTU
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Senior Lecturer, Interaction Design,
Kolding School of Design,
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Energy Design Studio, Interactive Institute Eskilstuna
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Department of Communication and Psychology,
Aalborg University
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Interaction Designer,
Kolding School of Design
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TOKE HAUNSTRUP CHRISTENSEN,
Energy Researcher,
Danish Building Research Institute
“ELECTRICITY CONSUMPTION AND
EVERYDAY PRACTICES IN DANISH HOUSEHOLDS”



10 RECOMMENDATIONS TO THE WORLD

BASED ON DISCUSSIONS AND PRESENTATIONS PRESENTED AT THE SEMINAR POWER RESEARCH ON USE, CONSUMPTION AND VISUALIZATION OF ELECTRICITY OCTOBER 6TH 2011 AS PART OF DESIGNCAMP2011, KOLDING SCHOOL OF DESIGN

1 // DEMOCRATISE INNOVATION

A new energy system must engage the users as co-creators and encourage ownership.

One of the most significant changes necessary for developing a sustainable energy system is to take a completely different approach concerning how to involve the users. In the future, many consumers will be transformed into 'prosumers' which means they will produce their own energy through solar panels or small wind turbines and sell as well as buy electricity from the central grid. Furthermore, the users need to become co-managers of the system by being flexible in their consumption. To encourage this fundamental shift in the relationship between system and user, it is important not just to implement new pre-designed technical solutions but also to engage the users in the design process through user driven design and co-creation thereby encouraging a feeling of ownership.

6 // MOVE ELECTRICITY FROM THE REALM OF UNLIMITED SUPPLY TO THE REALM OF LIMITED CONSUMPTION

We need to understand and manage electricity the way we manage limited resources like time and money. We should, among other things, make electricity budgets.

One of the fundamental mental changes we need to make as users is to change our current understanding of electricity as an endless resource to understanding that it is a limited resource. Electricity is considered an integrated part of the home and paid for as part of the rent without consumers being aware of the need to manage it. However, so many other aspects of modern life are about managing limited resources: We have a limited amount of time and personal energy that we have to distribute between work, family, and personal interests. We have a limited amount of money, and at the moment a popular, Danish TV show 'Lüksusfælden' (The Luxuray Trap) is teaching Danish families to make budgets balancing income and consumption. Making budgets for energy consumption should be equally natural.

2 // FIND THE RIGHT BALANCE BETWEEN AUTOMATIC REGULATION AND USER INTERVENTION

An energy system with fluctuating energy sources cannot work without mechanisms of automatic regulation. But for this to be accepted and to appear sensible, the regulation needs to be balanced with opportunities for user intervention.

While the new energy system must engage the users, it may also in some respects have to dis-empower them by creating mechanisms of automatic regulation of the energy consumption of home appliances to balance the system. In order for this regulation to be accepted, there is a need for an overall understanding of the system as well as opportunities for user intervention overruling the automatic regulation. Achieving a balance between the system's need for balancing production and consumption and the users' need for control inside their own home is one of the most delicate problems to be faced.

7 // LET THE USER EXPERIENCE LIMITS AND REALISE CONSEQUENCES

In order to change behaviour, we need to experience the limitations in the system and realise that our actions have consequences.

A fundamental reason for the conception of electricity as an endless resource is that we do not experience any limitations in our daily use. It is extremely rare that we 'run out' of electricity, and the problems caused by high demand during peak hours are solely managed by the system managers. The environmental problems caused by high production from fossil sources are beginning to be apparent to everyone but the relationship between these consequences and our personal actions are completely invisible to us. Experiencing limitations and consequences in our daily lives is a strong driver for actual behavioural change but it requires mental preparation to accept such limitations in a system that we have come to know and depend on as being unlimited.

3 // CREATE A NEW WAY OF MEASURING ELECTRICITY

Measuring electricity in Kwh is too abstract to be related to any everyday experience. We need a measuring unit that makes sense to us.

How much is a Kwh? Not many people can answer this question in a way that makes sense to them. It is a purely technical unit that works for standardised measuring but at the same time it supports the feeling of electricity being abstract and incomprehensible to the user. Developing a measuring unit which can be related to everyday experiences or metaphors will be a way to bridge the gap between system language and everyday language.

