Smart urban lighting

Document status and date:
Published: 01/01/2013

Document Version:
Publisher's PDF, also known as Version of Record (includes final page, issue and volume numbers)

Please check the document version of this publication:

• A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
• The final author version and the galley proof are versions of the publication after peer review.
• The final published version features the final layout of the paper including the volume, issue and page numbers.

Link to publication

Download date: 16. Nov. 2023

Real Projects for Real People

Volume 3

The Patching Zone

Real Projects for Real People

The Patching Zone

Volume 3

Table of Contents

Preface

Anne Nigten
Director The Patching Zone

A year and a half after Real Projects for Real People Volume 2, we proudly present Real Projects for Real People Volume 3. This edition is entirely devoted to the first year of Mediawharf, the media workplace where praxis and knowledge meet. Mediawharf is a longer-term project by The Patching Zone and our technical vocational school partner Zadkine in Rotterdam, the Netherlands.

In this first year we worked on an integrated innovation plan for the technical vocational school Zadkine, which encompassed the first assignment with the Zadkine students, and social innovation training with the Zadkine teachers, while giving input for the new course in Human Technology. The first year's assignment for the students served as the hands-on case study for the teachers' training.

I would also like to inform you, before you start to read Real Projects for Real People Volume 3, about the structure of the first assignment. We initiated the first assignment under the work title Streetwise Billboards, due to budget cuts the planned billboards in Rotterdam South did not arrive (yet) and in the course of the project our team found more

interesting ways to interact with the Rotterdam South area through the neighborhood soundscapes in Are You For Real? The experience's audio track is an outcome of the collaboration with the local Helderheid group. The design and development of Are You For Real? benefitted immensely from our European exchange and collaboration with the DIgital VOices (DIVO), partners Blast Theory and Translocal.

These days the technical vocational schools in the Netherlands often suffer from a negative image in the news, while at the same time, the most interesting global economy forecasts inform us especially about the importance of local, skilled professionals. Besides these contradicting media messages, we worked from our own angle and approached the technical vocational courses from a positive perspective, as we believe in the importance of these 'makers' in the present and the future. And above all, we believe in the joy and fun of making. In this way, Mediawharf aims to contribute to an even more attractive technical vocational education programme that is well prepared for the future. We hope you will enjoy this publication about the first year of this unique project, which brings together the street culture, art, design and technology represented by the local youth, the intermediate and higher education and the academic fields!

Word of thanks

Anne Nigten

We would like to thank everyone who contributed to Real Projects for Real People Volume 3, especially The Patching Zone young professionals team members of Mediawharf, The Patching Zone supervisors, our fantastic team and everyone who worked behind the scenes!

Our special thanks for the great collaboration in Mediawharf project goes to our inspiring collaborators Peter Criellaard, and Aad Veldboer from the Zadkine's course management and the Zadkine teachers Vesna Kovacevic (HT), Michaël de Ridder (HT), Vinod Poenai (ICT), Maarten Nouwen (ICT), Marcel Koningstein (ICT).

Thanks to Liane van der Linden and Chris van der Meulen, from our collaborating partner Kosmopolis Rotterdam, to Ralph Boeije and Harry Kotey of Alares, the Helderheid group, our CRISP i-PE partners and to our DIVO partners Blast Theory (UK) and Translocal (FI) for the trust in working together with us.

We would also like to thank the people who subsidised the project in good faith: DOEN, Cultural Participation Fund, SNS Reaal Fund, VSB Fund, The Prins Bernhard Cultuurfonds, Stichting Bevordering van Volkskracht, and the Culture Programme of the European Union. The CRISP project receives FES funding from the Dutch government and NWO (the Dutch organisation for scientific research).

We also would like to thank our generous sponsors: Alcatel Onetouch and Gemeente Rotterdam Dienst Jeugd Onderwijs en Samenleving.

And last but not least, of course, we would like to thank the Zadkine Human Technology and ICT students and all supporting service employees.

> Doing an external project like this gave our group a stronger bond. Before we were not all hanging out together, but we started to get closer as a group.
>
> Soraya

> The funniest thing I learned was processing from Victor and of course the table tennis tournaments. I had a great time at The Patching Zone. Sometimes it was a little bit chaotic but that's always when you doing a project like this for the first time.
>
> Davy

Mediawharf, The media studio where praxis and knowledge meet

Mediawharf is a media studio for knowledge and praxis at Zadkine, the technical vocational school in Rotterdam South. At the core of Mediawharf is the creative media training and apprenticeships for young people, to encourage them to participate in the educational system. We focus on playful media literacy in combination with engineering and other "hard" techniques for creating interactive installations in public space. This training is provided by The Patching Zone in close collaboration with teachers from the Zadkine South, study ICT and Technology, and local youth organisations. The young people we plan to reach represent vocational technical students and a hard-core group

Context

The urban encounters between people, are increasingly achieved through media channels. The world is in your pocket and much social interaction is invisible to those who are not directly part of it. In public spaces large format advertising billboards roll past us. It is widely believed that online interaction influences physical behaviour. In Are You For Real? will see how this works for the youth in South Rotterdam!

"What happens between people, is much more valuable than what happens in people." (Henk Oosterling, Rotterdam Vakmanstad/Skillcity 2007-2009)

In a survey executed for Kosmopolis Rotterdam about the behaviour of people, especially young people, in the so-called problem areas in Rotterdam South, investigated the behaviour with regard to mobile phone use and popular social media environments. The survey concluded that mobile phone use provides a sense of belonging, security, closeness and freedom. In addition, according to Durkin and Barker (2002), gameplay gives a positive effect on the development of the young adult. Gamers are closer to their families and have more stable relationships. In addition to that other research shows that intellectual and perceptual skills improve with young people who regularly play games. They learn skills that are useful in their later work or training. They learn to solve problems strategically and creativly, and develop visual and spatial abilities.

The outcome of the Kosmopolis Rotterdam survey was the basis for Are You For Real?, based within existing online youth networks, which are employed as a virtual components to be connected with the physical environment through interactive street furniture, a physcial model or mobile phone. If we look at the specific media use of young people, then Are You For Real? ranks in the category: Geeking Out. An online hobby activity where someone is completely immersed in the use of new media. Geeking Out is huge on the Internet and meets a particular interest of young people. Geeking Out turns out in practice to be a social activity, which brings Are You For Real? somewhere between the two worlds (a

'Bridging the gap between creative communication and social interaction amongst young people'

physical and virtual) place. This project can be of use for the online community and considered in terms of the impact and / or networking of online communication.

Objective

In the project Are You For Real? we aimed to bridge the gap, currently found between creative communication and social interaction amongst young people in pubic space. Young people have their own subculture and communication strategies and the membership of such experiences was also the basis of

of school dropouts and other young people, based in the public space of the area around the Zuidplein.
The Mediawharf takes another approach than other courses already available aimed at students who are considered at risk for dropping out, and those who have already dropped out. The purpose of this project consists of two directions: a) the completion of an appropriate training, b) increasing opportunities for young people in the labor market. The project partners include the possibility of cooperation with other vocational courses and local young people.

Briefing of Mediawharf's first assignment:

Are You For Real? (formely known under the worktitle Streetwise Billboards)

Parties:	The Patching Zone, cultural organisation Kosmopolis Rotterdam, technical vocational school (ROC) Zadine, Zadkine's students and teachers, youth form the neigborhood.
DIVO partners:	Blast Theory (UK), Translocal (FI)
Target group:	young people aged 15 - 23 years
Location:	Rotterdam South and public library at the other side of the river Maas.
Topic:	Are you for Real? an interactive game-like experience asignment around the South square in Rotterdam

Citizens' ethnic background in the borough of Feijenoord, Rotterdam
Source: Rotterdam facts, http://rotterdam.feiten.info/

'Uncovering prejudices that suggest striking paradoxes'

Are You For Real? Are You For Real? can also serve as an eye-opener, as a window to the world that young people enter (after training) and where they find their way to learn. As this gap is observed in many other places in Europe, we are happy to engage in this joint effort from the art and design scene to engage, thourgh art and creative media, with the young people out there.

Audience and Content

… …. Mobile and ubiquitous technologies enable social encounters located in public space, albeit not confined to fixed settings, whilst also offering gift experiences from sharing or non-place based networks. … … (Shared Encounters, 2007)

We are especially interested in uncovering prejudices that suggest striking paradoxes: The interaction in public space is anonymous and sometimes even experienced as anti social, while many young people maintain a very active social online (media) life. We approach this paradox from the bridging and bonding principles for social and cultural capital (Putnam, Oriental, etc.). Here we focus on participation (in workshops etc.) given that the use of social networking and gaming act as positive elements for connecting and bridging groups of young people with a shared interest (Geeking Out).

Are You For Real? is a game experience that takes place in public space and online, on the border between the physical and virtual world, mixing the two worlds in a creative way. Are You For Real? is a social game-like

experience and a display in the physical semi-public space of the library that can be used as a reinforcing bridge (interface) between different groups of young people with one or more shared interests. We hope that fleeting contacts (informal ties) among youth can be strengthened over time and grow into a strong social ecology. This hooks into the previously observed fact, that people from different ethnic backgrounds in the area often have little or no social interaction with each other. However, in previous projects in this area, The Patching Zone found in digital (online) gaming, a cross-cultural experience not found in general Internet use, or chat. The demographics of Port Feijenoord, the location where Are You For real? takes place, has a large ethnic diversity as seen in the following diagram. This diversity (with some margin) is reflected in all age groups.

Participatory approach

We work with a participatory approach, whereby all aspects for the project will be the subject of interactive workshops with students and / or local youth. After each workshop we enter a iterative design cylce, where output from the last workshop is integrated, together with the newly gained knowledge, insight and ideas. With our DIVO partners we design the workshops and contribute to the exchange, during the design process with youngsters from the United Kingdom, Finland and the Netherlands. With these workshops

'Are You For Real? is a GPS driven, real-time, sound experience created for and by young people'

we aim to contribute to a trans-european understanding of interaction and game design with youth in tough European areas.

Are you for Real?

"Are You For Real?" is a GPS driven, real-time, sound experience created for and by young people and played in their own local urban setting. As the players roam the familiar city streets, they are simultaneously experiencing and exploring a virtually sonified version of the urban space through a modified smartphones/headphone set. The sound experience is driven by the players' position, the position of other players and the influence of online users that virtually walk through the same streets and are able to broadcast messages to specific locations in the sonic cityscape. The project explores how sound and music influences the experience of moving through an urban environment while at the same time altering the possibilities for interpersonal interactions on the streets. The overall structure of the game follows the mechanics of a traditional treasure-hunt, with players collecting sonic elements located in physical space, but the result is an open-world game where the interaction between players (both online and in the streets) generates complex sets of rules and experiences.

We had a nice time at the Mediawerf and at the same time we learned a lot.
It would be cool if Mediawerf could expand its projects to ICT, HT and HRO students.
HRO students could do the marketing so more people would come to our projects.

FranKLin

I liked to go to mediawerf, because it was nice to do and learned to do a lot of new and interesting things and made the year more fun.

Benny

The Mediawharf learning environment

Anne Nigten

The Patching Zone became engaged in a conversation with Zadkine, a technical vocational school , after a successful collaboration during the final phase of the Big South Lab project (Nigten, eds., 2010). We began discussions about a possible collaboration because we had previously worked with young people from Rotterdam who had dropped out of school. Although earlier projects led to positive results, The Patching Zone had become interested in the school trajectory from the students' perspective. We wanted to contrib- ute to making their studies more attractive, preferably in practice, in a hands-on way. Up until that point The Patching Zone had been working with higher professional education, university and master students, but technical vocational education was a new area for us. This required more research. We were eager to know how the programme was set up and how this type of education was designed. This led to a closer acquaintance with Zad- kine, a school for intermediate professional education. After several site-visits, talks with

the teachers and students, informative brainstorming sessions with the course management and additional desk research, we were finally able to answer some of our initial questions. These (provisional) answers served as a guideline for our approach to the Mediawharf project.

This research presented a big question, which kept haunting us: If we wanted to build a meaningful project, we had to get some kind of grip on the difficult situation experienced by the school dropouts in South Rotterdam *(Deetman, 2011)*. This is therefore where we started, how could we contribute something

'Responsibility and co-ownership were the main motivating factors'

meaningful to the students' school career/ schooling before they dropped out? What were the factors in which we could make a difference, what approach would we be able to play a role in, to make technical education more attractive? Earlier projects by The Patching Zone made it evident that responsibility and co-ownership were the main motivating factors. Another important insight provided by these earlier projects, was that 'making' and 'doing' stimulated students' interest in theory and not the other way around. Based on this perspective we researched inspiring and hybrid learning environments in which students were given substantial responsibili-

ties and where practice came before theory. This method is also found at the Waterfabriek <http://waterfabriek.tumblr.com/>atthe Koning Willem I College in 's-Hertogenbosch *(Aalsma 2011)*.

Although all aspects concerning the practice were facilitated within a realistic and fully functioning 'factory' and the work was to be made in collaboration with other study subjects, we still missed one vital component; the professional practice. We were looking for a model in which the professional practice could play a role as well. You may wonder why we would include the professional practice. We did this because ICT and technology are playing increasingly important roles in all layers of our lives and in all business sectors, which in turn causes new professional practices to emerge all the time. Questions change, applications change, production processes change and the relationships between the client (business sector), the executor (employees) and the customer are constantly changing. In other words the professional practice is a very dynamic area and this brings about the necessity for dialogue and collaboration, with the educational institution. The most fitting alternative to the factory appeared to be, from an ICT and technology perspective, a laboratory, a practice laboratory to be more precise. From The Patching Zone's perspective, Mediawharf could become a technical practice lab for technical vocational education, it would be environment in which students and teachers could work on practical assignments from the professional practice. Eureka!

When we tried to fit the laboratory concept into the Zadkine context, it became clear what was missing within the courses, and how The Patching Zone's transdisciplinary team, of talented young professionals might contribute. We would like to explain a little more about this.

During the past few years The Patching Zone has been closely involved in research in the so-called creative industry *(DMSC, 2013)*. Even with a minimal analysis of this sector one could say that technical intermediate professional education finds it difficult to connect with research and development in the growing creative sector in the Netherlands. Intermediate professional education works with CRHOHO (Centraal Register Opleidingen Hoger Onderwijs – central register courses higher education), which distinguishes between creative and techni-

'The creative industry is a 'make' industry for the leisure market'

cal education. Technical intermediate professional education is not, according to this numbering, automatically linked to the creative industry *(Van Hoorn, 2011)*. The fact that a technical vocational education is intended to train for the practice is, in our opinion, not a valid reason for not understanding and connecting the parallel research and development in the creative business sectors. On the contrary; the creative industry is a 'make' industry aimed at ICT applications for the leisure market, service industry and the so-called experience economy. It became evident that there is a wealth knowledge and in-

I enjoyed it the most with the Mediawerf group because we always laughed together and had fun. There were times when we upset each other but we always made it good again. I would like to thank all of you, individually, for the good times we had.

Emre

formation to be found there, which is relevant to all kinds of new technical areas, such as domotics, augmented reality and embedded technology in the street. Therefore this is also relevant knowledge for the level of intermediate professional education. Without placing the course under discussion, we may conclude that it is regrettable that such little knowledge and experience is exchanged between technical innovation and the creative branch. If students are to be prepared for a technical professional practice, which continues to change dramatically every decade, even every five years, then two issues become very important in the profile of the prospective technical employee:

A continuously learning and flexible attitude.

It would be wonderful, if we could teach students a pro-active, professional learning attitude. It is true that they would learn these attitudes in a school environment, but why end this when they finish school. What are the most important conditions for this? For a practical innovation lab where people learn continuously, the peer learning system appears the most suitable. In this case, we positioned peer learning in the context of lifelong learning. For Lifelong Learning we use the description of the European Union: *'all learning activity undertaken throughout life, with the aim of improving knowledge, skills and competence, within a personal, civic, social and/or employment-related perspective'. (Commission of the European Communities, 2001)*. According to this view of Lifelong Learning it would be ideal if students and teachers could work together in the Mediawharf laboratory. Where a good example tends to be followed, you might say.

The conditions for the Mediawharf lab concept were becoming clear; it would become an environment in which students and teachers could work together with the client, on assignments from the outside world. As peers, they would research the most suitable and newest techniques for the assignment. Regarding ambition we had a good discussion partner in the management team of the programme; they agreed. The starting point for the Mediawharf approach had been put into words: A peer learning environment in which the practice brings about the need for theory, allowing practice and theory to form an integral whole. Furthermore, this concept matched perfectly with the 'Just in time' learning that Peter Criellaard was promoting. This enabled us to connect with an existing educational model within Zadkine. This link also provided the necessary structural formalities concerning assessment, credits, exams and so forth, which could be facilitated by the experienced Zadkine education specialists.

The intended flexible attitude on the part of the students brought along a new challenge: Zadkine ROC vocational school operates with, (along with most schools for intermediate professional education,) clearly defined assignments in a classroom setting, or sometimes in groups. This very tightly organised education programme of a vocational school is in a certain sense diametrically opposed to flexibility. As a preparation for the traditional professional practice, schools for intermediate professional education usually work on tightly formulated problems, which then have to be solved in calculated protocols. This approach collides with the aspect of the profes-

sional practice, which requires a flexible attitude to connect with the field of innovation. Creativity, associative and divergent thinking is what we were missing and this was something The Patching Zone's *Processpatching* approach *(Nigten, 2007)* was able to contribute, to make the courses more attractive. In this way, we were able to transfer our knowledge and experience from the creative sector to intermediate professional education students and teachers.

How then do you determine the prerequisites for such a creative learning environment? If we study Csikszentmihalyi's creativity theory, we see that in the work Creativity: *Flow*

'Creativity, associative and divergent thinking'

and the Psychology of Discovery and Invention (Csikszentmihalyi, 1996) there are several layers distinguished as feeding grounds for creativity: The domain, the practice and the individual. The domain in this case is the course. Although Mediawharf took care of the practical programme of the course, it was of great importance to allow for enough space for creativity in Mediawharf without causing a clash between the laboratory as a learning environment and the rest of the programme. This led to a physically separate lab space in one of Zadkine's older buildings, so the students had to travel there physically from their regular school environment to the

Mediawharf environment. The teaching domain as a feeding ground for creativity also required active participation by the teachers, in Mediawharf. The concept would not work if the teachers were following the linear and reductionist, problem and solution model, while the students were working according to a creative and divergent approach. This was the reason a social innovation trajectory was started with the teachers concerned, which allowed the teachers to use their professional knowledge in a different way.

The practice in this case is the professional practice, which increasingly is confronted with complexity and problems in which technique and social issues are intermingled and can no longer be solved easily by means of a strict protocol, guidelines or a single discipline. Active participation by the professional practice in Mediawharf is of course essential, but considering the feasibility at first; a choice was made to not take on everything at once. Before the project started the professional practice had been put on hold; they were involved at a later stage. So we started working on the Streetwise Billboards project, an assignment that was formulated by the Mediawharf partners involved, in which a virtual and a public space for social interaction were the focal points. As it turned out, the first external assignment arrived half way through Mediawharf's first year, which brought about additional learning experiences for those involved.

It became very clear by this time, that creativity should become one of Mediawharf's essential ingredients. Innovation is also un-predictable and uncertain, which is counter to the linear solution-based approach used in the rest of the country at ROC centres. The third point of focus for creativity, so says Csikszentmihalyi, lies with the individual. Now, during Mediawharf's first year there was certainly no lack of individuals. Over 30 students and The Patching Zone's team of 5 young professionals, plus The Patching Zone supervisors, management, Zadkine employees and young people from the neighbourhood. In all seriousness, during the preparation phase we wondered what the situation was concerning the student's pattern of expectations. The students were a great challenge, how would we get them into creative gear? And to what extent had they already embarked on the linear, solution-based course guidelines? The innovative approach and flexible working attitude we wanted to encourage, had the greatest match with the course profile of Human Technology. This course started in September 2012, at the same time as Mediawharf. This allowed the students and the teachers from Human Technology to work together with The Patching Zone team in the development of Mediawharf. In addition Mediawharf was open to a small group of motivated students from the course, application management (ICT). The ICT students could sign themselves up for an intake interview.

As a theme for the first assignment we focused specifically on social design. Where experience and the interaction between the players/students, their environment and locative media were the main subjects. Our young professionals brought along the creativity from their own expertise, technique, design, art and science. This led to a very special, divergent design process which, when the transition was made to the final development of 'Are You For Real?', brought about a difficult transformation towards a convergence. All young professionals contributed their own perspective based on their professional expertise, significance, and cultural background. This then intermingled, often at unexpected moments, with youth culture and local customs so a *rich community of practice (Wenger, 2007)* emerged for students, professionals and teachers, which would have really excited any ethnographer. Our European partners went even further in their creative and artistic innovation, based on years of experience, which allowed everyone to immerse themselves and learn a great deal from each other.

We can conclude that Wenger's model offered the possibility to arrive at layered Communities of Practice, where diverse working areas enter into (temporary) alliances. This may give rise to interesting opportunities for an exchange between 'participation and reification', which can be given shape by collaboration between students, researchers and people with various professional practice backgrounds. The Mediawharf project gave rise to a (small-scale) living lab with Zadkine technical vocation, their supervisors and The Patching Zone's young researchers from universities, and universities of applied science and their mentors. This way, speaking with Wenger, a living curriculum was created.

In this chapter you will read about experiences; the motivation, difficulties and learning moments we had during Mediawharf's first year as a learning environment.
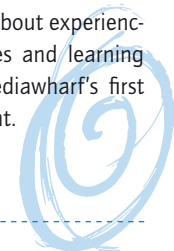
References

Nigten, A., eds., 2010, Real Projects for Real People, volume 1

Deetman, Mans, Kwaliteitssprong Zuid: ontwikkeling vanuit kracht, Eindadvies van team over aanpak Rotterdam-Zuid 2011, Lysias Advies B.V. last accessed September 7, 2013.

Aalsma, E., 2011, De Omgekeerde Leerweg; een nieuw perspectief voor het beroepsonderwijs.

We use the broad definition of creative industries as defined in Classifying and measuring the creative industries, Department for Culture, Media & Sport, United Kingdom, 2013.

Hoorn, van, M. eds., 2010, Creatieve MBO-opleidingen tussen talentontwikkeling en arbeidsmarkt, Cultuur + Educatie, Jaargang 10, nummer 29

Commission of the European Communities, Making a European Area of Lifelong Learning a Reality, 2001, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2001:0678:FIN:EN:PDF last accessed September 8, 2013.

Nigten, A., 2007, Processpatching, Defining new Methods in aRt&D

Csikszentmihalyi, M., 1996, Creativity: Flow and the Psychology of Discovery and Invention

Wenger, E., 2006, Communities of practice http://www.ewenger.com/theory/. Last accessed September 1, 2013.

Education in a changing world

Peter Criellaard

The world around us is changing very rapidly. The influence of urbanisation and the Internet has a very substantial influence on the speed of renewal and innovation in society and the business sector. Education is facing the challenge to anticipate these changes.

Despite regularly reappearing didactical renewals and developments concerning competence-based education, at its core education remains rather traditional, craft-based and introverted. Changes coming from a traditional setting offer very few possibilities to connect with the speed of the changes and to meet the demands concerning affordability.

Reason enough for the Committee of Directors of Zadkine to commission a course from a blank setting, which will meet the current generation's expectations, is cost efficient, responsive to developments, connects to requirements from the business sector, is a challenging working environment for teachers, and trains a new generation of technicians; in other words, innovative education that can serve as an inspiration for various sectors in education.

For a closer realisation of this assignment the makers chose not to take an existing or newly developed 'paper', didactic model as a starting point but looked for a pragmatic setup. This was based an innovative work ethic, the extensive knowledge gained over many years experience working with educational developments, which served to provide a good notion of the requirements necessary.

'The student, teacher and business sector operate together'

In close consultation with the business sector and stakeholders we reflected on an image that was created in order to realise our ambition. Two things quickly became very clear. Firstly that the business sector is also dealing with some of these challenges, that the solutions the business sector came up with in order to face social and economic developments, could also serve as a model for the structure of education. Issues such as service-orientation and returns, as a starting point instead of payment based on invested time (time clock idea); flexibility, intensification, taking responsibility (a flat organisation) and increased efficiency, in which there often is talk of the 'new way of working'. Of course, here we also take into account effects such as the risk of overburdening people.

The second point is that traditional roles need to be left behind. In order to prepare students for a work ethic, which allows them to survive in a rapidly changing (work) environment, to get teachers to take on a learning attitude, to provide for the need for lifelong learning and to exploit knowledge from the business sector within education. This requires a setting in which the student, teacher and business sector operate together. In order to realise this, the choice was made to set up a shared workshop, the 'Mediawharf'.

Based on this arrangement the student will immediately get an idea about the profession and about the relevance of his/her work, something which is a very important motivation for the current generation of students. More and more the student wonders, what's in it for me? This also gives a good idea of (technical) professions in this day and age, which increases the influx to courses that are relevant to the market.

The preceding led to the foundation of the Human Technology course within Mediawharf, the 'learn and work' laboratory in Rotterdam south. In the spirit of this course, we began by establishing the framework, based on the legal requirements for the implementation of an adaptive learning environment.

Mediawharf offered the ideal setting for a practice based learning environment. In Mediawharf, students, teachers and professionals turn knowledge into action. The emphasis here is on social knowledge combined with technical science and other 'hard' techniques and on the collaboration between the various disciplines and study subjects. During the first year work was done on Streetwise Billboards

and later on 'Are you for Real?' an interactive installation that you can experience with your mobile phone, in a public space. For this The Patching Zone gave workshops and trainings, in close collaboration with teachers from Zadkine Zuid (study HT and ICT). Mediawharf challenged students to undertake innovative projects so they remained motivated and did not leave school early. At the same time Mediawharf's interactive and continuous-learning approach, challenged teachers to develop innovative education and perhaps even more importantly, Zadkine placed a strong emphasis on the current and future developments in the professional practice.

All work that is done in the Mediawharf is practice based, so the client is closely involved in the design and realisation of the projects. The result of this first year is a close collaboration between The Patching Zone, teachers and students, and produced very high learning benefits. This applied to students, but also to teachers and our stakeholders. This is a new form of education, which is aligned with the expectations of both the student and the business sector. The professional practice was very enthusiastic about the outcomes, and several organisations expressed interest in continuing to work on projects with Human Technology, Mediawharf and Zadkine. Of course these developments have not gone by unnoticed; a number of interviews were given from which a few quotes have been included in this chapter.
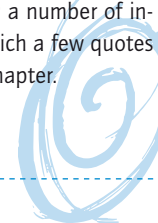
The teachers' new role as innovator and learning process manager

Ralph Boeije and Harry Kotey

The rapidly changing world requires for educational institutions to adapt and anticipate. This particularly holds true for the ICT and engineering education in their relationship with the creative industry (see introduction chapter Learning Environments). As Peter Criellaard describes (see "Education in a changing world") vocational education needs to develop into a dynamic cooperation between business partners, educational institutions and students. The business partners provide their entrepreneurial challenges and

Mediawerf purpose

WHY: Mediawerf uncovers the true potential of MBO students

HOW: Mediawerf offers:
- Different learning experience (attractive, learning by accident, practice based, multi-level and professional)
- Better fit to industry labour requirement (professional project approach, innovation and creative industry focus)
- Networking students and industries

WHAT:
- Combine practice and learning (real projects)
- JIT teaching
- Deliver market value through projects

RESULT:
- DROP-OUT REDUCTION

Mediawerf process design

Steering & project management

---

are actively involved in the execution of these practical assignments. In collaborating with educational institutions they constantly show what knowledge and skills are required in the current labor market. Students learn to take their development in their own hands in this practice-based education. They develop the knowledge and skills needed to enter the labor market. This dynamic cooperation allows educational institutions to constantly adapt to new methods, techniques and developments in the industry.

Teachers play a crucial role in this educational development. They are at the center of the triangular relationship of student, business and education. To the student they are coach, contractor for business partners and they act as independent professionals within the edu-cational institution. The role of the teacher will therefore evolve from instructor to "manager of the students' learning process". That is the core challenge of this educational development. The question is how to stimulate the required learning attitude from the teachers. Another question is how to turn, yet another educational change program, into an energetic process. The answer to these questions is social innovation. Social innovation is a change approach in which the teachers are guided to discover and shape this new role themselves. In the first year of Mediawerf this social innovation approach was developed and tested in practice. The result is a change process full of energy and focus and enthusiasm among the involved teachers.

The new role of teachers

This new role requires a strong impulse in the development of vocational teachers. In the current educational model, teachers are often distributors of knowledge. Based on an existing method, or using their own knowledge and experience, they provide the obligatory material to the students. Each study has a required set of courses with corresponding contact hours. And the teachers fill these hours with the contents of the course. The teachers' biggest challenge in this format is to keep the students interested. Just enough to help them pass their exams and get their diploma. Regardless of whether the labor market is in demand of these qualifications. Practical assignments usually only follow after the tests and these projects are mostly fictional and of-ten uninspiring for students. In their current role, teachers are controller, or even "police officer" in the lesson. Teachers have to pull all the strings to keep the students, and themselves, motivated.

In their new role teachers will be managing the learning process and personal development of the student. Teachers arrange the business partners' challenges as practical group assignments. During the executions of the assignments they deliver 'Just In Time' the theoretical basis for the required knowledge and skills (see later in this chapter "learning trough making" and "Teaching by example").

The teachers' role is to anticipate the learning needs of the student that arise from the practical assignments. Teachers become stu-

Networking

Common ground

Define project idea

Design project

Write project plan
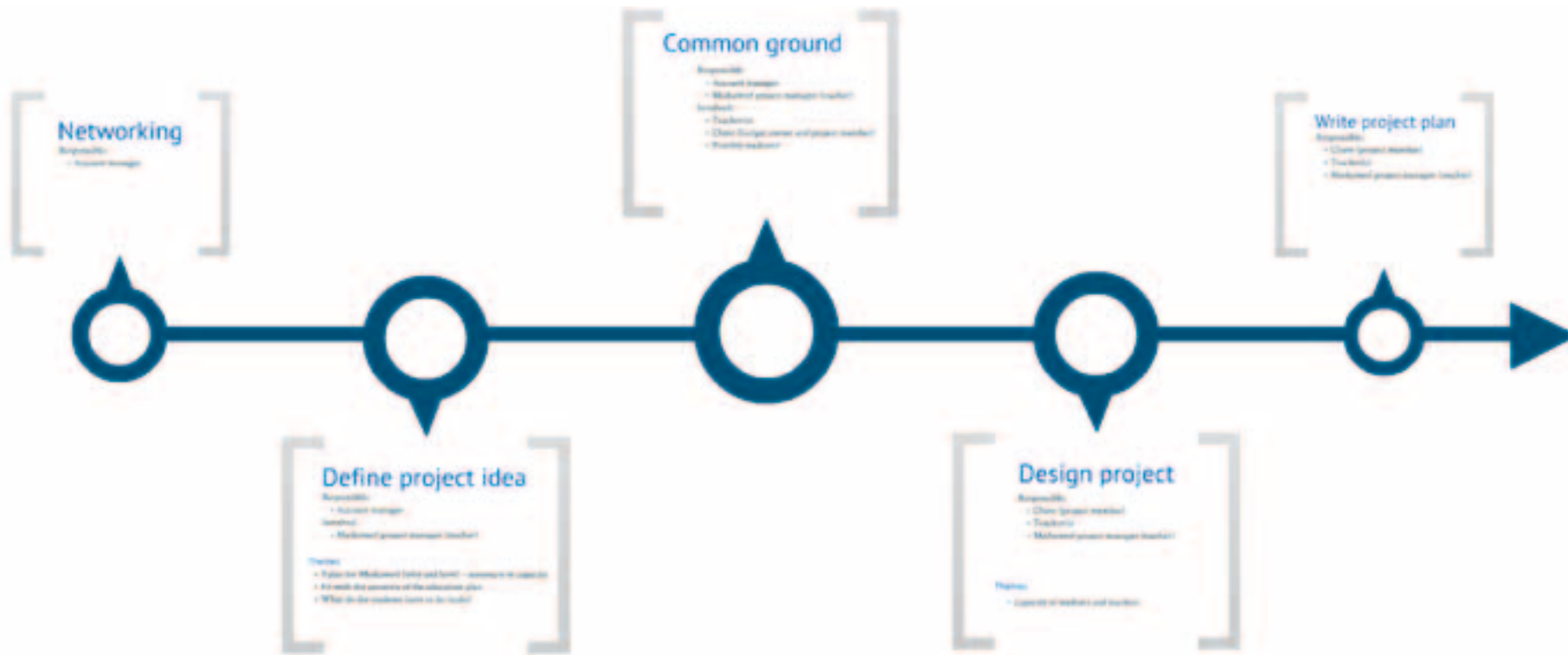
dents again (lifelong learning). It is not about distributing available knowledge, but about joint discovery of new knowledge. Teachers guide the learning process, but are not necessarily content experts on every aspect of the business challenge. In their role as process manager, teachers manage the connection between students, business partners and the education institution. This means that teachers are:

Coach for students:
Teachers help students to develop their learning attitude in the practical assignments with real clients. Teachers stimulate learning needs and fill these needs where necessary, or guide the students in filling their learning needs themselves. Teachers support students in their peer and self-evaluation and assess this evaluation according to the formal study requirements.

Contractor to business partners:
Teachers are the first point of contact for clients of the practical assignments. Teachers encourage the active involvement and participation of the customer towards the students. Teachers organize the students' project teams and have regular progress meetings with (potential) clients. In this way teachers keep a close view of the needs of the labor market and the implementation of the projects.

Independent professional within the educational institution:
Teachers monitor the quality of education in practice compared to the formal (legal) educational framework. Teachers acquire projects that fit within this framework and provide the right ingredients for the students to take the next step in their professional development. Lastly, teachers advise the educational institution regarding the continuous development and innovation of the formal framework based on the input from the business partners.

'Teachers become students again'

The social innovation roadmap

This new role requires an investment in the development of the teaching staff. An investment that starts to (re)develop the ability to learn; teachers become students again. The change of attitude and behavior needed for this ability requires a lot of energy. Because people, including teachers, do not like change, or better, they do not want to be changed. The core of the social innovation approach is therefore to inspire teachers to take this development in their own hands.

Social innovation concerns a change in the employment relationship between employer, employee and customer. It means letting go of bureaucracy, needless hierarchy and "command and control" management, but instead making way for own strength and entrepreneurship of employees in combination with freedom and responsibility. This is an innovative way of organizing and managing, especially in educational institutions.

Social innovation is a proven approach with visible and tangible results. Higher productivity and quality go hand in hand with higher employee satisfaction and commitment (Erasmus 2009). And this is exactly what the (vocational) education needs.

A social innovation approach starts with creating a clear vision, a shared "why". In this phase, the teachers reflect on their own drive and place it in the context of the "why" of school (see http://www.startwithwhy.com). This is the basis on which teachers can fill in their role. Within teams there can be different emphases in the individual role of teachers (coach, contractor, independent professional). But the starting point is that the different accents are equally valuable to the team and the educational process.

In the next phase the teachers need to have the opportunity to gain experience from practice. Experience with organizing projects, coaching and monitoring the development of students and the interaction with clients. The educational institution has to facilitate this by providing both time and sufficient support. Teachers need professional freedom, but are not trained to work from a blank sheet. The free space therefore does require clear borders and a stable environment.

During this phase moments of reflection should be organized and knowledge and skills have to be offered to the teachers 'Just In Time' ('practice what you preach'). The group process in this reflection is an important source of energy for the behavior change. Good examples and inspiring experiences are important in this development phase. At the same time there is room to learn from mistakes and to discuss practical obstacles and to take action to resolve them. The teachers collaboratively create a communication approach on their new role. Appealing and understandable visualizations are a useful tool in this approach.

The social innovation approach also enables teachers to explicate what support they require from students, business partners and educational institutions. Teachers require of the educational institution for example contacts with potential clients (account management), professional freedom and less bureaucratic rules.

Social innovation in practice

Zadkine and The Patching Zone have developed Mediawerf together as the 'knowledge and practice' lab. Within Mediawerf students get creative media training by Young Professionals and gain practical experience through real business assignments. Mediawerf provides therewith for innovative contents of (a part of) the regular curriculum of the Human Technology (HT) and ICT studies at Zadkine. The first year we went in head first. The HT study just started, Mediawerf launched and the first project "Streetwise Billboards". Supervisors and Young Professionals of The Patching Zone and the teachers and students of Zadkine met for the first time and started to work together. They worked together on the assignment, the development of Mediawerf and the new role of teachers and students. This was an exciting exercise for all parties involved. Young Professionals had their first experience as teachers, Zadkine teachers sought a balance between instruction and experience and the students had to let go of their initial thoughts on vocational education.

In the first months of 2013 we started the social innovation development process with the teachers and Young Professionals. The

first half-year of Mediawerf provided us with enough experience to discuss and determine the new role of teachers and the structural organization of Mediawerf. Teachers experienced that within Mediawerf projects they were not the experts and they had to find a new role and position towards the students. They were somewhat forced into a more equal relationship between teachers and students. This was quite challenging for the teachers and it took some time for them to appreciate this new role. Because of the regular collaborative reflection on this experience, there was room for the teachers' personal development. In the second half-year the building of the location based game "Are You For Real" provided for extra experience. Step by step we

'The educational institution has to facilitate this'

incorporated these experiences in the development process. Learning by doing and co-creation therewith remained key to the social innovation approach. In this development we first discussed the "Why" of Mediawerf and we then developed a process with a clear role for the teachers. Finally, we tested the developed process by applying it to the proposal for a new project "Wilhelminapier".

The main result of the social innovation process was that the teachers started to feel ownership of Mediawerf. They understood

their new role in the educational process in relation to students and business partners. A typical example of result was the change in attitude of the teachers at the workshops. The first workshops they sat back and commented. Later on they became more active. In the last workshop one of the teachers stepped up to take over the role of the workshop facilitator. The teachers are enthusiastic about their new role, but still uncertain about their own qualities. They still need to develop further but the results are already visible. Especially when you compare the teachers (mainly HT) who attended the social innovation program and the teachers (mainly ICT) who did not. For the first group, Mediawerf is an instrument for improving their education, for the second group it is primarily an extra (time consuming) project next to the regular education.

As said, the teachers are never done learning. The next project of Mediawerf is coming up. Together with The Patching Zone and cultural institutions the teachers have designed a new project on the Wilhelmina Pier in Rotterdam. In this project, the teachers will further develop their role as process manager. Because we will be working with new technology (Augmented Reality), teachers and students start from the same level. They will have to learn together. This will stimulate the teachers to take on the role of coach and teach the students how to learn.

References
AWVN (2008). Sociale innovatie, lessen van toppers. Den Haag.
Erasmus University Rotterdam (2009). Erasmus Concurrentie en Innovatie Monitor 2008 - 2009. Rotterdam: INSCOPE/RSM/EUR
Xavier, Pot, F. (2012) Doorgeven is aanpakken. Tussenstand van 10 jaar sociale innovatie. NCSI.

Learning as a Process of Becoming

Kristina Andersen

While the growing body of work emerging from The Patching Zone deserves attention in itself, it remains the *how, who* and *where* rather than the *what* that is the focus of our work. As we continue to refine the practise of *participatory design* and *making as research* we can begin to consider what it means to learn in this manner. I would like to propose that the learning moment is a moment of personal change: to be able to consider a new notion is a moment of transition in which one becomes the *owner* of that new thought.

With technologies moving into the microscopic range, where matter is modified on a molecular or even atomic scale, their function must increasingly be believed or assumed by the uninitiated rather than observed with the naked eye. At the same time almost all new devices we make contain a CPU, and "computer" is no longer a distinguishing name for a technological device *(Graham, 2013)*. As a result technology has lost its body and its capabilities are already exceeding what we can imagine. What is left is our bodies and

the relationships we have with each other, and as a consequence the work of creating *technology interfaces* becomes more situated and social. How can we help students innovate, design, make, talk about and act around that, which is yet to be imagined? To treat technological matter as yet another material from which their visions of a possible future can be constructed, intrinsically intertwined

'Learning inside a community of practise'

with and informed by their everyday lives? How do we create learning experiences for a set of knowledge that is not so much application and technology specific, but rather techniques for how to imagine and develop interfaces and experiences with any emerging technological system?

To explore this we look to *Situated Learning*, as proposed by Lave and Wenger (1991) as a way of learning inside a community of practise. They argue that learning should not be viewed as simply the transmission of abstract and de-contextualised knowledge from one individual to another, but a social process where knowledge is co-constructed in real experiences and contexts. This allows us to focus on the application of methods and approaches to create new visions rather than teaching a series of specific always already obsolete technological platforms. Biesta suggests that the focus on the *"how"* rather than the *"what"* allows us to: *"look at learn-*

ing from a slightly different angle, and see it as a 'response' to a 'question'. Rather than seeing learning as the attempt to acquire, to master, to internalise, and what other possessive metaphors we can think of, we can also see learning as a reaction to a disturbance, as an attempt to reorganise or reintegrate as a result of disintegration. We can look at learning as responding to what is other or different, to what challenges, irritates and disturbs us, rather than as the acquisition of something that we want to possess." (Biesta, 2005)

For such an approach we can take inspiration from the learning processes of artists and designers and in an extended understanding of the classical notion of *bildung*, where an individual's spiritual and cultural skills are in a process of continual expansion and growth, we can become engaged in new kinds of situated learning and reflective practicum where in Schon's words: *"It is as though the studio master had said to him, 'I can tell you that there is something you need to know, and with my help you may be able to learn it. But I cannot tell you what it is in a way you can now understand. I can only arrange for you to have the right sorts of experiences for yourself. You must be willing, therefore, to have these experiences. Then you will be able to make an informed choice about whether you wish to continue. If you are unwilling to step into this new experience without knowing ahead of time what it will be like, I cannot help you. You must trust me.'"* (1987) In this way learning becomes akin to deliberately getting lost: You emerge yourself into the context and the possibilities of a project and the learning experience becomes one of paying attention to

where you are as you explore and eventually settle on a form or expression.

Oppenheimer famously described scientists as "living always at the 'edge of mystery' – the boundary of the unknown" and Rebecca Solnit echoes this sentiment in A Field Guide to Getting Lost: "scientists transform the unknown into the known, haul it in like fishermen; artists get you out into that dark sea." (Solnit, 2005) The classic Situationist derive remains a strong reference as to how we might go about navigating those dark seas: a Dérive is an unplanned journey through an urban landscape with the goal of encountering an new and authentic experience. Guy Debord defined it as *"a mode of experimental behavior linked to the conditions of urban society: a technique of rapid passage through varied ambiances." (Debord, 1958)* An example of a well known Derive would be to go for

'Self-discovered and self-appropriated by each individual'

a hike in the mountains using only the map of the London underground as a guide. In other words, the map is obviously meaningless but provides a starting point and answers to moments of doubts, stopping us from walking the well trodden paths of common sense and habit. In practical terms this means that we set out on educational journeys with trajectories and direction but with open-ended outcomes and destinations. This allows each participant to arrive at results, where the knowledge gathered (while directed and supported in a system of Situated Learning) is fundamentally experienced as self-discovered and self-appropriated by each individual. By

'Trust,
is about what is
incalculable'

emphasising embodied activities and the practical production of social facts inside an everyday lived experience, each student is potentially building a personal system of practice rather than collecting a set of abstract knowledge.

Barad introduces the open-endedness of both the future and the past by making a theoretical physics argument for the possibility that the past is actively determined by the present, and that what just happened can potentially change what went before (2012). As a consequence of this, *"particular possibilities for acting exists at every moment, and these*

changing possibilities entail a responsibility to intervene in the world's becoming, to contest and rework what matters and what is excluded from mattering." (Barad, 2003) This opens up the present as a series of moments in which we can have agency and act, with every act potentially altering the past and in turn setting out new trajectories for the future. Each person involved in a learning experience has the ability to claim and appropriate the experience for him or herself and effect fundamental change. This notion of the now as an ongoing re-creation of the past/future suggests that we, and the world around us are continuously in the process of becoming.

To create learning experiences within such an open framework requires risk taking and trust. Biesta describes it like this: *"Trust, however, is about what is incalculable. This is not*

to suggest, of course, that trust should be blind. It is only meant to highlight the fact that trust structurally and not accidentally entails a moment of risk. To negate or deny the risk involved in engaging in education is to miss a crucial dimension of education. To suggest that education can be and should be risk free, that learners don't run any risk by engaging in education, or that 'learning outcomes' can be known and specified in advance, is a gross misrepresentation of what education is about." (2005)

I would like to suggest that by creating and engaging in these situated learning experiences we are not so much creating new interfaces to and experiences with technology as we are changing ourselves, becoming the person who had this experience. As we handle a new complex technology for the first time, the thoughts that are acted out and are created in a complex collaboration between the technology, the situation, the participants and the context. As this process begins to act through us and new experience emerges, we are in turn changed into owners of new thought.

We can then work with ideas not just in the form of description, where only language can become knowledge and meaning, but rather as a process of becoming. Without turning to either romanticism or mysticism, this process allows what may appear as chaos to create order and pattern through embodied experiences. Butler states that we are required to: *"risk ourselves precisely at moments of unknowingness, when what forms us diverges from what lies before us, when our willingness to become undone in relation to others constitutes our chance of becoming human." (Butler, 2005)* I would like to suggest that we should build learning experiences to purposely facilitate this kind of risk taking and provide a temporary space in which we can become.

References:
Barad, K. 2012. Matter feels, converses, suffers, desires, yearns and remembers. In: New Materialism: Interviews & Cartographies, Dolphijn, R. and van der Tuin, I. Open Humanities press.
Barad, K. 2003. Posthumanist performativity: Toward an understanding of how matter comes to matter. Signs, 28(3).
Biesta, G. 2005. Against learning. Nordic Educational Research, 25.
Butler, J. P. 2005. Giving an Account of Oneself.
Debord, G. 1958. Theory of the Dérive. Internationale situationniste, 2.

Graham, R. D., 2013 https://twitter.com/ErrataRob/status/318810839513714688. [accessed 3/4/2013]
Lave, J.; Wenger, E. 1991. Situated Learning: Legitimate Peripheral Participation. Cambridge University Press
Schön, D. A. 1987. Educating the reflective practitioner. San Francisco. Jossey-Bass.
Solnit, R. 2006. A field guide to getting lost. Canongate Books.

Creativity: It's all about context!

Victor Diaz Barrales

"*I am not creative. I wasn't born with that talent.*" I've heard that sentence hundreds of times during my life - not only from other people, even from myself!

People who are not trained in the arts or any creative field, which basically means a huge percentage of the world, tend to believe that creativity is something that you need to be born with – a God given quality, a gift. For sure, genes might help you to be on the creative side, but honestly, context is clearly a really important factor when engaging the right side of your brain.

Let's imagine a situation. Pick the most creative person you can think of and place them in a 30-story building on the 7th floor in a room with no natural light, a few dozen people talking loudly, some others chatting with metallic voices coming from phones, machine generated noise all around, doors opening and closing, a grey computer and dozens of files next to it in its cubicle. Not very inspiring, not the most appropriate environment to ask a person to be inventive.

Now take the least creative person you can imagine, and place them in a crystal clear

'Intangible positive energy that floods a space'

room in front of the sea, filled with people creating astonishing things, robots here, flying machines there, live music, interesting food to eat. Surely that person would start engaging and slowly start being creative.

When I refer to context, I don't only mean a place – a physical spot filled with mind-stimulating objects – I am also referring to the people around you and the invisible, intangible positive energy that floods a space. Those of you who frequent Medialabs and creative places around the globe might know what I mean.

One of the biggest enemies of creativity can sometimes be freedom. It disorients your mind, fills you with fear and uncertainty, and the lack of stimuli can prevent you from doing anything at all. Some people call it the blank canvas paradigm: Give a person a white canvas and ask them to draw something. Kids don't have much of a problem doing that, but as people get older it becomes more difficult. You might hear, *"eeeeh, I don't know what to draw"*, *"I am really bad at drawing"*, or just a *"no"* after some minutes of struggling, thinking about what to do.

Instead, what one can do is give a person a canvas with different shapes and doodles already on it and tell them to draw. Their brain will start recalling similar shapes, ones that we have seen or identified previously, or looking for patterns. At that point the brain starts experiencing enough neural activity to start

getting crazy with new ideas. I think I am not the only one who has seen a coffee stain somewhere and wanted to draw over it, or seen a bunch of clouds forming shapes reminiscent of animals. It's the same principle!

During the Mediawerf project, I designed a workshop to fight the blank canvas paradigm. My desire was to teach the students creative programming using the Processing environment. *"The ICT students are not creative at all"* was something I heard from numerous people throughout the year – even from inside our group. I got a bit allergic to that topic. Damm! Of course they are creative, really creative, they just don't express their creativity in a visual manner! Anyway, I accepted the challenge and tried to demonstrate to everybody that they were indeed creative. The workshop was divided into two parts. One section was assisted – I worked through

'Of course they are creative'

small exercises with students and then they did a "final assignment" they had to make something "creative". Now there wasn't much creativity there! Just some shapes moving around the screen, maybe one or two of the students had done sometime more interesting.