8 // LET THE USER EXPERIENCE REWARDS AND JOY

An energy system with renewable energy sources does not only lead to periods of scarcity but also periods of abundance. We need to be rewarded for managing our electricity consumption sensibly but we should also make use of and enjoy excess production.

If by 2020, the Danish electricity production as planned is powered by 50% wind energy, we will experience periods during which we can potentially produce much more energy than we consume. Introducing renewable energy sources will make us more dependent on nature and the weather in the form of fluctuating production patterns. This means that not only do we have to adapt to periods of low production but we can also enjoy periods of high production in a 'guilt-free' manner. While sustainability demands the development of new technologies, it at the same time challenges the idea of progress as mankind's liberation from nature and may encourage the return of the feeling that energy is a gift from nature.

4 // BUILD COMMUNITIES

Future architecture should create and support communities rather than separate people in isolated boxes.

Decreasing energy consumption and encouraging flexibility is not just about designing the touchpoints between the system and the individual users. It is also about rethinking how the design of buildings and cities can support sharing of resources. The single house can of course be made more energy efficient but architecture can also encourage communication and sharing of resources by considering the kind of social structures it supports.

9 // SHAPE CLIMATE-SMART IDENTITIES

If climate responsible choices become a mark of an attractive social identity, it can lead to sustainable consumption and overrule price concerns.

One of the classic functions of design in the market is connecting attractive things with attractive lifestyles. The iPhone is the obvious contemporary example showing how aesthetic and cultural values embedded in commodities can overrule rational choices based on price and functionality. Making tools for energy saving and energy management aesthetically pleasing and culturally attractive marks a different approach from the rational or ethical arguments that presently dominate the discourse of sustainability.

5 // THINK DIFFERENTLY ABOUT ELECTRIC INNOVATIONS AND NEW SERVICES AND BUSINESS MODELS WILL EMERGE

If we stop thinking of the electric vehicle as a 'vehicle' and stop comparing it to existing vehicles, it will change related communication, services, and business models.

The language and concepts we use in connection with new innovations determine what we can think about these as well as how we act. If we take the electric car as an example, the notion of it as a 'car' means that we let the traditional car set the standard that it has to meet and thus limits our view in terms of its potential. Liberating ourselves from old concepts creates an open field of new possibilities which is a prerequisite for successful innovation.

10 // THINK GLOBAL – ACT LOCAL; THINK LOCAL – ACT PRIVATE

The sense of shared responsibility must be extended to the private home. Global consciousness must be transformed to local actions.

The popular saying 'think global – act local' is a request for individuals to transform an awareness of global problems to specific action in their local community. However, in relation to energy consumption, the most important aspect might be how to transcend the limit between the public and private sphere. The home is very much conceived as a shelter from the constant demands on conscious decision making in the public sphere. Long, hot baths work for many as a way of turning the mind off for a while. Local commitment might be a way to turn the mind back on while at the same time avoiding a situation where the bath becomes a struggle between abstract, moral consciousness and individual pleasure.

INTERNATIONAL DESIGNCAMP2011 FROM INTANGIBLE TO TANGIBLE FROM TANGIBLE TO WONDERFUL

One of the students at Kolding School of Design comes from a small village in India. There, they have one generator producing the electricity of the entire village. The generator is switched on when the village council decides that the village needs electricity. Thus, everyone has to prioritise their activities due to the limited resources and adjust their consumption according to the commune.

This story inspired the solid design challenge of this year's international DesignCamp: To transform something as intangible and distant as electricity into something tangible and concrete and even wonderful. To establish proposals for how users/consumers can acquire a more clear perception of energy; a perception marked by care, reflection, submissiveness, joy, and pleasure rather than indifference where electricity is only experienced second hand through the myriad of devices that need it to function.

This publication presents student proposals and evaluations as well as comments and abstracts by experts working with energy and design from different perspectives and volunteering their knowledge during the Camp.

Also watch the student proposals on the enclosed CD.

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