For the second part I created a set of computer screen overlays with different cutout shapes that they had to "fill" using digital content created with the Processing language. The first reaction when they saw the overlays was like, *"Eeeeh? What?"* Some of the students immediately said, *"I have the perfect*
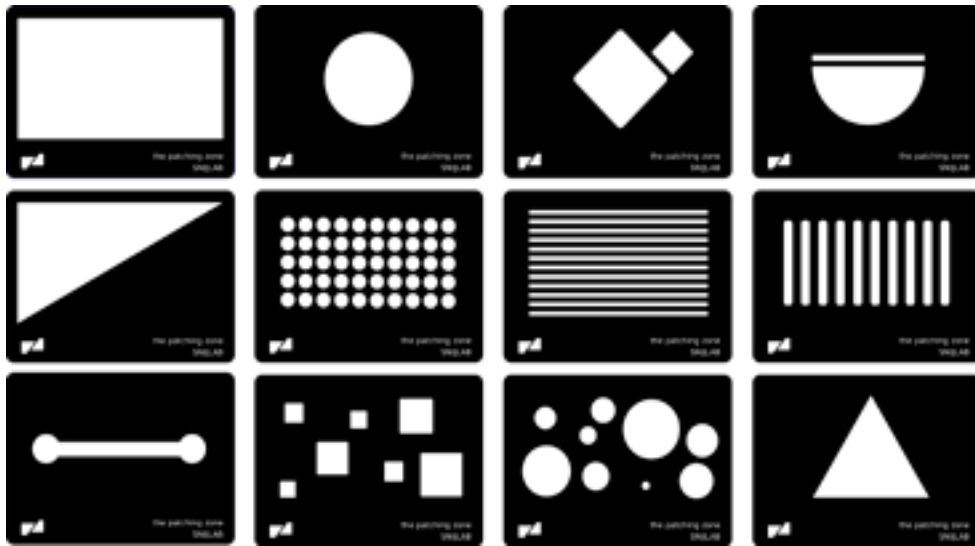
'Engineers must be extremely creative'

idea!", while others used the cutout shapes as a place to start and their ideas began evolving gradually. The result was way better than the first round. All the students ended with one or event two really creative projects using the overlays!

Now let's go back to what I mentioned above about the ICT students and visual creativity. In a international conference I once heard some designers on the stage complaining about engineers. They were accusing them of being uncreative with their grey computer boxes, numbers and calculators. I totally disagree with that. (Partly because I was first trained in that field!) During the last century,

engineers have influenced the world we live in enormously, in every technological iteration; engineers must be extremely creative to make things evolve. The majority of those technological challenges might be invisible to a technologically illiterate society, but they are there! Being creative doesn't necessarily mean that you need to be limited to the visual arts, music or writing.

The background of a person and the contexts in which they can be creative play a big role in their creativity. Let's assume that many people think that visual designers are creative. But what if we place a visual designer in different context? One in which they are asked to be creative in a different way. How about singing, cooking, dancing, finance, architecture, clowning or mathematics? It is extremely difficult for a person to excel across the entire creative spectrum.

In an interview with Richard Feynman, he mentions a critique he got from an artist friend who said that Richard couldn't appreciate beauty the same way he could. So here is a small extract of Richard talking about his friend's comment:

"The beauty that he sees is available to other people and to me too, I believe, although, I may not be quite as refined aesthetically as he is but I can appreciate the beauty of a flower. At the same time, I see much more about the flower than he sees. I could imagine the cells in there. The complicated actions, which also have a beauty. I mean, it's not just beauty at this dimension of one centimeter, there's also beauty at smaller dimensions. The inner structure, also the processes, the fact that the colors and the flower are evolved in order to attract insects to pollinate, it is interesting, it means that insects can see the colour. It adds a question: If this aesthetic sense also exists in the lower life forms… why is it aesthetic…"
(http://www.youtube.com/watch?v=zSZNsIFID28)

So creativity might come in many different shapes and colours. It doesn't have to be visual, musical, through writing, etc.

What I mean to say with all this text is that you cannot say to a person "be creative!" and expect that person to come up with an awesome idea immediately. Creativity! Innovation! Blablabah! NO! it doesn't work like that. First give someone an appropriate context, and then creativity will start flowing around. Let's use the MIT Media Lab as an example. They are well known in the world for their technological creativity. Some people think

this is just because they gather all the most interesting brains together. Of course they have intelligent people there, but the context of the MIT Media Lab has a huge impact on their results. I bet if any person who was interested enough, spent a year there they would boost their technological creativity immensely.

In some ways, Mediawerf was something of an island of creativity and a bit of good craziness inside a sea of boredom and frustration for many students. This is what we tried to achieve during the year. We tried to create a wonderful context for creativity. We tried and we succeed many times but at the same time we failed often too. But failure is not bad. In fact, for many occasions failing is the best thing that can happen to you. It allows you to see things, understand and improve them. That was a big part of Mediawerf for me: doing, learning and then redoing it better.

Participatory art in an educational context

Ida Toft

I couldn't believe my luck when I was invited to join The Patching Zone team. The position was generous and full of opportunities for me. One year where I was asked to do exactly what I wanted to do and was passionate about; to make an experimental game in an unusual and interesting setting. We would work together as a team of researchers, artists, engineers and designers and would have supervision from competent mentors.

Together as a team we would explore the playing possibilities in a city I had never been to, but had long been following for its inter-

esting art and technology scene. We would work together with teenagers who were experts in the neighbourhood, who could share perspectives and knowledge of the city that I would never normally have access to. There were even people to take care of financing, accounting and all the paperwork.

It took us some time to understand the rather complicated project setup. We would primarily be working together with students and teachers of the Zadkine School. There were around 32 students in total. 11 were enrolled in the Information Communication Technol-

'The traditional roles are constantly being questioned'

ogy program and around 21 enrolled in the new program for Human Technology. Kosmopolis (NL) was an organisation for cultural activities in Rotterdam South, providing connections and key material regarding the local neighborhood, and Blast Theory (UK) and Translocal (FI) were giving the project grounding within experimental art, performance and game design.

During the year we realised that the partners, stakeholders, interests and expectations involved in the project were numerous, and at times it was almost impossible for us to navigate.

As the contact person to the teachers of Human Technology, I would primarily work with the students and teachers enrolled here. Human Technology as a program covered all aspects of human computer interaction and ergonomics. It had never before been offered at the school and I should contribute to the curriculum, the content and the format for how we can define and approach the studies.

This context fitted my ambitions for the project well. I was not only interested in the game design aspect of the project. The making of a game was for me an alibi to study design processes. In this case it was a design process inspired by the discussions of contemporary design practice, where the traditional roles between users, makers and clients are constantly being questioned and re-established. It was also an alibi to show the students some of the things that I consider the task of educa-

tion. For example, that school does not have to be boring, that school is a place where we can learn the skills we need in order to express ourselves, as well as a place where we can learn the skills to do the things we feel an urgency for.

On a practical level I was looking forward to work with the students, study the city and its playing possibilities and to study different kinds of play for different spaces and situations. I was looking forward to inspire them and make them curious so they would explore by themselves, to introduce them to intrinsic motivation, the skill to appreciate, to imagine and to express yourself through making.

I was also aware that it was not just going to be easy. The area of the school was known as one of the roughest areas in Rotterdam and the school had been struggling with high

dropout rates and some students having a tense relationship with the educational system. The urgency for something to be done did not challenge my motivation.

Workdays in the Mediawerf

The students' resistance towards school and education was strong. Almost by default they would try to get away with leaving early, sleeping or "doing nothing". We were fortunate though. Mediawerf was another kind of place: not really a school, home, work or leisure place. Placed within the discussion of contemporary design practices (co-design and participatory design) in which traditional roles between designers, users and clients are being questioned and re-configured in new and experimenting ways, the Mediawerf was still a rather neutral space. No one knew the rules, roles and etiquette. We were nei-

ther teacher, boss, parent or friend, and we all represented different cultures including cultural norms and behavior, and everyone spoke English but all with different accents. The students represented the Dutch culture and although we were setting the agenda, the students would sometimes adopt the role of Dutch teachers or help us with practical chores, such as buying a bike and handling cultural differences. And the students enjoyed the space and the feeling of "being abroad" and said that it was a "nice distraction". Here they could have coffee with milk and lots of sugar if they wanted, and they asked if they were allowed to come every day or if we could give them longer tasks so they didn't have to go back to the other classes. And the students took Mediawerf into their dreams: Several students reported they dreamed about games, power-ups and teleporting between their bed and the Mediawerf workspace.
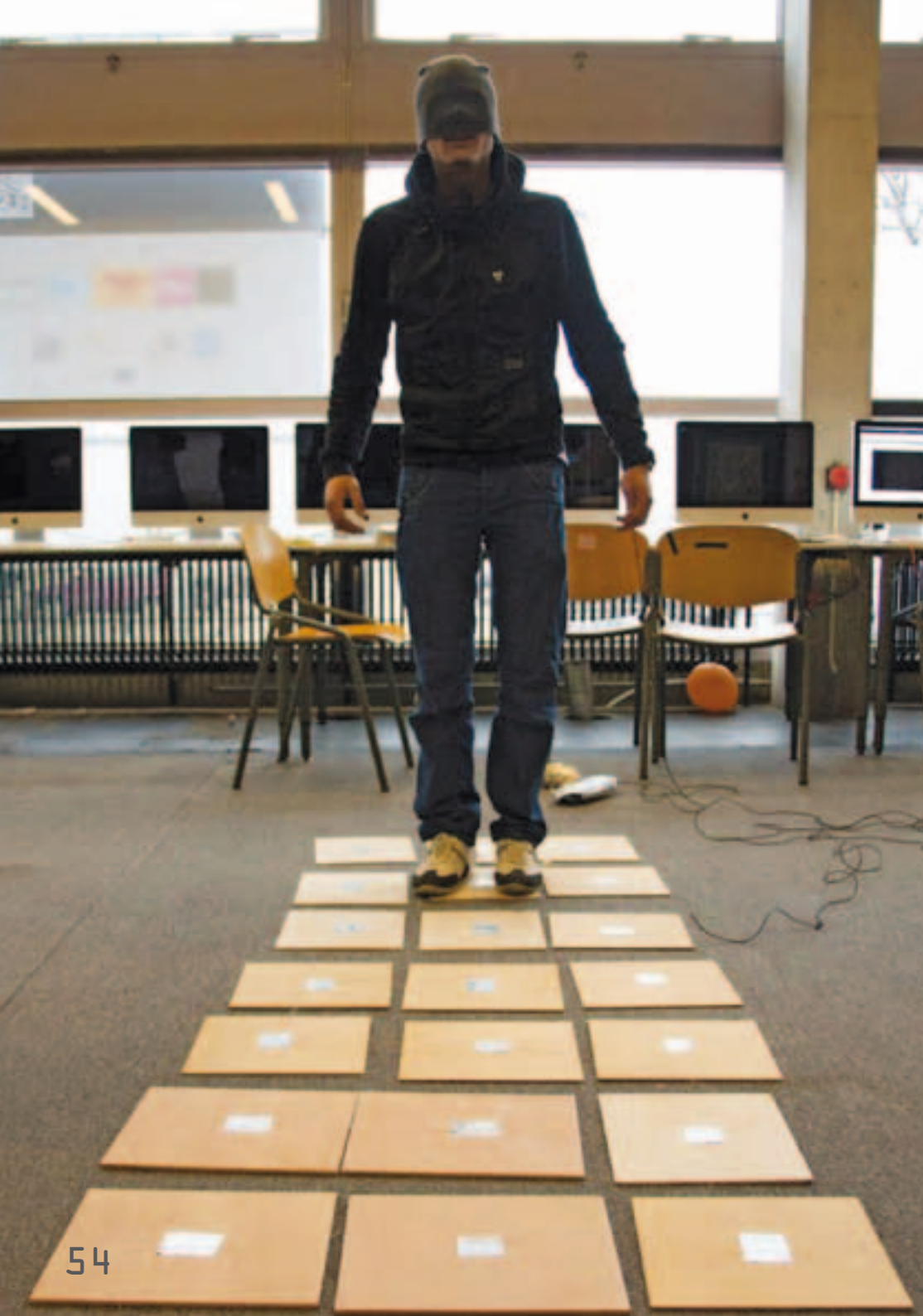
We enjoyed having a closer more casual relationship where some students would talk about thoughts and concerns they hadn't shared with their teachers, friends or parents. We also had to consider how we wanted this closeness to grow when the students were challenging it; *"Do you want some hash?"* or *"Lets go to the casino!"* or when they started friendly Facebook chats on Sunday afternoons.

We had the task of designing a game and as the game designer in the group I thought that getting to know what games are about was crucial. We played computer games, street games and folk games, we talked about play, favorite play, boring play, typical moments

and places for play, and we also designed small games. These activities created strong moments among the group. One day Vesna – one of the teachers – started singing because she had lost in a game and it was so beautiful and unexpected that we all stopped what we were doing and just stared and listened.

After the first few weeks the students showed skepticism about our play studies. One afternoon a student told me: *"You know, all this we are doing, it is a bit childish"*. Suddenly it was tough to convince the students to take the study of play seriously. We had to meet and respect the students' expectations of what school was and ought to be. The students had chosen to continue education in order to get a better job "in the professional world" so they could earn money to move out of home, get a car and a life independent from their parents. Keeping a serious and professional attitude that was distinguishable from leisure time turned out to be crucial in order to convince the students of the qualities of fun and play. With this lesson in mind, however, we could get them interested in silly and unconventional angles.

We overcame the barriers of shyness and awkwardness and of talking to strangers in the city. During research in the area we asked Chris van der Meulen from Kosmopolis to schedule meetings between the students and the shop owners in the local shopping mall. We taught the students how to look professional, to dress up nicely and to do their hair, and we taught them good questions and phrases, gave them a name badge, a camera and a questionnaire. The students had fun

"Mediawerf: Werk in Uitvoering" biedt jou een kijkje in het creatieve laboratorium van Mediawerf. Doe mee met workhops, bekijk demonstraties en kom rondneuzen!

with it – and it gave them confidence to do the interviews. Afterwards students were recounting it with pride.

The fact that the students were expected to engage in their own personal interests of e.g. video games and movies to a school project was at first confusing to them. Later they learned to appreciate it. The main motivation, however, seemed to be that they were working on a bigger project that they were making something for someone else. In the regular school tasks they had been asked to work on a portfolio or imaginary projects they had made only for the reason of learning. The students reported that they liked that in the Mediawerf project "everyone has a role in the project" and that "every opinion counts". The students belonged to what Wenger (1998) calls a community of practice. It was a large team with a complex organisational struc-

ture, in which actions had different meanings and consequences.

On losing or keeping orientation

For some of the students it was challenging to work in this loose structure. Plans and structure were constantly changing due to the dynamics of the process, and the end goal was unknown and in constant becoming. It was in particular challenging for us as a team. It was not only the end goal that was unspecified, we also had to find the infrastructure of the project. The amount of decisions and unanswered questions could at times take the form of an "overwhelming complexity" *(Stolterman 2011)*.

As we moved into the reduction phase of the design process *(Buxton 2007)* this turned out to be a major difficulty. During the first

months with the students, mentors and partners we had created a rich landscape of ideas and interesting elements. Together with the students we had been researching the two neighborhoods for the game, brainstorming game mechanics and game elements. We had learned basic video editing, projection mapping and radio broadcasting techniques. The richness of the possibilities we had mapped out reflected a design space with incredible variety of stakeholders and participants.

It became almost impossible to choose and navigate in this space. According to Nelson and Stolterman design judgment, a skill can best be described as the right feeling, a skill that is tied to the knower and supported by knowledge and imagination *(Nelson and Stolterman 2003)*. They describe how it can happen – often in social design processes, when the group is unable to agree on which

ideas are good or which directions to go. These groups often enter a paralysis state. Either an analysis paralysis, an analytic state lead by the idea that by analysis the group can find the correct solution, or a value paralysis, a diplomatic state where interests and opinions are carefully managed to make sure these are all represented, though often compromised in the final result.

We were searching for something different. Some way of stitching all the elements together to create a game which embraced all the very different cultural and aesthetic preferences present in the design space without compromising an interesting edge or an artistic signature style. At this point the design process got stuck. We had lost orientation and a clear vision for the game.

This phase was particularly difficult as the students were closely involved throughout the whole process and this fumbling and confused part of the design process conflicted with the expectations they had to both school but in particular the professional life. However, creative design processes are by nature messy and unpredictable *(Schön 1983, Stolterman 2011).* They are an inquiry into the unknown and not-yet-existing and often brings with them activities of flounder and wallow.

Thanks to competent mentors and in particular our international collaborators from Blast Theory we were guided through to an acutely

'Creative design processes are messy and unpredictable'

suitable final result. The final game as it was played by the end of the year was indeed a result of the design space it was made in. Players and visitors of the game were taken through an interesting mix of aesthetics qualities and cultures. With Anne Galloways (2007) words we can say it was a seamful design, an assemblage which acknowledged the multiplicities and allowed for and valued the singularities and differences that had been present in the process.

Afterthoughts

We might have experienced some of the consequences of introducing co-design in an educational context. The contrast of design as messy and unpredictable by nature and the educational system's need for a stable and predictable activity seemed conflicting and at times hard to balance. However, we also had a double design process, in which we were searching for formats for future education styles while searching for the formats of a game. The undefined relationship between the different roles, co-designers and participants interrupted our decision and reduction process. If we want to continue co-design processes of such large groups, where participants hold equal voices and at times, conflicting interests, motivations and aesthetic preferences, without compromising on an interesting artistic edge, it calls for further studies into the process of design decisions and design judgment, as an individual and collaborative ability. Anne Galloway's essay Seams and Scars (2007) suggests some interesting perspectives on the tensions and difficulties in social design processes. Similar reports from the side of practitioners would be welcome.

Although the process described at times, conflicted with school system and students expectations it also was a nice opportunity to introduce the students to what philosopher Andrew Pickering calls the ontology of the unknown – an ontology of a world in constant becoming. It occurs to me that living and working in a world of constant becoming, in which we can never fully predict the responses and reactions, we ought to learn a set of practices and strategies. Pickering refers to this as engaging in "open-ended performative dances of agency" between humans and non-humans *(Pickering 2009).* In retrospect we can say that the students of the Mediawerf project were introduced to this both through their individual works in the project as well as by being part of the larger project and watching how we were dealing with it.

The issue of dealing with the unknown, the unpredictable and ever surprising can be extremely difficult and a challenge we face not only in our work life. This need should be reflected in educational design, taking responsibility to teach some basic skills and strategies of how to engage in this process constructively. Introducing creative and innovative projects like the Mediawerf can be one suggestion. However, I would welcome a more explicit and elaborate debate about a diversity of methods.

In the Mediawerf we all experienced a creative process from the inside, with fun and vibrant explorations and brainstorms. But also we got to see the more frustrating phases. We came to see how design projects can be intense and involve some kind of a loss of orientation. Although some students in particular found it difficult to deal with the uncertain and ever changing dynamics of the design process, they also learned to welcome the nuances of the situation. In the evaluation from early spring several students expressed a feeling of luck and appreciation for the being part of the project: *"It's new and interesting", "Not many people get the chance to experience this", "(it's) an once in a lifetime chance" and "I'd like to see more projects (like this) because it's really interesting!".* Some students even reported *"I find it really amusing and learn tons of cool stuff."* and *"it is like one of the reasons I still go to school".* The fact that these students were recounting about school as amusing and interesting was a major contrast to how they talked about other school activities. It indicates that maybe the entire meaning of going to school had taken on a slightly new meaning for them.

References:
Buxton, M., 2007. Sketching the user Experience: Getting the design right and the right design. San Francisco: Morgan Kaufmann Publishers.

Galloway, A., 2007. Seams and Scars, Or How to Locate Accountability in Collaborative Work. In Uncommon Ground, Cathy Brickwood, Bronac Ferran, David Garcia and Tim Putnam (eds.), pp. 152-158. Amsterdam: BIS Publishers.

Nelson, H. & Stolterman, E., 2003. Design Judgment - Decision Making in the "Real" World.

Pickering, A., 2009. The politics of Theory: Producing another world, with some thoughts on Latour. Journal of Cultural Economy, Special Issue: Assembling Culture. Vol. 2, Iss. 1-2, 2009.

Retrieved at: http://www.tandfonline.com/toc/rjce20/2/1-2 [30/9 2013]

Schön, D., 1983. The Reflective Practitioner: How Professionals think in Action. New York: Basic Books.

Stolterman, E., 2008. The Nature of Design Practice and Implications for Interaction Design Research. In International Journal of Design Vol 2, No 1 (2008). Retrieved from http://www.ijdesign.org/ojs/index.php/IJDesign/issue/view/8 [30/9 2013]

Etienne Wenger (1998) Community of Practice: Learning as a Social System. Systems Thinker. June 1998. Retrieved from: http://www.co-i-l.com/coil/knowledge-garden/cop/lss.shtml [30/9 2013]

The Mediawharf design patches

Anne Nigten

A brief analysis

During the past seven years, The Patching Zone has worked with various models to support the integral and transdisciplinary innovation process. You may have noticed in the previous texts about Mediawharf, that during the first year, several innovation trajectories intertwined; the professional development of teachers, the development of cross-disciplinary learning models and new design techniques and design skills. In Mediawharf's first year we continued the flexible Processspatching approach, where fitting methods and approaches are often loosely combined. Many

innovative and interdisciplinary projects show, that the designers and artists involved are able to work very well with a comprehensive and integral approach, where innovation is dealt with at many different levels at the same time (Nigten, 2012). One can finally note that in the Mediawharf, the training of technical skills and the coaching model are aligned. These objectives were realised simultaneously, which is essentially different from most standard trajectories for R&D and which, not surprisingly, bring about great challenges often at unexpected moments.

The social innovation process for teacher

training was described in the chapter Learning Environments. Here we would like to elaborate on the most eye-catching methods and theoretical frameworks, which were used for the learning models and during the entire realisation process. In this chapter we will also go into the learning moments and points for improvement for the coming Mediawharf year.

First we would like to return to the connection between practice and theory. The global, mobile youth culture is incredibly complex, with structures that have no equivalent in the physical reality. This is a new research terrain for both the experience and the interpretation of online cultural expressions and structures *(Castells et al, 2009)*. In Mediawharf the values and interpretations from academic research, design and art practices came together with popular culture of young people

in online environments. Integral to the practice model is the connection and constant dialogue between creating (making) and reflecting. This allows a reflective attitude to surface due to a continual exchange between practical knowledge, skills and theory (wisdom). An integral practice, research and theory model, may provide fertile ground for the enhancement of practical knowledge through continuous feedback, from practice through to the context and theory. Through this method, the student becomes aware of the modelling powers of his or her own practice, during the work or learning processes. This interconnected approach will either succeed or fail with a balance between making and passing on of knowledge or the other way around, generating new knowledge that is linked to the practical creation process. In such an environment theory is a dynamic given, it is constantly renewed and questioned by the

practice and vice versa. The theoretical background in this environment is always linked to the (new) practice. So we can speak of an 'integrated design where reflection informs practice and practice generates theory'. In a way this model reminds us of Schön's Reflective Practice theory (1983). And this gives us a good model for practice based research and development that connects well with a Higher Vocational Education level.

The practice-based approach for Mediawharf was inspired by the design and art practices. For this we especially draw from the explorative (hands-on) design process and the 'making' itself, the implementation aspect, as we know it in today's design and artistic practice. During and because of this creation process an important part of the research emerges. The progress of the creative process brings about the necessity for background information and theory, and in its turn the theory feeds the practice. The research and creation process usually has a holistic nature, as opposed to the conventional reductionist and solution-focused processes. From a classical engineering perspective this can sometimes be problematic, because it may lead to a myriad of different interpretations or viewpoints on one theme, or many possible solutions to a design problem *(Nigten, 2007, page 103)*. However, it does link very well with the current interest in Human Computer Interaction (HCI) for multiple interpretations concerning emerging technical design areas, which are increasingly influenced by interaction of the end user with the technical system and with the designer. The space which HCI requires for multiple and personal interpretations,

'Plural interpreta-tions as a counter-part to the singular interpretation'

is sometimes also called Reflective Design (Sengers, Boehner, David, Kaye, 2005). These authors plead for space for plural interpretations and holistic viewpoints as a counterpart or addition to the singular (reductionist) interpretation in HCI. This is closely connected to the shift, discussed briefly in 'The Mediawharf, a learning environment', from instrumental, work-related technology to technology for personal experience and the experience industry. Sengers and Gaver claim that the much-used traditional, objective utility and usability studies are not sufficient for personal, subjective experiences. They also refer to media art as an inspiration for the replacement of the singular interpretation, which is often still in the hands of the HCI designer.

'Systems that can be interpreted in multiple ways allow individual users to define their own meanings for them, rather than merely accepting those imposed by designers.' *(Sengers, Gaver 2006)*

The role of the designer in this situation, and in certain elements of the design process, is more appropriately described a facilitator of the process rather than the designer who always makes all design decisions. In the chapter Participatory art in an educational context

(page 49) you can read about the potential problems in this process. In Mediawharf the work was often done according to a co-design approach, an approach derived from participatory design and user-centred design *(Nigten eds., 2010, 2012)*. In co-design the emphasis is on the joint design process. During the various phases of the whole process (concept, pre-design, design and realisation,) the relationships of the participants towards each other shift. For example, The Patching Zone's young professionals worked together as coaches with the Zadkine students in the pre-design phase (co-design). At a later stage (development) the Zadkine students partly represented the end users. During the

'The search for the new role of the designer'

workshops with our European partners, peer teaching on the conceptual level happened quite easily, when the experts of Blast Theory and Translocal shared their experiences with the young professionals from The Patching Zone. During the work sessions with Blast Theory and Translocal the focus was more on artistic aspects, while in the work with the students there was much more attention for emancipatory aspects. The responsibilities everyone had (student, designer and artist) kept shifting; a necessary role change, which was sometimes a bit tricky. After a largely democratic co-design trajectory, holding on to a democratic decision-making process can

become an obstacle for the process, because it may lead to a design compromise. This gives a good idea of the dilemma between emancipatory work and artistic, or more general, creative work. What is the most important issue in each part of the whole process? From the huge collection of ideas gathered in the pre-design phase, it turned out to be quite difficult to arrive at a convincing design supported by everyone. Just as it is much more difficult to make a selection from a menu with 1001 pizzas than from a day menu with three dishes, an overload of good ideas in combination with a democratic process can make the final choice a very complicated issue. Especially when the whole group can order only one pizza... Of course we came up with solutions to this situation, such as smart decision tools, calculation of probabilities, lotteries or handy immediate democratic instruments, but we preferred to study strategies from the professional practices, which surrounded us at the start of the R&D process.

We see an extreme example of process-facilitated co-design in Conditional Design (Maurer, Paulus, Puckey, Wouters, 2013). Based on a number of clear, logical rules a joint design (sketch) process is set up, to which various people contribute. The designers and artists have drawn up a manifesto, which says:

.... Input engages logic and activates and influences the process.
Input should come from our external and complex environment: nature, society and its human interactions.
(Maurer, Paulus, Puckey, Wouters, 2013).

A very interesting concept which, in their documentation and in their workbook, surprisingly often leads to more or less the same results. The drawings on the website of Conditional Designs reminds one of machine-made drawings without a random function or any noise. In his afterword in the Conditional Design Workbook Koert van Mensvoort teleports this Conditional Design formula to the China of 2061 because, according to him, it offers perspectives for co-creation which remind him of a Lego system for urban development, which of course everyone is allowed to help build.

The Danish Lego designer Ole Kirk Christiansen and his followers, as a role model for todays designers? Rather, Conditional Design reflects what is on the minds of many designers and artists these days. I can't help but think that Conditional Design was invented during the process of the search for the new role of the designer as a process facilitator. Quite a lot of literature is available about recent shifts in the design world; from the traditional designer who works on products, to designers who work on the designing of meaning (purpose). With this last one you can think of experience design, design for emotion and design for transformation (Sanders, Stappers, 2008). The shift from problem or functionality based designing to designing 'for the sake of fun and pleasure' inspired Gaver and Dunn to the concept of 'ludic design' *(Gaffney, 2007, Gaver et al, 2004)*. Ludic design, a reference to Huizinga's Homo Ludens, a study of the play-element in culture *(Huizinga, 1944)*, in many respects resembles a somewhat formalised art approach. Here designing no longer happens from a predetermined functionality or a specific use in order to become engaged with the world around us. We see that the old rules and laws of applied design discipline are shifting more and more towards the

way artists work. The dividing line between the design and the art practice is becoming ever more blurred. It is remarkable that a lot of literature is available from the design and technological perspective and much less from an art perspective. While it is precisely this media art practice to which Sengers et al look
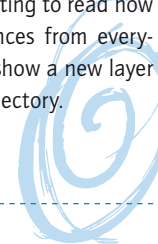
'Artistic experiments as forerunners for interaction design and technology'

as inspiration for ambiguous interpretations and open scenarios for participation *(Sengers, Gaver, 2006)*. Media art and art & technology harbour a wealth of information. During the past decades the media artist has created a trail, which many people can learn from. For some time now the Creativity and Cognition Studios from Sydney, Australia, have been publishing about artistic experiments as forerunners and inspiration for interaction design and technology. Bilda, Edmunds and Candy (2008) researched the interactive behaviour and the engagement of participants in different interactive media art installations over a longer period. This resulted in their 'Creative Engagement Model'. Bilda then 'translated' the sequential interaction phases and the different 'modes' of active audience behaviours into experience Design Principles for five different phases (from initial introduction to deep understanding) of the interaction process *(Bilda, 2012)*.

In personal, often informal, conversations with established media artists about the role they play in their projects, what often becomes clear is that they usually do many different kinds of jobs and switch roles very easily. Most media artists or media art collectives carry the final responsibility for the process, or for the final product (depending on how they look at it and what is developed). This brings us to an important point of what distinguishes media art from the co-creation processes of, for example, community art. The media artist is almost always the person who weighs the artistic deliberations and makes decisions in the design process, while in community art the emancipatory aspect often gets priority. Concerning the artistic quality of community art many interesting discussions have been held *(Bishop, 2010)*.

It seems to me that the outcomes of community art, in which the emancipatory aspect is the central focus, should not be accessed for artistic quality but for the participation process, the realised empowerment and everything this entails. Although in media art public interaction is often essential and parts of the work are realised according to co-design principles, we do judge the final process or the media art experience according to (new) artistic criteria. It is worth mentioning that many media artists also have a professional practice as new style designers. The different innovation layers we come across in Mediawharf required an emancipatory (community art-like) approach during the first phase (pre-design), while the realisation of 'Are You for Real?' would benefit from a media art-like approach. You may wonder whether this

dichotomy did not complicate the process needlessly. Perhaps the ambition-bar had indeed been set a bit high here because we learned that this turnaround was complicated for both our team and for the students. Our team of young professionals can, as far as we are concerned, rely even more on their discipline-specific expertise so team members can fall back on this at the change from process facilitator for empowerment to the designing of the final artistic and creative experience. Next year we will certainly pay extra attention to this. Although the turnaround certainly required an extra effort from The Patching Zone team and the Zadkine students, it did have a very important function for Mediawharf's first year. Thanks to 'Are You for Real?' a real experience for real people in the real world was brought about, including all test and learning and evaluation moments. Moreover, it would not have been easy to simulate 'Are You for

Real?' because of the personal and therefore subjective involvement, which was essential for the experience. 'Are You for Real?' was a convincing example of an experience, which allows space for multiple or ambiguous interpretations, with strong artistic, cultural and aesthetic aspects to boot.

In this chapter the team members of The Patching Zone take you with them in the process of pre-design, design and development of the patches (parts) of the first year of Mediawharf. It is very interesting to read how separate parts and experiences from everyone's own field of expertise show a new layer of the diverse innovation trajectory.

References

Bilda, Z. Edmonds, E. Candy, L., 2008, Designing for creative engagement, Design Studies, Vol 29, Issue 6, pag 525-540.

Candy L., Edmonds, E.,Eds. 2012, Interacting - Art, Research and the Creative Practitioner, Bilda, Z. Designing for Audience Engagement (page 163-181).

Castells M., Fernandez-Ardevol M., Linchuan Qiu J., Sey A., 2009, Mobile Communication and Society: A Global Perspective, Chapter 4, The Mobile Youth Culture page 127-169.

Bishop, C., 2010, Is Everyone an Artist?, Van Abbemuseum, Eindhoven The Netherlands http://www.conferenceofconferences.com/is-everyone-an-artist (accessed September 28, 2013).

Gaffney, G., 2007, Ludic Design: An interview with William Gaver, Information and Design, http://infodesign.com.au/uxpod/ludicdesign/(accessed September 28, 2013).

Gaver, B, et al., 2004, The Drift Table: Designing for Ludic Engagement, CHI'04.

Huizinga, J., 1944, Homo Ludens, a study of the play-element in culture.

Nigten, A., 2007, Processpatching, Defining new Methods in aRt&D, printed edition page 103.

Nigten, A. Eds., 2010, Real Projects for Real People, Vol. 1.

Nigten, A. Eds., 2012, Real Projects for Real People, Vol. 2.

Sanders, E. B., Stappers, P. J., 2008, Co-creation and the new landscapes of design.

Schön, D., 1983, The Reflective Practitioner: How professionals think in action.

Sengers, P., Boehner, K., David, S., Kaye, J., 2005, Reflective Design, Proceedings Critical computing: between sense and sensibility page 49-58.

Sengers, P., Gaver, B., 2006, Staying Open to Interpretation: Engaging Multiple Meanings in Design and Evaluation, DIS/ACM 1.

Designing for playful sense-making and listening

Ida Toft

The game we created, Are You For Real? was a soundscape experience - a journey accessed from two locations: One was in the neighborhood of the school in South Rotterdam, where street players (equipped with a mobile phone and a pair of headphones) moved around in the physical spaces to activate and collect different sound clips. The other location was the public library in the centre of Rotterdam, where library players used desktop computers to control an avatar's movements within a minimalist graphical representation (a map) of the school neighborhood, thereby activating the sound clips in the area.

Two Access Points

The river Nieuwe Maas runs through Rotterdam, separating the south from the rest of the city. The two parts of the city are contrasting each other demographically, industrially, ethnically, and culturally. The city's inhabitants rarely cross the bridge to the south and the

same goes the other way. As the students would say: *"No, I don't go out in the centre, those people are very strange"* or *"South is for the normal people"*. The two access points to the game are placed on either side of the Nieuwe Maas connecting Rotterdam across the river.

The school is situated in a postindustrial neighborhood in the south of the city with low buildings and carports, car mechanics, a church, and a few small retail shops. The school had recently opened a new building in the northern part of school grounds, which stood out with its dazzling white facade and architectural style, and looked almost futuristic compared to its surroundings. Although the area is only a few hundred square meters, we realised that most of the students had never walked outside of the entrance area, car park or the path built for access to the Mediawerf workspace, to enter these smaller streets. They had also never walked along the path leading around the school building - quite understandable, since the atmosphere of the area changed drastically the moment you left the car park.

In the library we installed the Are You For Real? game in a corner where computers and playstations were normally occupied, all day long by teenage gamers and their friends. We put up a white scale model with projections of the game area and the players' positions in the south of the city and placed the desktop computers inside oddly shaped plywood structures. Library visitors were encouraged to try the game.

Playing the game

The library players were able to watch street players move around in the map and they could listen in on their sound experience by following them around with their avatar. They could also explore the soundscape on their own and move around faster than humanly possible by foot in the streets. By picking up small speech bubbles library players could send out comments and messages to the game and hereby interact with all game players. The comments were displayed on screen and read out loud by artificial voices audible to all players.

Back at the school the street players were first guided into a dark room filled with smoke to wait for the instructors to gear them up. The instructors were dressed in white coats and dark sunglasses giving the whole setting an unusual feel. After a short wait the players
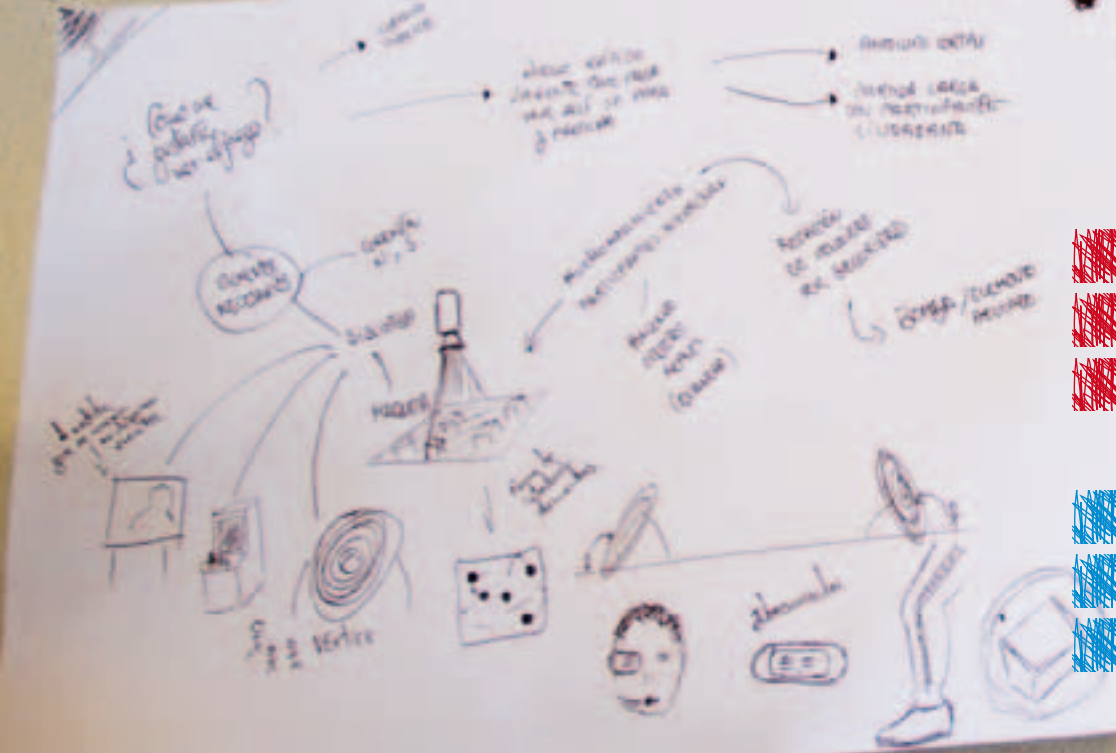
were invited into an interrogation room and placed at a table with abright light pointing directly into their faces. The instructors asked a number of questions in order to identify the each player type: *Do you trust people? Do you see moving pictures when you close your eyes? Would you trust your best friend to tattoo a surprise on your shoulder?*

After the interrogation the instructors turned friendly but ambiguous and guided the players to the corner of the room where they were handed a pair of headphones and a machine (a phone camouflaged in a custom designed cases).
The players were then guided into the street and the soundscape journey could begin.
The area was filled with sound clips which were layered out and placed according to GPS positions. The soundscape mixed in a variety of sound types, indexical sounds,

natural and synthetic voices, hip-hop beats. Messages from the players in the library were read out loud by synthetic robot voices thus intertwining with other sounds. Furthermore, the headphones the players were equipped with were open and allowed for the sounds of the environment to blend in with the virtual soundscapes.
Street players could choose to go for a hunt to collect the 16 indexical sound clips in the area, or they could choose to simply explore the soundscape.

Telling a story by creating an environment

Are You For Real? takes the player through a landscape of mixed sound spaces. The sounds from the school neighborhood reverberating in buildings, trees and ornaments of the street, the hip-hop beats representing a youth culture with attitude, tradition and history.

'Personal stories of hope and positivity resonating humor and culture'

The synthetic voices, the synthesizers and the digital sounds representing sounds of a physical setting so different from any natural space and the lyrics of the Helderheid group were broadcasting personal stories of hope and positivity resonating humor and culture from the neighborhood. Some library players were helpful, guiding the players in the street around in the soundscape while others were playing with what to say: *"Robert is gay"*, *"I love you, can I have your phone number"*, *"Your connection is weak, shake your phone to reconnect"*. And some were playing with spectatorship and commentating as we see in popular e-sports.

There was no predefined order or linear structure to the sound clips and the experience did not follow a traditional narrative structure. In this way it engaged with the discussions designers and game critics are having about the potential of games as a new platform, with new potentials and forms of storytelling. Designer of The Longest Journey, Ragnar Tornquist, expresses in a panel on the future of games and storytelling *"Games is where storytelling is being experimented with and people are discussing it at length. We are trying to find new ways of telling stories, we are trying to take the old ways and convert them."* *(Ragnar Tornquist 2013 10:40).* As such Are You For Real? is a game where narratological meanings are ambiguous and not easy to depict.

Other games are experimenting on storytelling in similar ways. Dear Esther (2012) intro-

duces the player to an uninhabited island with a ghost-like feel. The soundtrack and visual landscape are dark and mysterious, the interactions are restricted to only moving around - there is no jumping, bending, touching or picking things up.

Proteus (2013) is another first-person exploration. Players wander around in a randomly generated island of pastel colours, hills, trees, flowers, water and animals. A musical soundscape emerges as all the things have a sound you can hear when you get close. Clouds can rain and there is both a day and a night cycle, there are no enemies, you can't die, shoot, jump or kill.

Designing for a slow play, listening and sensemaking

Both *Dear Esther* and *Proteus* are two examples of games that tell a story by letting the player explore their environment, and making that a *gameplay experience in its own right*. Designer of Dear Esther, Dan Pinchbeck, says: *"Rather than traditional game-play the focus here is on exploration, uncovering the mystery of the island, of who you are and why you are here. Fragments of story are randomly uncovered when exploring the various locations of the island".*

Although Are You For Real? does not offer a stunning 3D landscape like Proteus and Dear Esther, it does share similarities. The order between the different elements is non-linear and non-hierarchical and no story is being told directly to the player. Instead the players are uncovering or creating a story was *"it's really really nice but... what's the purpose? ... what is it"?* The whole experience – from the introduction in the smoked room until the sound exploration – was strange, ambiguous and not easy to make sense of it.

Are You For Real? features a play that is slow and introvert. The minimal graphical interface allows for the players to turn attention away from the screen and focus on their own inner "movie" that emerges from the sounds. Although it is possible to finish Are You For Real by collecting all the sound clips, this game is not a game about running fast or having good tactics, and it is not about winning, losing, high risks, and big challenges. It is more about what you discover on the way, the ways in which we explore and the ways in which we listen, associate and make connections. Are You For Real works as a game, a structure, an alibi and a designed situation to engage and experiment with.

References:
Key, E., Kanaga, D., 2013, Proteus, computer game: Windows, Mac, Linux, Washington, US, Steam.
The Chinese Room, 2012, Dear Esther, computer game: Windows, Mac, Linux, Washington, US, Steam.
Eurogamer, 2013, Panel: Is storytelling in games getting any better? – Rezzed 2013 Developer Session, [Video online, 10:40] Available at: http://www.youtube.com/watch?v=4Lb3OOFld-s [Accessed 2 September 2013]

The design process of the headphones

Kati Bessenyei

Headphones are a part of our everyday life; almost everyone carries a pair. The brand, the size or the volume of the music describes your style, and says something about the kind of person you are, especially if you are young.

The 'coolest' headphones are highly prominent, their logos are imprinted into our memory, and you can see them on the street every day. Similarly, sound artists are also visibly connected with a brand, endorsing the equipment they use in the making and presentation of their artistic activity. Even in contemporary art galleries, headphones are the only exhibited objects in an empty room used to broadcast a sound piece. As Marshall McLuhan said *'the medium is the message"* – relating to the symbiotic relationship between the medium (headphone) and the message (the sound). The medium influences how the message is perceived.
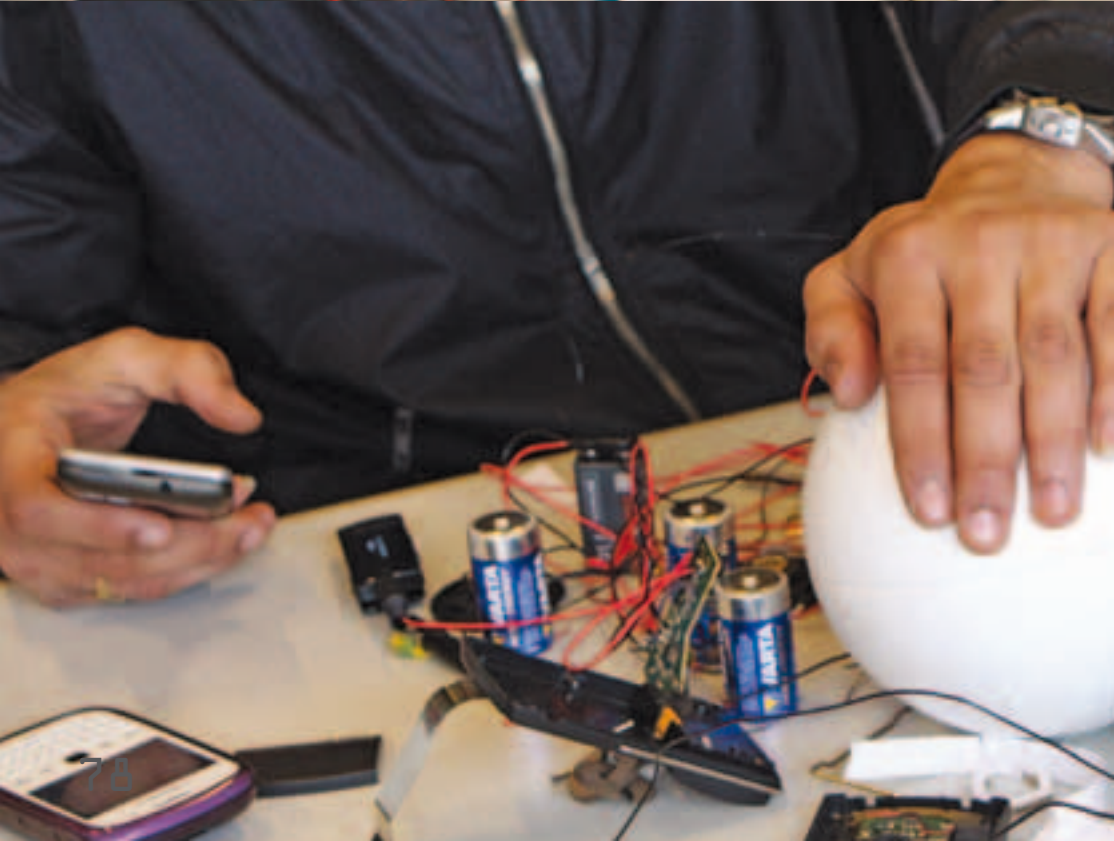
'The brand,
the size or the
volume of the
music describes
your style'

'Unique, recognisable, good quality and comfortable'

This was the reason behind the idea to design our own set of headphones. They should be unique, recognisable, good quality and comfortable. They will relate to the game and nothing else. They would also act as a form of costume, worn by the players order to identify themselves and to recognise each other. Of course, there was always a risk that these 'do it yourself' headphones wouldn't be 'cool' enough. We needed help from the professionals on this subject, therefore we quickly involved the young students from Zadkine, who participated in the design process and helped to design and select what was cool, or not.

In the first stage, I asked the students to show me which headphones they would buy, regardless of the cost. All of them chose the ones promising the best audio quality and they all agreed that elegant and black design was cool. It turned out that the important factors contributing to their preferences, were the technical details, including, deep bass, isolated or open, frequency range etc, rather than the design itself.

As the interest of the students developed, we began to get hands-on with the technical construction of headphones. They had never built a headphone before (and neither had I,) so we began by experimenting with wires, speakers and jacks. These experiments resulted in a really messy tabletop of prototypes, which produced a crackling loud noise, closely reminiscent of hip-hop. No headphones yet, but a bluetooth controlled, ball shaped, deep bass speaker, which was built by Marlon Stolk, and seen in the image.

The next step was to make something wearable. Some students reused computer headsets, others attached the speakers to hairbands and tried to create a futuristic shape. The results were interesting but we needed to move on with new prototypes. The best production method was to use laser cut material, to build up the headphone forms using layers. In this way we could materialise exactly what we had designed, and the students were free to create any style they could imagine. The students designed the layers using vector based graphical software, which we then we took it to *FabLab 010* to cut out the shapes from plastic foam board. Next they simply needed to glue the parts together and place the speakers inside.

When all the prototypes were ready, we made a small exhibition where the visitors could vote for their favorite headphone. Yasmin Schell's white design was the most popular by far, and through this democratic selection process the design became the official headphone for the *Are You For Real?* game.

References:
McLuhan, M., Understanding Media: The Extensions of Man
FabLab 010 – http://www.stadslabrotterdam.nl/

Ethnography as a toolkit

Waldek Rapior

"**P**rocesses are far more interesting" – says Alejandro Zaera-Polo – "than ideas which are linked to existing codes, operating critically or in alignment with other, pre-existing systems of ideas" (2012, pp. 240-241). Rather than implementing ideas to the reality, we should focus on constructing and examining differing social processes. We miss adequate definitions (e.g. what a collaboration art, co-operation, cultural planning are, etc.), but as Grant H. Kester suggests, we should rather pay attention to the research methodology and analytical tools in order to simply describe what these processes deal with (2011).

Observations provide information about a given approach. Then, by using ink and paper in order to create a distance to complex social situations, find accurate definitions, criteria of criticism and tools for teaching such processes. We have to learn from fieldwork. In this case, theory comes from practice.

Ethnography can facilitate both these tasks: be a tool for cooperation, that is, an exchange in which the participants benefit from the encounter *(Sennett 2012)*, as well as a tool for understanding relations within the project and turn problematic situations into a chance to discover alternatives. After all, discovery
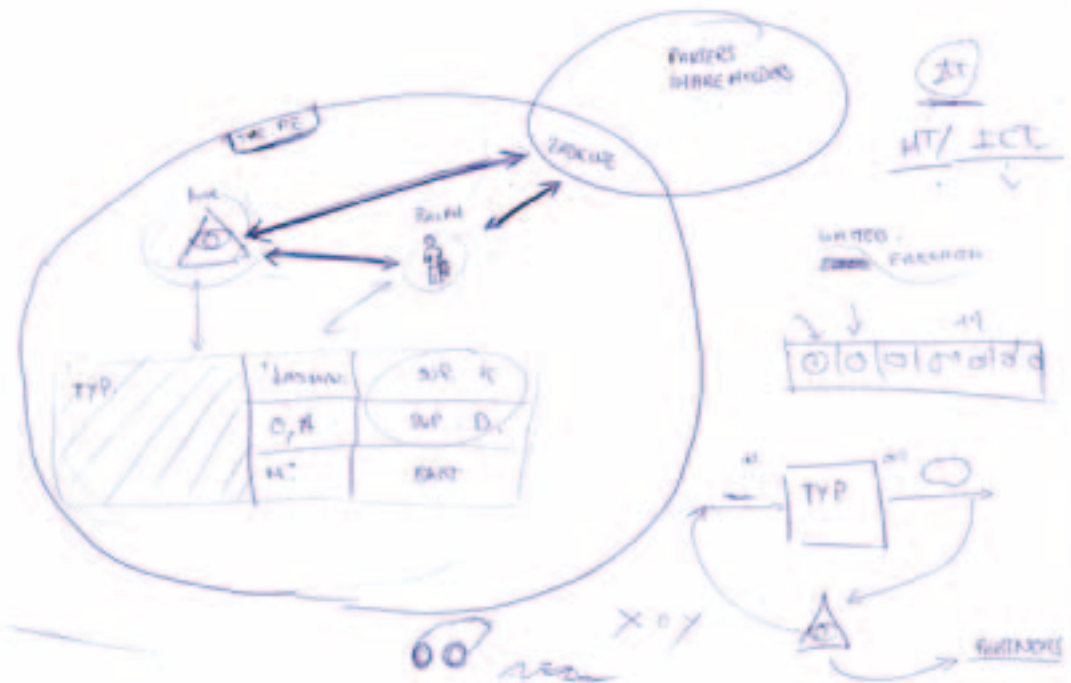
and ethnography are social processes – they require a dialogue with other people and reality. The conventional model of working together focuses on decision making by using rational procedures. The new model that we'll suggest it is not about static mechanisms but about motion: (a) organisation, often on the spot, of activity and (b) exchange between people (e.g. knowledge, viewpoints, options, forms of work, management etc.). It reflects the shift from finding objective laws that govern social processes toward the here-and-now experience. This view has been supported by many authors *(e.g. Fischler 2012, Healey*

2012, Thomas 2012), who emphasise the fact that when cooperation is concerned, one cannot apply the same rigor as in the case of fully controlled experiments in laboratories; they should rather accept that human and environmental capacity is always limited. Fischler lists the required competences for the new model: first of all, "professionals must give up the illusion of control", secondly "must see her/himself as a learning agent", and then "must be able to listen", "tolerate the anxieties of confrontation" with messy reality and conflicted viewpoints, and finally, "adopt the ethic of existing knowing" (2012, p.320).
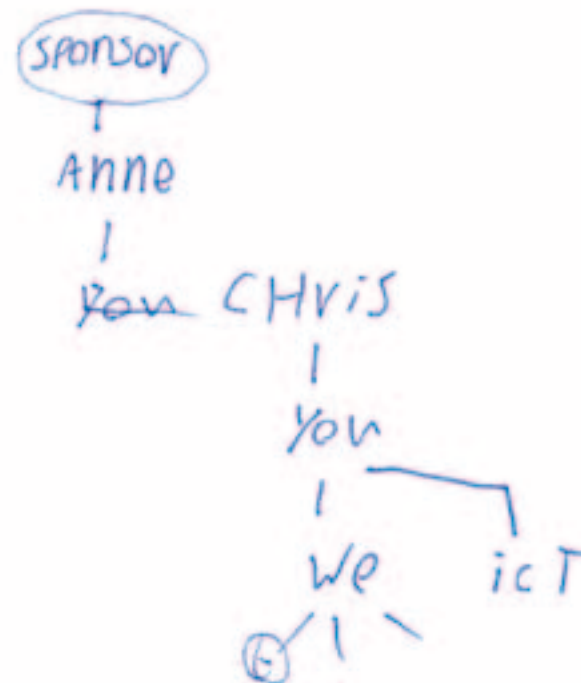
This new model is now well established in literature and in research practice. Searching for the roots of the shift toward the microdynamic of practices, we should go back to the 1950s and the positive vibe created by welfare state, then to the 1960s and the counterculture as well as emancipation and civil rights movements, and eventually, to the 1980s and the process of moving the attention away from the public sphere as a bureaucratic tool to achieve political, ideological and economical programs. Finally, we should not forget about changing economic conditions suggested by Fischler: flexibility

in job assignments, lifelong learning in career development and creativity in daily work (2012, p.326). Last but not least, two decades of experience of humanists and social scientists, but also natural scientists, have shown: there is no such a thing as knowledge that

'Ethnography can be a tool for cooperation and for understanding relations'

can be produced independently. Knowledge is always produced in the collaboration.

Nowadays, projects require knowledge from a wide range of fields. The analysis of the complex, indefinable and heterogeneous nature of social constellations needs vocabulary to articulate various languages, national and disciplinary traditions and experience. As Healey suggests, one should consolidate such "experience into both practice guidance and, more generally, practical agenda" (2012, p.334). We should spend some time discuss-

ing methodology of the whole process – from the beginning to the end. In my opinion, examining ethnographic tools used in a cultural project can help answer to the above mentioned issues.

In between: Ethnography as a link between action (organisation of activity) and knowledge (science)

Ethnography is an encounter with other people in order to grasp their thick world. Organisation of people's activities is about making projects or situations in order to create cooperation. However, ethnography can be a tool for both, analysing culture as well as creating collaboration – it enriches spontaneous actions and could reveal the meaning of dynamic relations within cultural projects. Let's start with the ethnography as a framework for a workshop.

'Knowledge is always produced in the collaboration'
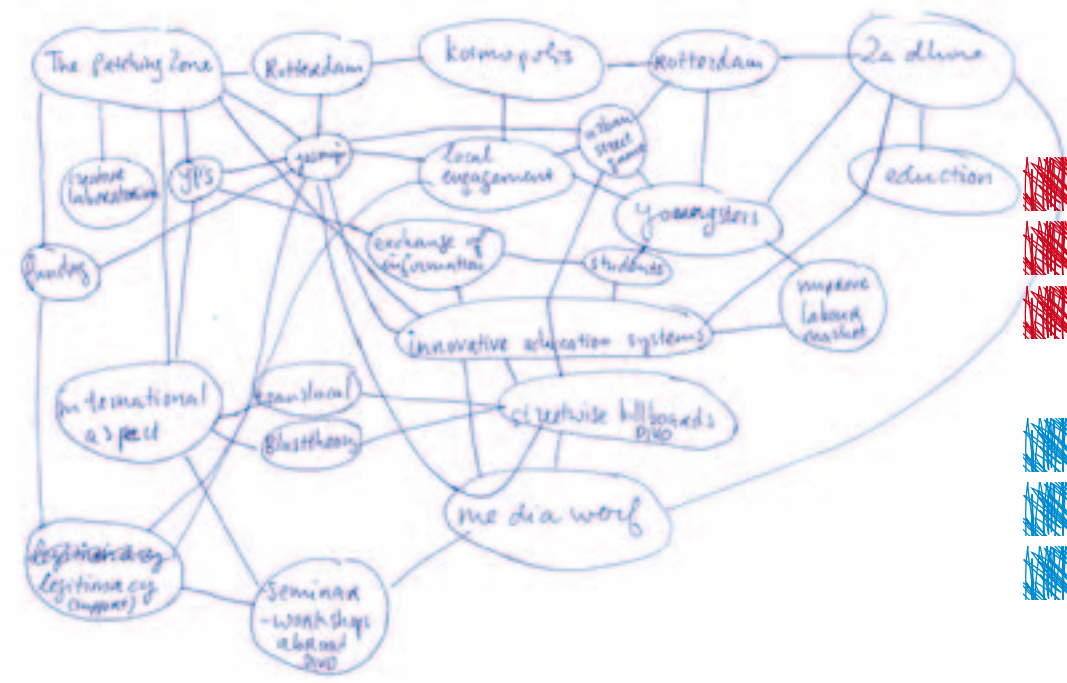
Some of us see the project as a very complex network where not only humankinds are important but also the city of Rotterdam, system of education, actions such as workshops and exchanging of information. The images of the project show that each of us see relations within the project in slightly different way. It is important to find a common imagination. Drawing can help to achieve this task.

A. Ethnography as a framework for managing action:

There are several strategies to facilitate the development and maintenance of field relations. According to Lofland, Snow, Anderson and Lofland, one of these strategies is a presentational one, which they called "nonthreatening demeanour" (2005). In their guide to qualitative research, the authors demonstrated that if you want people to be honest, you have to hold back your negative opinions

about others and listen to them with careful attention and respect. Listening is not only about the recognition of the verbal sense, but also about nonverbal acts that express the viewpoints of the situation. For example, in an interview with a forty year old bank manager, you should put the white collar on, but it is better to put on jeans and shirt to interview a student. We used this advice in one workshop with the HT students. We needed some information from the neighbourhood, such as how many youngsters visited the

shopping mall situated nearby and how the interaction between teenagers and shop owners went. To answer the first question, we could look at the surveys made some time ago, but to examine the interaction we had to experience it by ourselves, and interview shop owners. The main question was how to

'Should we wear a suit jacket or look serious and handsome'

engage the students in a possibly boring activity such as short (about 15 minutes) interview with shop owners? We explained to the students that it was important for both sides, for the shop owners because one day the students will become daily customers of the shopping mall; for the students, because they may find a job at this place. Moreover, using a Power Point presentation, we explained and showed why we needed this sort of information for the game. All in all, this was a very traditional method of building context for the specific task. What we did was make a framework for a serious assignment. We decided to record the interviews and make use of the "nonthreatening demeanour" strategy. We discussed our outfits. Why should we wear a suit jacket or look serious and handsome? The answer was that wearing a jacket and a white shirt makes the interviewer feel more confident as well as seem a more serious interlocutor in the eyes of the shop owners.

This was the key. We made special badges that informed we were not a chaotic group, but representatives from the institutions: The Patching Zone and Zadkine. Professor Brad J. Bushman in two studies conducted in the 1980s "found that people were much more likely to follow the orders of a person with a uniform and a badge than the direction of someone in regular clothing"(Ripley 2008). A suit is not a uniform, but it is definitely not casual dress. We disused this issue. Then we practiced interviews with the video cameras and finally dressed up and went together to the shopping mall.

Ethnography helped us not only prepare the questionnaire but also make a framework for the workshop. Tips such as "always start the conversation with "good morning, good afternoon or good evening" or "be polite" were important, but the key question was: how to create a framework for teaching the students these tips? How can we engage the students in the process of getting knowledge about the neighbourhood? The key to engage the students was the framework, which was a simple piece of advice: wear a proper dress, which fits the situation. This is the power of tiny things – the power of a uniform. There is a strong belief that you have to be an artist to think artistically. "I quit being an engineer" – said Victor. "Why?" – I asked. Because in the engineering world nobody can imagine being an artist, he answered. Victor was exaggerating this stereotype, of course. However, he pointed out that it is not easy to believe that everyone is an artist; you have to make people feel comfortable in order to convince them that they can be artists and get them to

talk and act. It requires a metaphor: it can be a football match (which team will score more goals?), it can be an academic lecture (who will repeat a story that has been told?), it can be a race, (who will be the first?). But it also requires a framework. It seems to me that the best framework is usually a small thing, such as outfit. It is important to everyone and almost everyone considers how he/she looks in the eyes of others. It is a personal but also a cultural issue. Ethnography helps to find the tiny thing – the frame – as well as to construct this frame. In this way ethnography becomes a workshop. The thick culture reveals itself in a context of ethnographic knowledge.

B. Ethnography as a toolkit for understanding relations within the project:

Collaboration can blur the edges of disci-

plines but it never erases them. They still exist and we have to be aware of them. I will give you an example. I talked to the team members many times. Victor once told me: engineering is about optimisation; it is about making the best use of materials. He used to be an engineer. However, Victor worked has with artists many times during his lifetime. According to him, art is more subjective than engineering and it is not about optimization but about daydreaming. Victor has this great ability to mix engineering with art. However, a part of him is still an engineer. Kristina is immersed into the conceptual and theoretical work. She deals with ideas. Once she said: *"I have my head in the clouds – it helps in searching for creative solutions".* I am a researcher who often sits at the desk and reads books and analyses everything. We do not want to remove the differences, but use them in the cooperation.

To use the differences for cooperation we have to be aware of them. I do not mean tacit knowledge, deeply rooted in the way one experiences the world and in routine actions. What I mean is the kind of knowledge that we are aware of but it does not always affect us; because it is so obvious or because we believe that we stand somewhere in between two fields (e.g. art and theory etc.). This knowledge has a social nature. It is revealed in social processes, such as consternation or surprises, and it is a tension between "I" and "me". In the pragmatic tradition, for instance in George Herbert Mead's approach, every act of communication occurs in a group context. Mead proposed a term the "social

'Ethnography helped me to follow the relations within the project'

self" – a dynamic relation between two aspects of self – "I" and "me". The former is the spontaneous aspect of self, the impulsive motor. The latter is a socialised aspect of the person; it represents the awareness of social expectations and it reaches out these expectations. Mead believes that the evolution of self depends on "I" – the creative aspect of a person - as well as "me" – the ability to take a role of the other in a human interaction. For instance, Mead has shown that people begin to understand social word through "play" and "game". In the play stage, a child takes on the

role of the other by observing an adult while in the game stage a child must take on the roles of everyone else involved in the game. It means that child can recognise much more complex relations, and has a double perspective – it can see its role in the game as well as itself as a part of social relations. The ethnography as a toolkit for cooperation helps to recognise differences– between "I", e.g. engineering, and a theoretical or scientific self (like in the abovementioned example). It also helps to find points of agreement and managing disagreement. "Me" is what is learned in interaction with others.

According to the ANT (Actor Network Theory) social relations are important because connections between heterogeneous elements such as different people, non-human beings, objects, norms, languages etc. create a collective. Collective is a network of relations and every single change in this network changes the character of the process, like every single change within a game changes it – e.g. playing chess, when you lose a knight, you change your strategy. All in all, ethnography helped me to follow the relations within the project as well as to see the differences between the participants.

Ethnography meets a cultural project

One of the most important problems in every project that deals with the people is the involvement vs. distance issue. Speaking in general, there is a tension between involvement (too much emotions, both positive and negative) and distance (too little emotions). In *A Diary in the Strict Sense of the Term*, the

famous social anthropologist Bronistaw Malinowski, described his feelings to the native inhabitant of the Trobriand Islands in Melanesia: anger, distrust and sexual arousal. It is better to trust, be fond of and honest to others, but at the same time talk to others, discuss every single thing, write a diary and show it to your closest partners. I describe a few ethnographic tools that support reflection and help find a balance between involvement and distance:

Visual diary:

keeping a visual diary is a wonderful tool for reflective practice. It involves observation, including self-observation, as Schön called it, in and on action. Video camera in a phone is enough for this purpose. For example, each or a few participants of the project can keep their own or shared (e.g. using social media such as FB) diary. Every three hours they record the situation they are in, as well as their comment about the surroundings, about other people and their behaviour. Another task could be recording the situations that seem interesting and important to the participants. The latter task is more subjective. When you look at the world through a screen, it creates a distance to the things around you. In addition, you start to comment on situations. The camera can help reflect in action. Then, participants who keep visual diary arrange the footage into separate folders. At the end of the week, e.g., all participants of the project can connect computer with projector, and watch the diary together. Watching and talking about the short pieces containing situations from the project can help to reflect on the project;

Collaboration diary:

how to reflect in and on the project together? Use e.g. Google doc or make a special account on Tweeter or FB, or start a blog, and share it with your colleagues in the project. Everyone should have their own font colour, this can help recognise who is who. Write about your emotions, about what you think about the project and even, or especially, about the bad and frustrating things. When something is frustrating, it does not mean there is something wrong. It shows the complex nature of your work. Lofland, Snow, Anderson and Lofland demonstrated that majority of the ethnographers describe their feelings as changing, ambivalent and complex. They feel

'Recording the situations that seem interesting and important to the participants'

frustration and experience discomfort. Psychologist called it cognitive dissonance – it occurs when someone simultaneously holds two or more conflicting cognitions: ideas, beliefs, values or emotional reactions. However, this is a common situation in the collaboration. If you feel tensions, it means that you are doing good job, that you care about the project: you are not too far from it (no emotions) or too close (you forget about why you are doing the project). Diary can help to express emotions;

Simple analytical tools:

raw data does not speak. Analysis is a transformative process in which raw data turn into "findings" or "results". Analysis is sorting data bits into broader categories. We can also describe analysis as the elaboration of conceptual frame to the data or moving from a descriptive characteristic to an explanation of the phenomena *(Lofland, Snow, Anderson and Lofland 2005, p.195)*. Analysis on action means to transform raw data into categories in order to find essential features and relationships. This helps you understand the nature of the given process. Analysis in action means to talk about the raw data, exchange your opinion and viewpoints. This helps you to find accurate categories and make a distance to the given process.

However, I believe that group work and conversation is the best support in balancing emotions. The best thing to do is to combine these tools with conversation, with listening carefully to people. This combination allows you to follow emotions and reasons why someone behaves in a certain way or makes certain decisions. Thereby, it makes the cooperation easier.

Conclusion

I would like to conclude with three points I have learned from this fieldwork:

a) Move form signification and representations to emotions, affects and imagination:
"People who do not observe, cannot converse". This wisdom, says Richard Sennett, evokes the essence of a dialogue. Listening well requires a different set of skills, Sennett adds (2012). Cooperation is not only about verbal language, but also working together, i.e. being with each other, observing partners and helping them. Once we made an experiment, each of us focused on their workshop, what did we gain? Time. Each of

> **'Exchange your opinion and viewpoints'**

us had more time to prepare a workshop because we could design our own workshop during the workshops of others. What did we lose? The group cohesion. Working together is enough to build cohesion. Kati asked me: "could you help me with the video edition?" "Yes, of course", I replied. "Ida, could you help me with the radio workshop?" "No problem", she answered. Next month we started to pay more attention to each other. We were more effective than when we used to be when we only helped each other but we did not prepare a whole workshop together. Helping others is enough. The ethnographic approach can help to discuss and exchange proposi-

tions and argumentation but also visual and bodily signals. We do not need another translator from one language to another, but a framework that transforms something very subjective – emotions and imagination – into an intersubjective dialogue.

b) Extension of the reflective practice:
According to Donald A. Schön, this practice rests on the ability to reflect in action – "thinking what [one is] doing while [one is] doing" – and reflect on action, that is, "to examine critically what one did, after the fact" *(see Fischler 2012, p. 317)*. However, Schön proposed this concept in the 1960s and developed it during the 1970s and 80s. If we do

'We need to develop the reflex-ive practice'

not want to be ineffective within the current global, complex and instable situation, we need to develop the reflexive practice. "Practice is never a pure form of local knowledge" Zaera-Polo notes (2012, p.142). Nowadays projects are carried out not only in local contexts but also on a global scene – the results, methodology and answers to particular problems can be discussed and used in other parts of the world. We, as a team, rely upon the perception of pre-existing ideas. For example, Kristina often showed us a brand new project, which she found in the Internet. Also, when we started a brainstorm about a game concept, Victor suggested: "let's begin with the
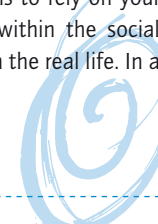
project that you are keen on and that seems interesting and adequate to you". He reached his smartphone from his pocket and showed us his favourite project that he had found last time. Practice is rooted in locality but it is also a system of representation. Practice is both a local and formal operation. It requires also an ability to find and read images, movies, articles and, at the same time, producing a visualisation of you own practices. Ethnographic tools such as I described above turns local issue into a global subject.

c) Engagement:
the most common process in numerous fields – e.g. culture, everyday life, economic, policy – is the process of engagement. Some authors assume that we no longer live in a time of subversion or critique: "this is not a time for subversion – says Liven De Cauter – it is a time for "affirmative action" (2011, p.16). If we would like to engage people but at the same time manage the process and be effective, we need tools that allow us to coordinate actions as well as a tool that gives a lot of freedom to the participants. Ethnography can be a useful framework for workshops. It can also engage participants in the process itself. For instance, recording, watching and discussing what is going on during the project gives a lot of fun and makes complex processes more comprehensible. It is because participants pay attention to the project per se. Vesna, one of the teacher at Zadkine, always said that we, the YP's, should explain, again and again, what we were doing and in which phase of the project we were. Indeed, when we did it, some students started to explain the project to their friends. They were

also able to describe what we were doing. Because the students engaged in the process, they were willing to put more effort to the workshops.

To sum up, I would like to stress that the best you can do in your project is to rely on your common sense. A project within the social settings does not differ from the real life. In a sense, it is life.

References:
De Cauter L. 2011. Notes on Subversion/Theses on Activism. In: L. De Cauter, R. De Roo, K. Vanhaesebroucek, ed. 2011. Art and Activism in the Age of Globalization. Rotterdam: NAi Publishers.

Fishler R., 2012. Reflective Practice. In: B. Sanyal, LJ. Vale, Ch.B. Rosan, ed. 2012. Planning Ideas That Matter. Livability, Territoriality, Governance, and Reflective Practice. Cambridge-London: The MIT Press. Ch. 12.

Healey P., 2012. Communicative Planning: Practices Concepts, and Rhetorics. In: B. Sanyal, LJ. Vale, Ch.B. Rosan, ed. 2012. Planning Ideas That Matter. Livability, Territoriality, Governance, and Reflective Practice. Cambridge-London: The MIT Press. Ch. 13.

Kester G. H., 2011. The One and the Many: Contemporary Collaborative Art in a Global Context. Durham: Duke University Press Books.

Landry Ch., 2010, Think Culturally, Plan Imaginatively and Act Artistically. In: H. Venhuizen, ed. 2010. Game Urbanism. Manual for Cultural Spatial Planning. Amsterdam: Valiz.

Lofland J., Snow D.A., Anderson L, Lofland L.H., 2005. Analyzing Social Settings: A Guide to Qualitative Observation and Analysis. 4th ed. Belmont: Wadsworth Publishing Co Inc.

Malinowski B., 1967. A Diary in the Strict Sense of the Word. New York: Harcourt, Brace & World.

Riple, A., 2008, Airport Screeners Dress for Respect, Time, http://content.time.com/time/nation/article/0,8599,1815529,00.html (accessed 18 Aug. 2013).

Sennett R., 2012. Together: The Rituals, Pleasures, and Politics of Cooperation. 1st ed. New Haven-London: Yale.

Thomas J.M., 2012. Social Justice as Responsible Practice: Influence of Race, Ethnicity, and the Civil Rights Era. In: B. Sanyal, LJ. Vale, Ch.B. Rosan, ed. 2012. Planning Ideas That Matter. Livability, Territoriality, Governance, and Reflective Practice. Cambridge-London: The MIT Press. Ch. 14.

Zaera-Polo A., 2012. The Sniper's Log. Architectual Chronicles of Genration X. 1st ed. Barcelona-New York: Actar.

Blast Theory: thoughts on co-creation

Ju Row Farr

Blast Theory is an inherently collaborative creative environment – there are seven people in Blast Theory, this includes three artists who have worked together for over twenty years. The three artists project lead different works, for logistics sake and for interests' sake. We have systems, processes, schedules, documentation, feedback, reporting procedures etc, etc.

And if it is not "our" project, we can and do step in with suggestions for an improvement if we don't think it is good enough. We do this with care and weigh up whether our disrup-

tion to another persons project could have some benefits.

We are artists' first, looking to make the best possible work for Blast Theory and we deeply believe that together we make ideas stronger, more innovative, more rigorous and more contemporarily relevant.

We are co-checkers as well as co-creators, co-workers, co-organisers, co-humble learners and co-failers. We think, make, document, organise and plan, argue, budget and strategise together. We jointly share vision, authorship

and responsibility – standing up for the work, proudly putting our names alongside it.

The creative process can start for us with an idea, an opportunity, a long held strategic aim/desire or any combination of these things.

The co-creative process can start in the same way, but it has to be time and project limited for us, so that we all know what the scope and the limits are when working with others.

My Neck Of The Woods

In the case of My Neck Of The Woods, we used an iterative, almost circular process of co-creation to develop the workshops and the materials with the young people of the Truth About Youth programme at The Royal Exchange Theatre in Manchester. This began with a brief to one of Blast Theory's associate artists' Niki Woods, who we have been working for over ten years by the project leader, Ju Row Farr. This was then shared with her assistant, Paul Dungworth, another of Blast Theory's associates who we have worked with for over ten years as well. This was then discussed with the project leader on The Truth About Youth (the partner organisation in Manchester), Kate Reynolds and then formulated into a series of workshops, overseen by James, also from The Truth About Youth programme.

We needed a certain amount of contact time with the young people based on previous experience making projects with young collaborators - this is in order to make this co-creation as real and as satisfying as we could for everyone involved, in order to make the best possible piece of work and of having the best possible experiences.

As the ideas of the associate artists' and the ideas of the young people evolved, as ideas of the project changed from a project lead perspective, as shifts in the mobile interface, server development and microsite occurred, as the team grew and came together for the final public iteration of the work and in consultation with the other two artists', the project moved in it's own direction. The project was steered from the top, the sides and the middle, then stirred and swerved and steered again.

The young people wrote, re-wrote, trialled, prototyped, re-ordered and reframed their creative work – alone, together, with the associate artists', the project leader. At home, in the studio, on the streets, via email and phone, mapping, walking, marking out geography. They learnt new ways of performing, of working in a team, in taking responsibility for themselves and others, they learnt how to make new forms of creative work.

Co-Creation And Interaction With The Audience

What is missing in this brief description of the creative process on My Neck Of The Woods, is the audience - the testers, the users, members of the public, the people who the work is for. The audiences' interactions are integral in all of this. They have a role as co-creators in some senses as well, completing the work by interacting with it, within it. It might not be immediately obvious, it is not a conversation with the audience from the outset about our

shared agenda - but it is a conversation from the beginning about the user experience, how the work works for an audience, how they can help us refine it through tests, how they come to know of the work and when the work is done or over.

So what role does the audience have within this work?

In My Neck Of The Woods, as with most of our projects there is an iterative process of development and design, which involves milestones and tests with members of the public. This work has in some ways evolved from I'd Hide You, another piece of work by Blast Theory, which uses live streaming as the platform with performers on the street and members of the public online and so there has been previous testing that sits as foundations underneath testing for this new work.

For us these iterative processes are like a rehearsal in some ways, where we invite in a number of people to come along and take part, to go through the experience in part or through the whole and report back. It is their insight into our processes at different stages, it is our chance to ask questions we don't know the answer to, or that we think we know the answer to, that we need to check.

It is a series of prototypes, of drafts, sometimes a beta test, involving a structured process, in which we try to measure what is going on. We need to find out how it feels to experience the work and of course where the Achilles heels are, challenging aspects of the work, which make it work and which make it not work, and also challenging us as makers. For this part of the co-creation we choose people carefully. It can be an open call out through social networks for example or a se-

lected group of trusted allies or experts, or a combination of the two. It can be a particular target group or a cross section. We formulate a feedback process with set questions the same for everyone and might do this online, one to one in person or in slightly larger groups. We prefer to hear individuals' opinions without other people being there if we are testing a work in development.

Some aspects of the work can and will be changed or fixed as a result of this, some changes will not based on these findings. We are listening from the perspective of making the best possible work and not trying to include everyone's opinion – this would be impossible and it is not desirable.

Once the work is ready and goes live for the public the role of the audience is there again as a co-creator. We will not know the exact shape of the work, the impact of the work, how the work works until it is live, until the audience and the work come face to face, whether it will work as a successful art work is unknown.

Adrenalin, the nature of something being live, different people interacting in different ways at different times with different expectations and experience, human and computer errors and flaws, economics and logistic and factors beyond our control – often the weather, will mean we cannot totally control what we have co-created – but of course we do our best. With My Neck Of The Woods, the young co-creators walk through their neighbourhoods and have a set of questions, which they ask the public who are online. You write your answers online and wait for the performer to assess if they want to have a conversation with you, if they think your answer is interesting or inspiring enough for them to get something from this chat. The richness of these interactions, of these sets of co-creative moments fuels the success of the work, as others online eaves drop and think about their views, their lives and the next question that is coming up. And then finally, we ask for our co-creators as audience to feedback to us after the work. In this case we used the online questionnaire Survey Monkey and a paper questionnaire and this may change the work again.

Ongoing Co-creation?

Creation and co-creation sit along a line of control and spontaneity. Our work is dependent on many people and circumstances along the way. It is these things that provide the unknown, the opportunities for lots of people to be involved in a myriad of ways along and something bigger than just ourselves, hopefully an interesting piece of artwork. We fundamentally believe in a collaborative way of making work, in the potential of people sharing experiences and the value of individual input into making and consuming culture.

Co-creation is not a term we have previously used to describe the process of Blast Theory making work and I'm curious to think whether this is a useful term or not to adopt as we go forwards.

Imminently we will be reflecting back and forward with our co-creators, the partners and spending a day with the young co-creators of My Neck Of The Woods, to see what they think really went on. I will ask them what they think it means.
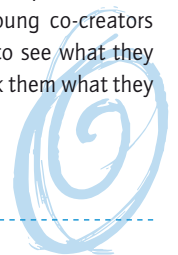
Technical overview Are You For Real?

David Jonas Marinho Neves Castanheira

Game Description

"Are You For Real?" is a GPS driven, real-time, gamified sound experience in an urban setting where players roam through a virtually sonified area wearing mobile devices and headphones while their experience is controlled by their position, the position of the other players and the influence of online users that virtually walk through the same streets and are able to broadcast messages.

The game explores the influence of sound and music on the perception of an urban environment and the more and more common damped interaction between people on the streets while wearing headphones.

In it's basic form, it follows the mechanics of a treasure-hunt game but it can easily be seen as an open world game where the interaction between players (both online and onsite) can generate complex sets of rules and experiences. Rules can be freely added by the online players in the form of messages that either a specific player or all the players on the street can listen to.

The technical platform

The platform consists on a NodeJS WebSocket server that receives connections from both a client-side Javascript library/Game engine and a native Android application. The client-side platforms are served through an Apache webserver.

The NodeJS platform is the central point of the information flow. It uses a MongoDB database to store user data and it processes and routes all the real time data (user locations, message distribution, scoring, distance calculations and administration/monitoring directives). The only type of connection it accepts is Socket connections (and it's compatibility fallbacks) so it does not serve any code or webpages, only game data.

The Javascript library/GameEngine facilitates any web-browser to connect to the NodeJS platform and perform any game action. This library is used to power the maquette projection, the web user-interface with the "godview" for the online players and the administration/monitoring screens. It uses an event driven architecture to facilitate programming any interface to deal with real time data.

The native Android application uses a Java WebSocket library to connect to the NodeJS platform, send and update the device's location and receive distance measurements to other players and targets and uses this information to control a PureData library that controls the sound output. It also uses the Android text-to-speech library to read out to the user the messages sent by the other users and the system and its administrators.

The Apache server contains the administration page, it serves the Javascript library and the android App for download and holds the code for the maquette projection and web user-interface

'Text-to-speech to read out to the user the messages'

'The web user-interface with the "godview"'

Super diversity and social design

An interview with Chris van der Meulen by Anne Nigten

Chris van der Meulen was involved in community art projects at Kosmopolis Rotterdam (KR) before, and is interested in social games. In the email interview below we discuss the work process in Mediawharf in the light of community art and game design and what the effects are of this.

Can social design projects play a part in the fraternisation (social cohesion) of people in a borough or a city?
I think that social design projects can offer solutions for all kinds of problems. Although KR did not have as a specific target to in-crease cohesion or bring about fraternisation, I do think that this can be achieved by Social Design projects. KR's earlier objective was to shine a light on large urban trends, which were important for the city's development (read: for making the city). We looked at the city from a modern day perspective on diversity. This perspective on diversity is often referred to as 'super diversity' *(Vertovec, 2006)*.

This is diversity which is not (specifically) aimed at ethnicity or background, but at a much more comprehensive meaning of diversity. It is a way of looking at diversity which

also takes into account todays complexity of migration and types of residence (judicial status, differences in duration of stay, etc.). With super diversity we look more at the different lifestyles, age, gender, political preferences, etc.

KR tried to highlight the positive power of urban diversity, where this remained hidden, without losing sight of the abrasive sides (which are often very interesting to draw attention to). We also tried to zoom in on young people sometimes, because they are the makers of new culture in a city. Youngsters give shape to new manners and morals, new rituals and so on. Young people in Rotterdam have grown up in a city where they were confronted with differences on a daily basis. (Bauman, 2007) Necessity has caused them to become experts in dealing with new situations, with new people, which they do

not always immediately understand. The unknown has become a constant for them. For KR it was very interesting to highlight precisely that skill. And to make this accessible to a large audience in an appealing (stylised) way, this is a good example of social design.

Speaking of social design, can creative and/or cultural organisations make a difference with this in focus areas in the city?
Certainly. The stories you want to tell, the productive contribution you want to make with whatever you want to make, should also hit the ground, they should land. In this case we wanted to see whether we could tell or visualise a story that could play with the notion that networks in a city often touch each other, but do not always result in new connections. Both virtually, socially and physically networks are separated/fenced off. There are areas in the city where there are a remarkable

number of networks, which just about touch or just about don't touch. The Zuidplein, the location of Mediawharf is a place like that.

This way Zuidplein and its environment are a good playing field for illustrating weak and strong ties, for bridging networks. Through ludic design you make conclusions like that, and that you can see them in the light of super diversity, accessible to bridging. You can publish research, you can explain it, but with Mediawharf we were able to make an attempt to show it. During the past year we asked participants to relate to sensory experiences, which together could tell a story. Then we actually started working together: how do you make a story visual or palpable with limited means? What if you only have sound? What if you only have one minute? Other participants were sent out to make simple skill games and to adjust the graphic interfaces. To bring these two together simply requires a lot of time and knowledge.

Competence as an incentive for a game is the easy way, but does not necessarily deliver the most interesting results. What we would like to spend more time on is on creating (explorative) games for action research. You want to invent the new hula-hoop, as it were. A simple thing without any instructions. You make an intelligent, but relatively simple intervention in the public space. Then we could research how a diverse public interacts with this and whether this intervention incites the public to interact with each other in a different way. People come up with a lot of things (hangplaces, products, activities) for youngsters, which simply don't work. But the key may lie

in studying 'improper use' of places and products, because this is where innovation emerges in the street. The problem is that young people often don't see the uniqueness of their own culture, of their own living environment. Many youngsters are used to the fact that they are not allowed into the supermarket with more than two people at a time, they are used to switching between languages, in having to find their way in hierarchical and less hierarchical relationships. The implicit

'Young people often don't see the uniqueness of their own culture'

codes they use in order to streamline their daily lives often remain invisible. Mediawharf made a valuable beginning with Are You For Real? in developing a youth culture for Social Design, but now we would have to stimulate young people to long-term and frequent 'improper use'.

Learning moments
I have a number of learning moments or focus points for the coming Mediawharf year: because Mediawharf's goal is very ambitious in the sense that we want to get everything out of our students, there should always be a check that the Zadkine participants are not left behind. When the participants are asked about creativity, at first they may not have the idea that their contribution is sufficient.

'It's like working in a particle accel- erator'

Positive feedback in this process is very important. They have to be able to enjoy small victories and successes. When they are asked about their creativity, we should also ask them about technical abilities so that the mix of questions contains successes and learning moments. Participants are capable of quite a lot, provided they are supported and all exercises lead to a presentable object or a description of this. Imperfect products are not a problem, half-products are more difficult for participants to take pride in. It is also important to show as many examples as possible of reference points, as soon as possible. Perhaps the next time we can show them ten kinds of (mixed reality) games, such as You get me and I'd hide you by Blast Theory or organise feedback sessions with professionals much more often.

Concluding

My work is fantastic, because The Patching Zone teaches appealing disciplines and because of the action focused way of working. Sometimes it's like working in a particle accelerator. We organise collisions of particles and then isolate new and interesting information, which is the result of this. Eventually this should lead to outcomes in which the input from the various disciplines constitutes a whole.

Then of course, it's also interesting to secure trends (which have a larger value than for Rotterdam alone) in a city like Rotterdam.

It's a good thing to make connections between local producers of culture (whether they are artists or other 'makers') and Zadkine students and the young professionals Mediawharf connects to itself.

References

Vertovec S., 2006, The Emergence of Super-Diversity in Britain, www.compas.ox.ac.uk/fileadmin/files/.../WP.../WP0625_Vertovec.pdf (accessed Oct. 18, 2013).

Bauman Z., 2007, Liquid Times: Living in an Age of Uncertainty.

Emerging innovation: Interactive streets

Anne Nigten

This chapter builds on the Interactive Streets seminar that was organised by The Patching Zone in the realm of the first year Mediawharf in April 2013. It focuses on a new trend that has silently entered our lives via different channels; interactive streets. This upcoming innovative strand announces a brand new field of interdisciplinary innovation, where we all participate: technicians, designers, artists, policy makers and last but not least, the people in the (semi) public space. Below we'll give a short introduction to the background of the theme, the current state of affairs and how new insights unfold.

Our daily hyper reality

Let's first look at our (fashionable) daily lives. In the leisure magazines the contemporary trendy 21st century human being is portrayed in environments that are liquid spaces. The indoor living room blends with the outdoor garden where one dines and wines with friends in the outdoor kitchen. Tablet computers and smartphones allow us to work in the park, on the boat or have our business meetings at heated terraces. Our private and public activities are no longer location based. It becomes harder by the day to distinguish our 'real' from our virtual reality, as our physical

'Reality and virtuality can no longer be distinguished'

environment is most of the time linked with our virtual networks via social media through our smartphone; we live in a hyper reality. *(Eco, 1986)* Hypermedia is an extension of hypertext; image, design elements, sound, text and video are interwoven and linked. In a hyper-reality the reality and virtuality can no longer be distinguished. GPS, location based apps and services, a recently speedily grown branch of computer applications, play into this. As we know, location based services go much further than navigation, interactive advertisement and tracking. Location based services have encouraged the youth to move outdoors to play augmented reality games that replace the computer desk with interactive playgrounds or smart schoolyards, while it enables the elderly to go outdoors for their fitness with a virtual trainer.

Sustainable energy

Another field of interest that connects a large variety of interactive, outdoor developments is rooted in the desire (and the need) for alternative energy resources. Many scientists, artists and designers work on field research and carry out experiments for independent and sustainable power generation. Large scale smart infrastructural innovations are developed out in the international mobility field, such as the concept of Smart highways (Roosegaarde and Heijmans, 2012-13), where the asphalt is equipped with interactive paint, Solar highways *(Julie and Scott Brusaw, 1979-present)*, where the asphalt is replaced by solar panels that could be driven upon, and LEDs that interactively 'paint' the road lines from beneath.

Interactive street lighting is another emerging field that combines energy saving with safety scenarios. One can witness interesting approaches in children's playground games, which are charged by kinetic energy *(Game-Netic 2012-13)* being generated through their movement. Other smart pavement and road innovations deal with energy that is generated out of vibrations in the asphalt *(University of Twente, 2010)*. Energy generation by other means than the known sustainable resources such as solar and wind also seems to have reached maturity by now. These developments call for new interaction scenarios where the safe experience meets the pleasant experience in the public space.

Design challenges

Although the above-mentioned examples identify the crossovers in technology and trends mainly, in this chapter about interactive streets however, we'll investigate the implications and the embedded opportunities for the users' experience. This chapter's contributors will discuss how future applications in this field can be beneficial to specific social aspects in the city and how we can use this technology to engage with the city's citizens as co-creators. Most of the above mentioned developments have been investigated and explored for decades by artists, designers and researchers, today these developments have moved into the mainstream culture. For us, it is now time to touch base and discuss the work of several of those pioneers and contextualise their work with contemporary work and propose scenarios for future development.

Why artists?

The theoretic discourse that is used for the above mentioned innovations stems often

'How future applications can be beneficial to social aspects in the city'

from smart technological developments. If we, however, take the importance of the public space in our daily life into account, the active participation of the end-users is essential. We suggest, therefore that the theoretic reflection about the work of artists could be a crucial addition for the debate about user-participation in interactive streets. In this context we refer to Art and hyper-reality. (Nigten, 2012) Here it is stated that media influences our behaviour, while we ourselves are inextricably linked to it. Experiments by media artists, as discussed later in this chapter, take us along in the critical and artistic media and technology experience. With this, let us look with different eyes at our (semi) public reality, to experience this in a different way. The Dutch philosopher René Boomkens gives a striking illustration of the point I'm trying to make when he writes: '(...) the meaning of new technology depends to a great extent on the way in which users of this technology take

'ownership' of it. But it is precisely in this ownership that the user of this new technology transforms his or her own reality. (Boomkens, 2008) Boomkens registers that a functionalist approach to the city and its public spaces should make way for a culturalist perspective, in which active participation by the modern

'Urbanity is no longer a spatial organisation process, but understood from experience'

'world citizen' is essential. He argues that urban spaces should first of all be understood as stages for the modern experience-economy and should be furnished based on this notion. From his perspective urbanity is no longer seen as a spatial organisation process, but understood from experience. The use, the experiences of the inhabitants give shape to the urban public space. To this can be added a fourth dimension: media reality. The urban space then is a hybrid public space, shaped by urbanites, in which a physical and a mediatised reality intermingle. Media art often works with non-functionalist perspectives, which break through obvious behaviour patterns in the form of artistic interventions or infiltrations. Artistic experiments deregulate the participant/user and in this way contribute to an increasing awareness concerning our lives in the 'new' public space, this is of course its intention; we call this inspiration. These experience-experiments differentiate

artistic research from academic or functional technical research.

The experience knowledge from media art, which is based on practice, can be used very effectively in design and innovation processes *(Nigten, 2012).* We therefore let media artists participate in design teams in Mediawharf: their expertise is especially relevant for urban, technological and social innovation. In this way the subjective and refreshing perspective of media art can be added to the expertise of a (technical) design team. In the same way (interactive) installations are the icing on the cake, media artists can take on the role of refreshing catalysts right at the start of a project or even before the project starts.

I would like to conclude this brief chapter introduction by stating that we are delighted to include three internationally acknowledged authors who also participated in the seminar, who will share their scientific, design and artistic visions, based on their work in this field. In this chapter you'll read about history, the most recent developments and on dreams, concepts, solutions and the design challenges for our interactive streets that are to be expected.

References

Studio Roosegaarde, Heijmans, 2012-13, Smart Highways, The Netherlands, http://www.studioroosegaarde.net/project/smart-highway/info/ [accessed Sept. 22, 2013].

Brusaw, J. Brusaw, S. 1979-present, Solar highways, United States. http://www.solarroadways.com/intro.shtml [accessed Sept. 22, 2013].

Playnetic BV, 2012-13 Audionetic playgrounds, The Netherlands, http://www.straatbeeld.nl/producten/spelen/interactieve-producten/playnetic.html.

http://www.gamenetic.nl/en/ [accessed Sept. 22, 2013].

University of Twente, 2010, Vibrations, fizzling source of energy, The Netherlands.

http://www.greenfudge.org/2010/11/10/the-netherlands-to-experiment-with-energy-producing-asphalt/ [accessed Sept. 12, 2013].

Nigten, A.,2012, Art and hyper-reality. About art, media and technology, page 182, in Windows of your eyes Kunst in de openbare Ruimte, Boekholt, M., eds., English translation available at http://www.hanze.nl/artandsociety.

Eco, U., 1986, Travels In Hyperreality.

Boomkens, R., 2008, The Continuity of Place, From the Socially Engineered City to the Global City, Open / Social Engineering, nr. 15, http://www.skor.nl/_files/Files/OPEN15_P6-17%281%29.pdf [accessed Sept. 22, 2013].

Nigten, A., 2012, New Roles for new Humus Layer, Science Guide, English translation available at http://www.hanze.nl/artandsociety.

Interactive sound art in public space

Laura Maes

Sound art?

These last few decades the concert hall has no longer been the only elected spot for musical endeavours. Experiments with the extension of time, the spatial placement of sound, the expansion of sound sources and the inclusion of other media, were hindered

Detail of Springtime in a small town by Peter Bosch and Simone Simons, Klankenbos, Neerpelt, Belgium @ Laura Maes

by the physical and social restrictions of the concert hall. Artists sought sites beyond the traditional concert hall such as museums, galleries, alternative locations and public space that foster musical experiment, rather than clash with it. These renewed presentation sites are no longer limited to the concert platform. They have an influence on the perception, form and shape of the sound and as a result new art forms have come into being. One of those art forms is sound art, a medium of art that is surrounded by fogginess, as the

term 'sound art' is uttered indiscriminately in a similar way to how the designation of 'environment' was used in the sixties. As a hot and catchy term, the label 'environment' was employed for a variety of works that had nothing to do with being an environment [1]. Similarly starting with the outburst of high profile exhibitions from the end of the sixties onwards, the designation 'sound art' has been used for anything that is somewhat related to sound and as a consequence the appellation sound art has lost its meaning. We consider sound art to be a hybrid of visual arts and music: art works that have both an aural as well as a visual component (either a material object or a location), but where the production, muffling or reflection of sound forms the starting point of the work. The static nature of visual arts reveals itself in the fact that the sound has no beginning or end. Therefore, the emphasis no longer solely lies on the time dimension of sound, but has partly moved to its spatial dimension. As a consequence, most sound art is not narrative. The visitors come and go as they please and can determine independently how long they attend the "performance". Consequently, very few sound works make an appeal to performers to produce sound, instead sounds are generated electronically, electro-acoustically and/or acoustically. The sounds are automated or activated either by natural sources, external input, animals or by acts of the visitors. The distance that is commonly kept between the spectator and the work of art or the performer[s] in both muse-

ums and concert halls has largely evaporated. The visitor can often walk around or into the sound work or is even encouraged to touch it. Sound art in the social-cultural context

Sound art has been presented in a variety of presentation spots ranging from museums and galleries to specifically built constructions, alternative locations and public space. Galleries and museums that want to engage in a long term relationship with sound art are still a rare breed. Worldwide there are only a few galleries that focus on sound art and very few museums have made investments to properly accommodate sound works. In most cases the museum's technical staff, are not trained to maintain the works and the infrastructure is not acoustically equipped to present sound works leading to sounds of neighbouring works interfering with each other. Fortunately, aesthetic experiences are not limited to those spaces that are specially built for that purpose and sound art has been presented in places where visual arts or music have rarely been seen. Amongst others abandoned factories, the attic and corridors of art centres and historical sites replaced the setting of a museum, gallery or concert hall. These new settings offered new opportunities, as the artists have to take into account the already present sonic, visual and environmental elements. Besides these alternative locations sound art also has found its way to the public space.

Motion detector that sets Springtime in a small town into motion @ Laura Maes

Sound art in public space

Urban city centres or nature have become the scenery for art works often entering into a dialogue with their surroundings. The well-determined pathway stipulated by the curator [mostly] has vanished in public space, whilst the audience expanded from art lovers to inhabitants, commuters and tourists. Sound art in public space confronts and provokes. Passers-by can turn away their eyes, but not their ears [2].

When works move from art museums, galleries or concert halls to public space, not only the traditional environments are abandoned, but also the rhetoric nurtured by those traditional environments. There is far less fearfulness to touch something or to try something out. As relationships change, the art experience evolves and new opportunities to communicate with the audience or the surroundings come to light.

Interactive sound works in public space

Public space gives rise to interaction with the audience, the environment or the historic or social aspects of a location. In the following section an example of each will be discussed.

1] The exposition Four environments by four new realists in Sidney Janis Gallery in 1964 did not present, as the title seems to suggest, any environments. *(Reiss, 1999)*

2] Although the amount of people walking around with some form of headphones do just this, closing oneself off of the aural outside world to focus on their own created auditive environment.

The first version of 3times4 [Kortrijk, 2007]. In the MDF panel a small hole was made for the webcam. @ Happy New Ears

Audience participation

The participation of the audience is often restricted to setting the work of art into motion. Once the work has been activated a pre-programmed process that cannot be interrupted or influenced by actions of the audience, is executed. The visitor can be aware of this activation as he or she performs a conscious act as is required in for example. Tune Towers [1979] by Dennis Oppenheim, whereby the visitor has to press down a pedal to let the various music boxes, each positioned on top of a metallic structure, sound.

Technology has facilitated unconscious participation. Visitors no longer have to actively stroke, press, touch, move, hit, bow or turn something, devices such as motion detector sensors have made it possible for artists to let the visitor participate unconsciously.

The work Springtime in a small town by Peter Bosch & Simone Simons, installed in 2006 at the Klankenbos in the East of Belgium makes use of such a motion detector. The wooden fence that surrounds the work only has one opening which ensures that when the visitor approaches the work, he or she is in sight of the motion detector that is hidden underneath the artwork. When approaching the work the visitor unconsciously activates the work and a composition of rattling wooden boxes comes into being. Once activated, actions of the visitor cannot change or influence the course of the work.

Screenshot of 3times4 [Copenhagen, 2008]

3times4 by Laura Maes presented during the Licht-festival [Gent, 2012]. The speakers were positioned underneath the screen as nothing could be attached to the façade of the protected building.

The visitor's role is often expanded beyond the activation of a work: in some works a two-way interaction is necessary for the work to display its operation. In this context interaction is an essential quality of the work as the course of the work and the perception of the visitor depend on the acts of that same visitor. The visitor is inclined to listen, to analyse the effect of his actions and to master the system. Interaction, with or without the use of technology, forces the visitor to listen and provokes him to fathom the sound producing system and to control it. Therefore interaction does not only have an influence on the course of the work, but also on the perception of the work. In 3times4 [2007-2012], the passer-by is challenged to create a new composition while he or she discovers the mechanism behind the sound and images. The image of a webcam is reduced to 12 surfaces: 3 x 4. A sound and image is attached to each surface. When movement is detected within the scope of the webcam, this movement is linked to the associated surface and the related sound and image are evoked at the physical location as well as in real-time on the World Wide Web. The installation was originally created for Klinkende Stad [3] [Happy New Ears festival, Kortrijk, Belgium]. To allow the visitor to understand the operation of the work a visual reference was needed. In the shop window of a former barbershop the red, white and blue diagonal lines from the barber pole evoked memories of its former function. A Shepard tone, the acoustic counterpart of the optical illusion of a rotating barber pole formed the auditive basis of the installation. To each of the 12 surfaces, a hairdressers' sound was added.

The second version of the installation was presented within the framework of the Re:new festival [2008] at the inner court of Huset Café in Copenhagen. The visual material consisted of close-ups of glass bases. Pub sounds without music formed the basis of the sound material. To the 12 surfaces bowed, rubbed or percussive glass sounds were added. Visitors and passers-by were invited to create their own soundtrack for a pub without music. The final version of the work was presented at the Light festival in Ghent, Belgium in 2012. Both sound and image referred to the former locations of the place, originally an orphanage, later the home of the National bank and at the time of the presentation a

'As the wind blows, each vane turns and pushes the pipe windward'

part of the Conservatory. The Shepard sound was replaced by a soundtrack based on falling coins. To each of the twelve surfaces a different short fragment of the hymn Christus vincit! Christus regnat! Christus imperat! sung by a young boy was added. The visual element consisted of a former note of 1000 BEF on which composer André Ernest Modeste Grétry was depicted. When all 12 surfaces were activated simultaneously, the composer was replaced by the image of a praying young boy.

3] Sounding City

Environmental input

Sound works can also demand input from the environment where they are situated.

In Douglas Hollis's A Sound Garden [1983], permanently installed at the National Oceanic and Atmospheric Administration [NOAA] campus overlooking Lake Washington in Seattle, pipes of various lengths are brought to sound by wind. Twelve steel-truss towers, each more than 6 meters tall, and support vertical aluminium cylindrical pipes mounted on vanes that move to face the wind. As the wind blows, each vane turns and pushes the pipe windward, producing a deep resonant sound *(Kelly, 1985, Roots, 2002).*

Douglas Hollis builds his pieces on the site itself. He aims to merge viewer and artwork by incorporating the viewer as well as wind, water, light and topography. "I have attempted in my work to build structures which function as sensory extensions of the body, incorporating the person into the landscape" *(Halverson, 1982).* The surroundings contribute to the atmosphere the work of art radiates and to the way it is experienced. In the creation of a site-specific sound work, the artist treats a complete space as one situation that can be entered by the visitor.

The historic or social aspects of a location

Sound works can incorporate the historic or social aspects of a location. The sound of the works created for the Tondelier and Tolhuis cluster of Track, a contemporary art trail in the city of Ghent, Belgium, was based on the former or current function of the locations. For the Tondelier cluster sounds were played near the wasteland at the Gasmeterlaan in Ghent. For more than 100 years, the site was managed by the "Gasmaatschappij van Gent [4]". Since the start of the demolition of the former factory buildings in 1981, the ex-factory grounds have gradually received a new purpose. The sounds for Tondelier confront the wasteland with its former function as sounds of slowly escaping gas intertwine with noise sounds produced by strings. While for the Tolhuis location the flow of juices of plants and trees would be combined with strings and percussion, performed by the Spectra ensemble. The plant juices are a reference to the botanical plant and herb garden that had been there since the 1920's and was reopened for the public in 1987. The miniature pieces, each between one and two minutes, were presented at their respective site. The sound fragments were played twice an hour and were not announced previously. Although more interactive ideas were formulated, the budget and organisational problems limited their realisation. Throughout the duration of the art trail the sound fragments would change and finally lead to the creation of two compositions.

4] City of Ghent's gas company

Conclusion

Public space seems an exquisite place to present sound works as it is possible to confront and challenge the audience unexpectedly. Moreover, the work can be fully adapted to the existing sound environment. When sound art is placed in public space, the work is not always indicated. When there are no visual elements that tell the passer-by that something out of the ordinary is going on, the work often remains unnoticed [5].

New possibilities of interaction emerge as technology has become affordable and widely available. Sounds of visitors or the environment can be recorded and can be reproduced

in various forms or serve as triggers for certain actions. Bio signals can be used to steer or process sound, while various types of sensors make it possible to use nearly all acts of visitors or environmental factors to affect a sound work. Public space has also become the scenery of the development of new or mixed art forms. Interactive Streets incorporates new technologies and deploys them to facilitate a two-way interaction. In this mixed-reality audio game the actions of the players as well as their GPS position manipulate the auditive landscape.

5] As is the case for Max Neuhaus's work on Times Square in New York whereby a rich harmonic sound texture, tuned to the noises of Times Square, emerges from underneath a ventilation grille on the narrow pedestrian island that separates Broadway from Seventh Avenue, between Forty-fifth and Forty-sixth. (Tomkins, 1988/1994)

The juice flow meter of
the Logos Foundation in action.

References

Devens, P. & Peters, P. 2008. Een geluidskunstmuseum. NRC Handelsblad, 24/10/2008, p.13.

Halverson, M. (ed.) 1982. Sonic Art – an exhibition organized by Marlin Halverson, Class of '82, San Bernardino, United States: The Art Gallery, California State College, San Bernardino.

Kelly, J., 1985. Conversation with Doug Hollis. Places: Forum of Design for the Public Realm, 2, 50-58.

Reiss, J.H., 1999. from margin to center: the spaces of installation art, Cambridge, MA London, United Kingdom, the MITT press.

Roots, G., 2002. Designing the World's Best: Public Art, Victoria, Australia, The Images Publishing Group Pty Limited.

Schellinx, H., 2012. Ephemeral Sustainability 1–Sound Art [Online]. Available: http://resonancenetwork.wordpress.com/2012/12/15/ephemeral-sustainability-1-sound-art/[Accessed28/08/2013 2013].

Tomkins, C., 1988/1994. Onward and upward with the arts – Hear. In: DES JARDINS, G. (ed.) Max Neuhaus, sound works; volume I, inscription; volume II, drawings; volume III, place. Ostfildern, Germany: Cantz Verlag.

Locative sound and local acoustics

Sebastien Seynaeve

This text gives an insight into the work methodology and concept chosen for the sound design of the mixed-reality game: 'Are you for real?'. It describes how the different factors of influence found their way into the sound design and how non-musical elements were converted into an interactive digital sound experience.

The playground was chosen in accordance to its geographical properties, social context and history. The area between the new and old Zadkine buildings appeared to be perfectly suited to create a playground for our mixed-reality game. I was particularly interested in the way this urban landscape was formed by different layers of architecture and how their purpose evolved through the years. The first indicator as a direction to follow was that the area reflected an environment that served for industrial purposes in the past and that evolved to serve different purposes in our current time. This feeling of landscape mutation was the first step to build on further, in order to get the sound design in harmony with its environment and specific purpose, namely a mixed-reality game to be played with mobile computing devices. Another interesting fact

about this area is that even though it is very close to both Zadkine buildings, the majority of the students we worked with never used these surroundings of the school. This feature accentuated a feeling that would help create another major theme in the further evolution of the game... exploration!

An extended description about the area and its development can be found in Ida Toft's article: Designing for playful sense-making and listening.

"The real world, the 'sonic givens', would form the basis of a new musical material. Musique Concrète would be made up of 'sonorous fragments that have a real existence, and that are thought of as being clearly defined and complete sonic objects'".
(Hegarty, 2007)

The approach chosen for the sound design leans closely to the basic principals of 'Musique Concrète' which works with recordings of non-musical environmental sounds, re-using them in a reshaped form, in a different context.

This idea sits perfectly with the general feel of the area and how it serves different purposes than what it was originally conceived for. Also the flow through history of this evolution is something that contributed a lot to the character of the sound design. It is important to mention, the philosophy of taking sounds from the landscape (field recordings) and giving them back by placing sounds in

the landscape (localized media), creates an interesting interaction loop between the project and its environment.

A consequence of this is that elements from the past receive a new meaning during the gameplay and that the relation between digital sound and the experience of time influences the evolution of the composition. It was our intention that the sound experience would be in harmony with its environment, therefore the soundscapes were made of environmental field recordings.

"Electronic products and services could enrich and expand our experience of everyday life rather than closing it down; they could become a medium for experiencing complex aesthetic situations. To achieve this, designers would have to think about products and services very differently".
(Dunne and Raby, 2001)

A phase that played an important role in the process of the sound design was the use of physical located media that interacts with a digital virtual space and how these work in real-time together as a mixed reality game, also how this real-time interaction between technology and players creates a new dimension to a public space. This gives the players a chance to re-contextualize their every day experience, of listening to electronic media

devices and how this influences their experience of walking through the urban landscape, which is usually dominated by the visual sense.

The idea that grew out of this for the audio design, was to artificiality amplify sounds in order to enhance the gameplay experience. Practically this meant recording naturally existing sounds and reworking them heavily in order that they became almost unreal. The idea was to create a feeling of disconnection, which could influence the perception of the environment, together with the purpose of the game.

The 'Are you for real?' audio design started by introducing the students to the basics of digital audio production. The next step was to teach them how to produce a sound piece using software tools, we introduced them to the digital audio workstation Ableton live. Once they mastered the basics they continued to work on their personal sound pieces and they received the task to finish a sound piece that suited their personal vision of the audio design for the 'Are you for real?' game experience.

To trigger their imagination, we organised an imaginative soundwalk in the neighborhood where the street game would take place. We divided the students into small groups and accompanied them on the game location and asked them questions about the meaning of this particular setting and how their personal experience of being in this neighborhood would sound like. Back in the workspace they received the task to link this with music they are familiar with and to create a new sound

'An almost unlimited amount of sonic directions to explore'

piece that suited their imaginative soundwalk experience. An interesting angle in the development of the audio design is the collaboration with the local youth organization Helderheid. They are based in Rotterdam South and promote hip-hop music from local artists that contains a positive message. We involved local youth from Helderheid during the testing phase and also included sound files from Helderheid artists into the 'Are you for real?' game experience.

Collecting field recordings made another layer of the sound creation, these were recorded at various places. All field recordings are captured sounds of ambient noise, sounds that are present in our natural environment. I focused on capturing the different sounds of wind and of elements affected by wind. These sounds formed a good prime material with a lot of complexity and rich sonic qualities. Especially when manipulating these further, their digitally complex nature opened up an almost unlimited amount of sonic directions to explore. All recordings were made with a handheld portable recorder with build in microphone. They were recorded in 16bit WAV format, imported & reworked in Ableton live and then exported in Ogg Vorbis compression to use on the smart phones. Ogg Vorbis com-

'By navigating through the city users create their own composition'

pression appeared to be the best choice because of its good compatibility with the Android operating system. All these recordings have been reshaped digitally in accordance with the specific locations of the game field. Ableton live was particularly suited because of its real-time approach and the possibility to make things evolve through looping which is the situation in 'Are you for real?'. During the game the sounds are looped and go on as long as the player is on the game field. The transition of the soundscapes is determined by the GPS position of the players. This makes it possible to use sound as a sense of memory. These are examples of other work that share

similarities with the Are you for real? mixed-reality game:

Radioscape by Edwin van der Heide (2000)
This piece uses the medium of radio to add new layers into a city. Radio transmitters are used to transmit a layer of sound to a specific location and the audience uses a receiver to catch them and it is possible to receive multiple signals simultaneously. By navigating through the city users can create their own composition.

http://www.evdh.net/radioscape/index_more.php

Core Sample by Teri Rueb (2007)
Core Sample is a GPS-based interactive sound walk and corresponding sound sculpture that evokes the material and cultural histories contained in and suggested by the landscape of Spectacle Island in Boston Harbor.

http://www.terirueb.net/core_sample/

The Audio Walks by Janet Cardiff & George Bures Miller
The Audio Walks by Janet Cardiff & George Bures Miller make connections between physical locations and their sound layers without using global positioning systems. The audio walks are fully recreated soundscapes recorded by binaural microphones. This creates a 3D sphere of sound that results in a lifelike experience of the environment.

http://www.cardiffmiller.com/artworks/walks/

'Are you for real?' relates to the above mentioned audio art works by sharing the idea of creating an audio experience that interacts with a particular landscape by moving through it physically. In our case the content was determined largely by sociocultural factors such as working with local youth and students, this aspect of our project is not comparable to the examples mentioned above.

When looking back at the project in its entirety the sound part worked exactly as intended. The most valuable aspect is definitely how the social aspect of the project has grown together with the technological aspect. Both built on each other, sometimes it was the experience of working with students and local youth that gave direction to the technological developments and sometimes it was the technology that led the team and the students to further evolutions.

The 'Are you for real?' model has been used on another location since its release; this was for the Helderheid festival. The focus was more on the hip-hop sounds but the atmospheric ambient sounds worked perfectly as well, they adapted very well to a different location and it gave the game a fresh edge to be played in a new environment.

References
Dunne, A. and Raby, F. 2001. Design Noir: The Secret Life of Electronic Objects. August Media Ltd.
Hegarty, P., 2007. Noise/Music A History. The Continuum International Publishing Group Inc.

Overcoming the challenges of Public / Urban space interaction

David Jonas Marinho Neves Castanheira

Can you see me now? © Blast Theory

Abstract

Public space interaction using technology, especially in an urban setting, is becoming a recurring problem in the mind of interaction and user experience designers. Cities started being embedded with technology at least as early as 1910 when Earnest Sirrine patented (patent 976,939) the first automatic street traffic system, and throughout recent times some places have become saturated with advertising displays. Nevertheless, real interactivity that does not serve as a gimmick for one-way communication, is still very un-

The challenges

Developing a piece of technology that has to interact with an unknown number of users that are diverse, untrained, unmotivated and most of the time even unaware of its existence offers various challenges that are not found in most types of private computing such as interactions through personal computers or mobile devices where the technology can safely assume that the user is aware, knows how to and intends to interact with it. First of all, users normally enter the public space with an objective and that is not, except in very rare occasions, to interact with a public display or piece of interactive street furniture. Therefore, to capture their attention, an interactive piece needs to either temporarily distract the user from that objective or become part of it. A number of techniques to attract passerby attention can be derived from the study of how the human brain processes visual input such as abrupt appearance of new objects *(Jonides and Yantis, 1988)* and luminance contrast changes (*Enns, Austen, Di Lollo, Rauschenberger and Yantis, 2001)* among others. Although valid ways of attracting attention, these techniques will not scale well when there are many different objects competing for attention on the same space, these will very easily over-stimulate the audience losing its effect and are therefore not sustainable.

common in today's urban spaces. That fact is changing rapidly though.

With this article I intend to explain the challenges specific to interactions that involve public space and some approaches to overcome these, while specifically highlighting how the latest evolutions on web technologies seem to drive them to a privileged spot in this field.

Another approach would be to use a mental model in which the interactive technology is not seen as a new object on the public space but an augmentation of an existing one so that the passer-by would initiate the experience with a common action, for example

using a trashcan, climbing stairs or simply crossing a bridge such as in the Bump art project *(Assocreation, 1999)* where the energy of footsteps was transmitted between two similar bridges in different cities. For this, one must take into consideration what the goal of the interaction is and how it can be contextualized by existing public interactions. An example set of a few successful implementations of this approach would be the Fun Theory project (http://www.thefuntheory.com/) where various public installations set out to change pedestrian behaviour by augmenting common street actions into humorous or gamified interactions such us a trash can with sound effects to incentivise people to not throw trash on the floor or a bottle bank arcade game to promote recycling. For this type of interaction to work, the installation has to provide the feedback in a simple direct way and at the exact moment the action is

'Users do not want to look silly in public'

performed so that the user can understand it as a reaction to what she just did.

Some other challenges derive from the fact that interacting with a public piece is a public and social action. One has to consider that any interaction happening in a public setting involves the persons directly interacting with the technology and/or each other and anybody else observing the interaction. Users do not want to look silly in public or make mistakes or even attract too much attention to themselves. They might also feel like they are keeping other people from interacting with the piece or interfering with their experience. This has been given as a reason for the failure

Live from Holland.

Live from Denmark.
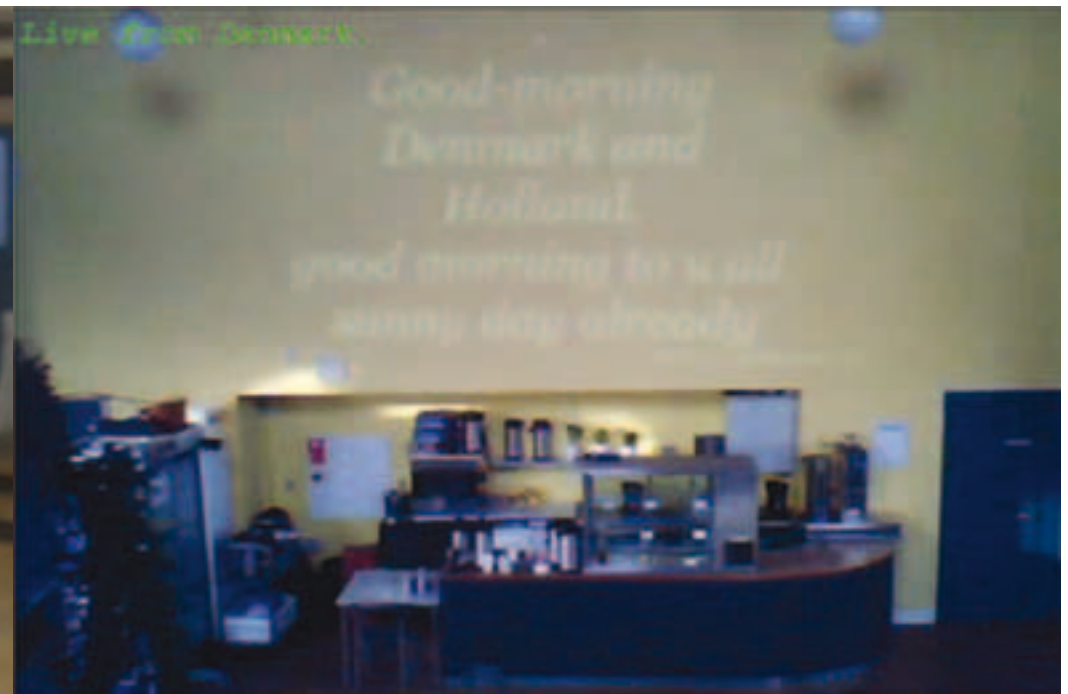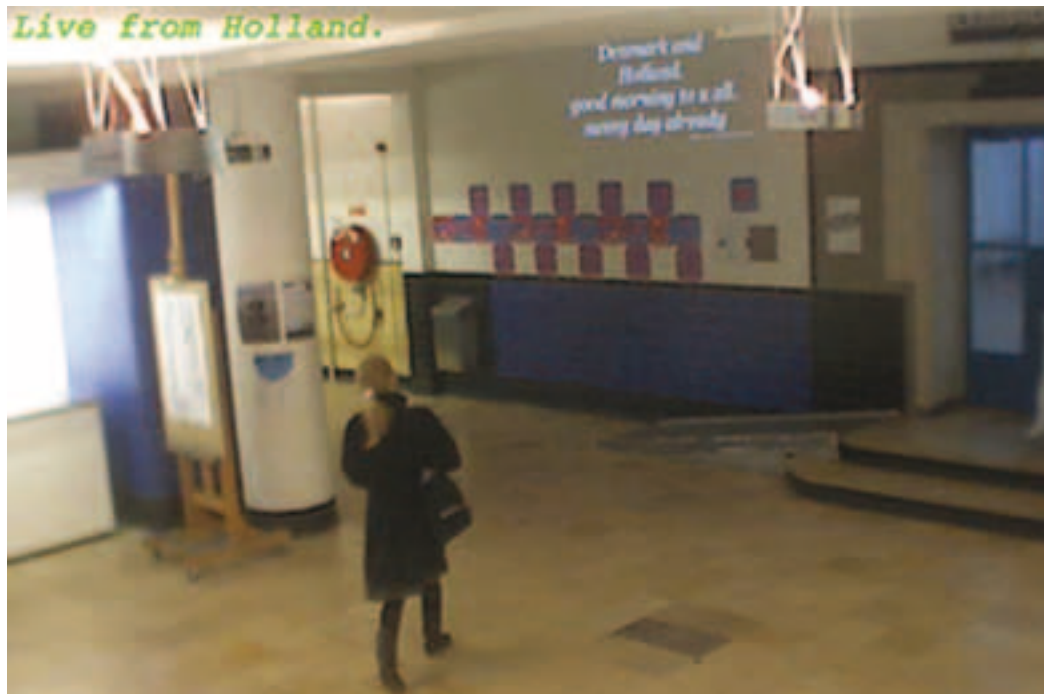
'Public interactions should be fast and simple in order to succeed'

of many interactive public displays that adopt a 'poster' mental model *(Müller, Alt, Schmidt and Michelis, 2010).*

To assure the comfort and optimize the chances of engagement with the user, the interactions should be short and natural.

The technology

Web technologies have also been overflowing the boundaries of personal computing into our cities with the explosion of mobile devices, wireless networks and Internet connected urban displays. This brings a nearly endless realm of possibilities for interactions between users in public space using public or personal technology (mobile devices), online users and/or real-time and social data from the Internet.

But although these technologies bring an unparalleled ubiquity, standardization, interoperability and connectivity into play, they were built for an environment where speed and timing is far less important than the generation, transference and access to large amounts of data. This poses a problem since, as has been noted before, public interactions should be fast and simple in order to succeed.

Simply put, the two greatest advantages of web technologies regarding interactive pub-

lic space installations are that currently almost everyone in a public space is somehow equipped with a personal device capable of understanding and interacting with web standards and that mass produced, therefore cheap, stable and reliable devices can be used, combined and/or hacked to create highly interconnected interactive street furniture. This immensely reduces costs on both production and development of custom software and greatly increases the possibilities for different interactions between a high range of devices. The downside is that to harvest these capabilities, one has to rely mostly on standardised functionality, frameworks and protocols to achieve the desired interaction, and until recently, the standards lacked the focus on speed and simplicity demanded by public interaction. This given to the fact that HTTP *(Hypertext Transfer Protocol, RFC2616)* was the only viable web communication pro-

tocol supported by most devices and it relies on a "one-off" call and response cycle that is not optimal for continued, fast interaction. This means that communication is made by creating a connection between two points, answering one request only and then discarding that connection immediately, bringing a big overhead and lag to a continued interaction between those two same points. Also HTTP imposes very strict roles for client and server in which the server cannot contact the client without a request being initiated by said client.

Many interactive public pieces in the first decade of the 2000's relied on combining custom software and web or mobile technologies to overcome these issues. In the description of Blast Theory's work "Can you see me now?" *(Tandavanitj, Nick; Adams, Matt; Row-Farr, Ju, 2003)* there are clear descriptions of how

lag was one of the central issues during the development.

Frameworks started appearing, as can be seen in INTK's work such as BeamIt (Castanheira, David and Guerra, Rui, 2010), which would emulate a stable connection between two or more points by either making many small HTML requests or permanently keep a connection by delaying the server response, called long polling, which simulates the ability of the server to initiate contact the client *(Sharma, Nikhar 2013)*. These techniques are still used to overcome the limitations of HTML but recently, and as a response to this need, the evolution of the standards introduced Web-sockets (RFC6455) that allow a stable two-way connection to be made between two points. This together with server-side technologies such as NodeJS that focus on real-time low latency communications make the web a perfect match to create stunning public space interactions.

There were many early adopters of these technologies that helped the standardization of Web-sockets and boost this evolution. The "Are You For Real?" experience is powered by these technologies and built with focus on real-time interaction with both the server and between players in determent of data storage and extensive logging.

This evolution of web standards make sense in more than one way since the web and the internet, although missing the physical qualities, can and should be seen as a public space in itself.

References

1910 Street-trafic system patent, http://www.google.com/patents/US976939 – Accessed 16, September 2013.

Jonides, J. and Yantis, S., 1988. Uniqueness of abrupt visual onset in capturing attention. In: Perception and Psychophysics 43(4), pp. 346-354.

Enns, J. T., Austen, E. L., Di Lollo, V., Rauschenberger, R., & Yantis, S. (2001). New objects dominate luminance transients in attentional capture. Journal of Experimental Psychology: Human Perception & Performance, 27, pp. 1287-1302.

Bump, Assocreation 1999 – http://www.c3.hu/events/99/bump/index.html – Accessed 18, September 2013.

Requirements and Design Space for Interactive Public Displays (Müller, Alt, Schmidt and Michelis, 2010).

HTTP Specification, RFC2616 – http://www.w3.org/Protocols/rfc2616/rfc2616.html – Accessed 18, September 2013.

Tandavanitj, Nick; Adams, Matt; Row-Farr, Ju. Where On-Line Meets On-The-Streets: Experiences With Mobile Mixed Reality Games. Chi Letters, Volume No. 5, Issue No. 1 2003.

BeamIt, INTK (Castanheira, David and Guerra, Rui, 2010) – http://www.intk.com/projects/beam-it – Accessed 18, September 2013.

Sharma, Nikhar. Push Technology – Long Polling. International Journal of Computer Science and Management Research, Vol 2 Issue 5 May 2013 – http://www.ijcsmr.org/vol2issue5/paper398.pdf – Accessed 18, September 2013.

Web-sockets Specification, RFC6455 – http://tools.ietf.org/html/rfc6455 – Accessed 18, September 2013.
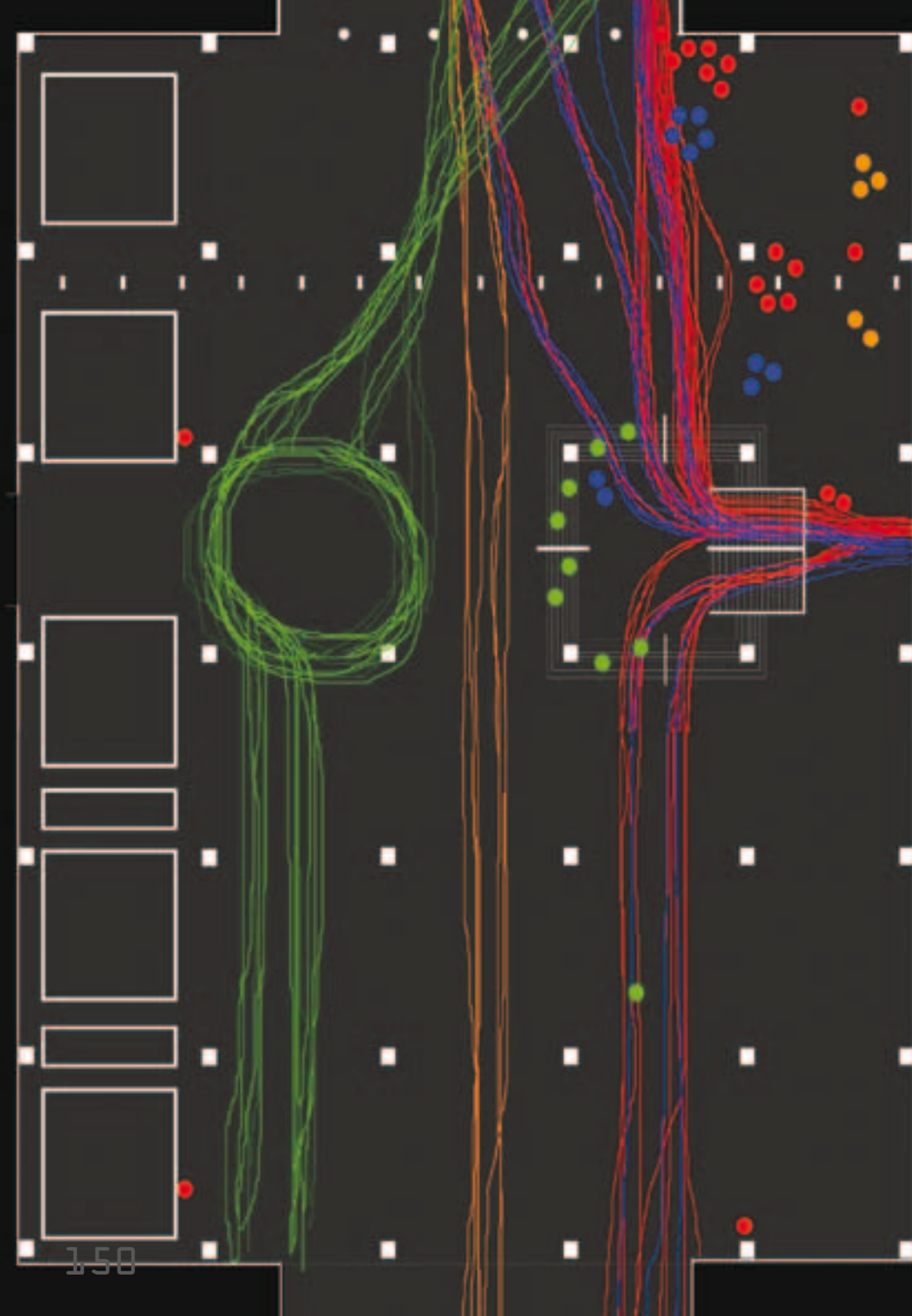
Smart Urban Lighting

Elke den Ouden and
Rianne Valkenburg

- -

Since their origin, street lighting systems in the Netherlands have been owned and managed by the municipality and public lighting merely fulfilled a functional role as safety system in places of transit. The rising cost of energy makes public lighting a significant cost for cities, up to 80% of their electricity bills are related to public lighting. Next to this cities are striving for energy and CO_2 reduction. Modern lighting technologies offer opportunities for energy and CO_2 reduction, and at the same time introduce new opportunities that can aspire other relevant ambitions for cities. Quality of life in cities is very much related to public lighting. Lighting provides safety,

comfort and creates atmosphere. Societal ambitions of governments can imply an enhanced feeling of comfort, safety and security. Lighting can increase social cohesion, or be aesthetically pleasing in an urban environment. It can also provide enhanced identity to particular areas of the city, and therefore increase city branding. Cities become more and more aware of the new possibilities of modern lighting solutions.

Increasing quality of life and reducing costs and energy seem like conflicting requirements. But the interesting thing is that new technologies for public lighting offer the op-

'The transformation in the lighting industry'

portunity to do both at the same time. Municipalities nowadays address both ecological and societal ambitions to the design of public lighting. In this article we formulate a vision on the development of interactive city lighting towards social ambitions.

New lighting technologies

New LED lighting technologies, control systems and advanced city infrastructures are creating a revolution in the public lighting industry. Where in the past the technology determined the colour of the light and dimming was hardly possible, the new led-based technologies allow the use of a full colour spectrum and dimming. Control systems al-

low remote control of individual LEDs and make dynamic lighting scenes possible. Internet connectivity allows the integration with smart sensor networks into all kinds of applications. These changes transform the lighting industry significantly. Similar transformations took place in other industries before. An example is the music industry, where records, record players and record shops have first been replaced by their digital equivalents like MP3 files, iPods and iTunes stores. Nowadays they are largely replaced by online streaming music services like Spotify. We expect the transformation in the lighting industry to result in new solutions for services and new fitting business models.

In a research project for the city of Eindhoven on the vision and roadmap for urban lighting towards 2030 *(Den Ouden & Valkenburg, 2012)* we identified a number of technologi-

cal developments that will affect the level of interaction in smart lighting solutions in the years to come:

- Dynamic lighting, based on predefined lighting settings activated by predefined triggers such as timers.

- Adaptive lighting, based on predefined lighting settings triggered in real time by low bandwidth sensors (e.g. light sensors, proximity sensors, microphones).

- Interactive lighting, involvement of users in the development and selection of real-time light settings, enabled by high bandwidth sensors (e.g. camera's, interactive touch screens, personal mobile devices).

- Social lighting, interaction based on recognition of emotions and social relations between users and systems.

We will illustrate the different levels of interaction with public lighting in cases discussed in the following sections.

Dynamic lighting: diversity for stakeholders

In the municipality of Veldhoven a bicycle path runs through an ecological zone. To prevent disturbance of the flora and fauna in the ecological zone, it is preferential not to install street lighting. However, as commuters and school children heading home use the path intensively, THE LUX LAB designed a lighting solution that addresses the various stakeholders. Different lighting settings are used, varying in colour and intensity, at different times to accommodate the different stakeholders needs. In the early evening the path is intensely used by commuters, particularly children heading home. Cyclists'

'Interactive street lighting
can be utilized to facilitate
de-escalation'

feelings of comfort and safety are increased with more light, so warm white light at a normal lighting level is proposed. Later in the evening as traffic ceases, the light dims to a less disturbing level for animals and plants, but still providing good visibility for cyclists. During the night, as there is hardly any traffic, the wild life becomes the most important stakeholder. Therefore, the light is dimmed to the equivalent of 'full moonlight', which does not disturb animals and at the same time requires significantly less energy while remaining aesthetically pleasing. In the morning, a bright cool white lighting setting is used to increase alertness of the cyclists. Stakeholders from the municipality, police department, neighbourhood, schools, sports club and interest groups were involved to verify the acceptability of the solution. In the concept stage a demonstrator was used to facilitate the discussions and later on prototypes were

installed on site to experience the settings of the dynamic lighting concept.

Adaptive lighting: needs based lighting

Many cities are exploring the possibilities for automatic dimming of urban lighting to benefit from the reduced energy. The relationship between light and perceived safety at night is intuitively strong, but its workings are largely unknown. In the residential area Achtse Barrier in Eindhoven a living lab has been installed to explore the user experience, especially social safety and road safety, with dimmed lighting. Sensors recognise the presence of moving cars, cyclists and pedestrians and pre-programmed algorithms will define the lighting level of a number of lamps for a certain period of time. The question with dimming is not only what level is acceptable but also what is the best way to distribute the

light: do people feel safer when the whole area is dimmed at the same level, or do they feel safer when the direction they are going to is brighter and moving with them, or do they prefer to be in the spotlight surrounded by brighter light that is moving with them? Experiments with static and moving people revealed that people prefer having light in their own immediate surroundings rather than on the road that lies ahead *(Haans & De Kort, 2012)*. Against expectations people reported to have a better overview when their immediate surroundings were most strongly lit, rather than the more distant parts of the road. The projects show that there is still a lot to explore related to perception of safety in adaptive lighting concepts.

Interactive lighting: urban lighting changing people's behaviour

At the campus of the Eindhoven University of Technology a Living Lab is set up to explore the interaction of people with lighting. Part of the living lab is outdoors and part of it is semi-outdoors. In the semi outdoor space a ceiling has been fitted with LED-lighting in warm and cool white that can be controlled on individual module level, resulting in a system where light can be controlled as if it was a coarse pixel display. Using sensors and tracking software, the behaviour of people can be studied. The aim of the living lab is to explore if lighting can make people change behaviour and interact with the lighting sys-

tem. The experiments revealed that people do not recognise their influence on the lighting system. Their assumption is that they cannot control the lighting and if they trigger an interaction they do not attribute the change in behaviour of the system to their interaction. The concept of interactive urban lighting is still too new for people to recognise. Moreover, when they do see somebody else interact with the system, they copy that behaviour and do not explore new ways of interaction. We believe that this will change in the coming years, when more and more interactive elements will be installed in public space. There will be plenty of opportunities to explore how people will interact and if their behaviour can be changed with interactive urban lighting systems. A specific area that we aim to explore in the near future is crowd management: can we guide crowds of people e.g. in emergency situations using lighting.

Social lighting: de-escalating stress

Stratumseind is the well known pub street in Eindhoven. As is the case in many pub streets, there are from time to time issues with escalating human behaviour – persons losing self-control, getting abusive, aggressive and crossing behavioural boundaries they would normally not cross. In this project the aim is to examine how interactive street lighting can be utilized to facilitate de-escalation. In a pilot study we found that dynamic lighting has an influence on the perceived atmosphere in

the street. In the living lab on Stratumseind the aim is to further study the potential impact of light on de-escalation and to translate these findings into dynamic lighting scenarios for this specific context. The project will make use of analysis of the data of incidents in the past, open data and social media data to try to find correlations with all kinds of potentially influencing factors (such as weather, results of the football match etc). With the use of the data analysis a prediction will be made of the stress levels and proactively the lighting system will aim to keep stress levels at ac-

'Use open data to address issues in a specific area'

ceptable levels. The system will also use real time measurements through cameras to see if the proactive setting is effective and to apply dynamic lighting scenes based on the actual measurements. The idea in this concept is that the system reacts to real time social interactions and becomes a social actor itself.

Specifying social ambitions for public lighting

The four case studies on dynamic, adaptive, interactive and social lighting illustrate the opportunities that new lighting solutions may offer. At the same time they show the unawareness and lack of knowledge on their social impact. This raises questions on three issues to be explored and investigated in future projects:

Co-creation
Urban lighting has been the domain of static lighting designs and professional lighting designers. We expect that in living lab like settings citizens will be more and more involved in the decisions related to urban lighting. The hardware infrastructure will provide a platform that is flexible and allows for new applications and services with lighting. Creative lighting, artists and app designers can use open data to address issues in a specific area of the city with dynamic lighting scenes and applications. Hackathons will be organised to explore new solutions.

New business models based on services
We expect a similar transformation for the lighting industry as in the music industry, resulting in new solutions for services and new fitting business models. Connected open hardware and software platforms for public lighting will enable the development of all kinds of applications and lighting scenes. A new market for dynamic lighting scenes and interactive applications will be developed, giving rise to new services aiming at increasing quality of life in cities in unexplored ways.

Ethical awareness
Interactive city lighting can be used to achieve societal objectives, but this inherently raises several ethical issues. The design of interactive street lighting systems is no longer just a technological design process, but as discussed at the interactive streets seminar, it becomes more and more a social design process. Therefore ethical design issues become apparent. The responsibility for the integrity of the social systems becomes more dominant than technological feasibility.

Conclusion
Modern lighting technologies allow for increased interaction of users of the public space with the urban lighting system. We have proposed four levels of interaction: dynamic, adaptive, interactive and social lighting. In the discussed cases, we have designed light settings for specific contexts, we tried to influence the mood and behaviour of people by applying different light scenes, and finally we are designing for opening the infrastructure of street lighting for citizen participation in developing and selecting light scenes.

Interactive city lighting creates opportunities towards social ambitions, and also creates new challenges. The broader scope of lighting design raises issues for co-creation, new collaborations, new business models based in services, and ethical awareness.

References:
Den Ouden, E., Valkenburg, R., 2012. Vision and roadmap urban lighting Eindhoven 2030: research results July 2012. Eindhoven: Technische Universiteit Eindhoven. ISBN 978-90-386-3301-5.
Haans, A., De Kort, Y., 2012. Light distribution in dynamic street lighting: Two experimental studies on its effects on perceived safety, prospect, concealment, and escape. Journal of Environmental Psychology 32, pp. 342-352.

The sky over Rotterdam

(A subjective view of living under a grey sky)

Victor Diaz Barrales

Ok, I have to admit it. I need lots of sun. I grew up in a southern Mediterranean country where it is sunny 95% of the year. The sun powers life, gives you energy and good vibes, puts a smile on almost everyone's face and provides you with vitamin D. In the past I've lived in many countries with varying amounts of sunshine, but frankly, the Netherlands is the most sun-deficient of all.

For example, it is easy to go a full month without seeing the blue sky once, which is not particularly pleasant for someone for whom

the occasional cloud used to be a pleasant surprise.

When I moved to Rotterdam I assumed that Dutch people would be used to the weather. As it turns out they are, but that doesn't prevent them from talking about it every single day. It's quite funny to think that I have experienced few things in my entire life as polarized as the weather in Spain and Holland.

I've always been passionate about the sky; it is such a immense, ethereal thing. It is something so vast that is almost impossible to avoid, but at the same time it is distant and ungraspable.

Rotterdam, picture © Henk Bol

Rotterdam

Madrid


```
void setup() {
  size(800, 500);
  noStroke();
  background(255);
  colorMode(HSB, 360, 100, 100);
  generateSky("Rotterdam", 50, 50);
  generateSky("Madrid", 50, 220);
}

void generateSky(String city, int posx, int posy) {
  fill(25);
  text(city, posx, posy);

  for (int j = 0; j < 4; j++) {
    for (int i = 0; i < 7; i++) {
      if (city == "Rotterdam") fill(0, 0, random(10, 80));
      else fill(202, random(32, 100), random(80, 100));
      rect(posx + 55 * i, posy + 10 + 35 * j, 50, 30, 3, 3);
    }
  }
}
```

A few years ago, I started to document the very first moment of the day when I could see the sky by taking a picture of it. This had a dual purpose. Firstly, to see the color variations of the sky over time and, secondly, as a way of introspecting myself – trying to find out how light and weather affected my mood. It was an interesting experience, and it confirmed a long-standing hunch – sunny days make me happier.

Letting my subjectivity loose, I made a small program using the Processing [1] language which depicted exactly how I remember the colour of the sky during the winter I spent in Rotterdam and how it compared to Madrid.

Well, that might not be completely true, I might have had grey days in Madrid as well (and sunny days in Rotterdam!) but this is what my brain is telling me at the precise moment of writing this text. Grey, very grey vs blue, very blue!

To be honest, this year wasn't the easiest. My time was clearly influenced by a lack of Vitamin D and I found the sheer quantity of rain and chronic lack of sun during winter very hard. Each time I saw a ray of sun I ran towards it. Sometimes I felt like a cold-blooded lizard trying to soak up energy under the sun :)

Here another tiny piece of code that represents my mood depending on how blue the sky is. Blue happy! Not blue, not that happy! For a long time I wondered how Dutch people do it? For me is still a mystery. I've carefully tried to observe the people's daily lives and they all look quite similar to mine! So there if there isn't a secret, I guess they are just used to it! They do, however, have a few tricks under their hats like really well illuminated, cozy houses, and wide-open windows during the day. Some of them (a minority) secretly use lamps that simulate the sun. A 30-minute daily dose and voila, fresh like a rose!

I guess one of the best things to fight the winter is, in fact, not fighting it at all. Instead, try holding its hand, have a nice promenade with it, spend some time together, and enjoy that time. Everything becomes easier and better when you embrace it.

One of the things I started to do was to get more active in other ways – I read more books, I made more artistic projects, I enjoyed home life more. I may have felt less happy but I can easily say that I had quite a productive year! This really made me wonder how living in different weather conditions might affect my productivity and creativeness.

All in all, I think something I once said to a dear friend of mine sums it up the best: "If the Netherlands had good weather it would be a too perfect place too live".

[1] http://processing.org/

Biographies
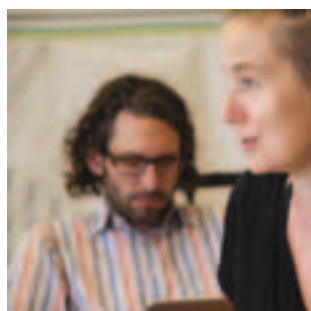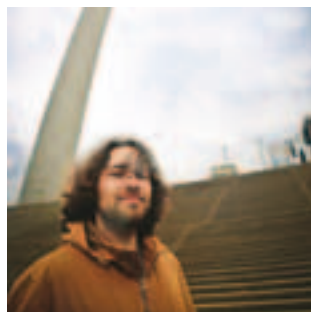
The Patching Zone

Anne Nigten (NL) is the initiator and director of The Patching Zone, the transdisciplinary media laboratory where young professionals and experts share their expertise for creative social innovation projects. Anne is also research professor Popular culture, Sustainability and Innovation at the Minerva Academy, Hanze University of Applied Art in Groningen (NL). Prior to her current position, she was the manager of V2_Lab, the aRt&D department of V2_, Institute for the Unstable Media in Rotterdam. She completed her PhD at the University of the Arts London (UK) and requently publishes papers on (social) innovation as the outcome from collaboration between art, engineering and (computer) science. http://patchingzone.net

Kristina Andersen (DK/NL) is a maker, researcher and storyteller based at STEIM (Studio for Electro-Instrumental Music) in Amsterdam. She holds a Cand. Arch. MA [in wearable computers], a M.Sc [in tangible objects in virtual spaces], and was a research fellow at the Interaction Design Institute Ivrea (IT). She is mentor and senior researcher at The Patching Zone and teaches as well as maintaining her own practice. tiny-thing.com

Kati Bessenyei (HU) is a media and visual artist. She received her MA degree at the Hungarian University of Fine Arts in 2012. She studied arts and visual communication since the age of 14. Recently she makes projection mappings, animated films, different kind of media projects, and she loves to find new techniques to experiment with.

Ralph Boeije (NL) is an innovation consultant at Alares. He is an experienced project manager and with his project teams he gives advice to managers of banks, mid-size companies and non-profit organizations in the health care and education sector. His expertise is in collaboration engineering, social innovation and change management. Ralph is also involved with various education and innovation labs. http://www.linkedin.com/in/ralphboeije http://www.ralphboeije.nl http://www.alares.nl

Peter Criellaard (NL) was Program Manager ROC Zadkine for the ICT and Human technology domains. Last August Peter started his new job as account manager for ICT, HT and Logistics at Zadkine. Peter is an educational innovator who is interested in the development of new high quality educational models that are aligned with the labor market, he therefore considers the collaboration among schools, the professional business sector, students and stakeholders of crucial importance. http://www.zadkine.nl/

Victor Diaz (ES) is a researcher, artist and educator whose focus is on creating new ways of interactions between computers and people. He is interested in developing novel ways of collaborative interactions in public spaces considering key aspects of time and space within a cultural context. He also creates tools that help to increase the usability of creative technologies. http://victordiazbarrales.com/

Ju Row Farr (UK) is one of the founding members of Blast theory. Blast Theory is renowned internationally as one of the most adventurous artists' groups using interactive media, creating groundbreaking new forms of performance and interactive art that mixes audiences across the internet, live performance and digital broadcasting. Currently she lives with her family in Portslade, Brighton. http://www.blasttheory.co.uk/

David Jones (PT/NL) is a technology supervisor at The Patching Zone. David is a computer science engineer working in the media arts field. He graduated in computer science engineering from Instituto Superior de Engenharia do Porto in Portugal and worked as a freelance programmer, web developer and designer for several years at David Jonas Design. David came to Holland

in 2008 to do an internship at V2_. After that he worked together with V2_, INTK and media artists developing projects.

Harry Kotey (NL) is an innovation consultant at Alares. Harry has a broad background as an editor, deputy director and program manager. The common denominator is the Internet in general, specialising in the social rise of the Internet. He has a linguistic background as a literary scholar and from 1996 to 2000 he united in his work on the editorial board of Wolters Kluwer. http://www.alares.nl/

Laura Maes (BE) is an sound artist and researcher, she completed her Master in Music at the Royal Conservatory in Ghent in 2001. In 2002 she received her Masters in Marketing Management at the Vlerick Leuven Ghent Management school. She is currently working as a researcher at the University College Ghent, Faculty of Music, where she pursues her PhD in the arts. http://laura.annaville.net/

Chris van der Meulen (NL) studied economics at the Erasmus University in Rotterdam and obtained his Master of Arts, Policy and Organisational Sciences at Tilburg University. Currently Chris organizes events, debates and works as a project manager.

Waldek Rapior (PL) is a PhD student from Poznan. Waldek is interested in public sociology and applied visual anthropology. He considers himself both a researcher and a social worker. He works as a scholar and theoretician at the Adam Mickiewicz University (Faculty of Social Science) in Pozna , Poland and he applies artistic methods and their identifiable way of thinking into both scientific methods and practice.

Sebastien Seynaeve (BE) studied Digital Media Arts at the University of Brighton. He is a multi-disciplinary artist in installation, sound and video art. He develops his videos and sound pieces by combining the use of hardware and software. Cinematic influences

and technology are at the core of his artistic practise and inspiration. He has also been involved in a number of music projects, all of them related to electronic music. http://sebastienseynaeve.net/

Ida Marie Toft (DK) is a media artist and digital designer. She creates games that explore new kinds of play and possibilities in digital technologies. As part of the Copenhagen Game Collective she organises game events and experimental collaborations. Her work has been shown in exhibitions, conferences and urban games festivals, including the opening of the 55th Venice Biennale, 2013.

Elke den Ouden (NL) is program manager of the Brilliant Streets research program of the Intelligent Lighting Institute at the Eindhoven University of Technology (TU/e) and strategic director of LightHouse, the solution partner of the Intelligent Lighting Institute. Next to that she is Industrial Fellow New Business Development in Public-Private Value Networks in the School of Industrial Engineering at TU/e. www.tue.nl/ili www.ili-lighthouse.nl www.item-eindhoven.org

Rianne Valkenburg (NL) is value producer in LightHouse, the solution partner of the Intelligent Lighting Institute at the Eindhoven University of Technology. With her background in design and innovation she has always been working at the crossroads of research and business. Next to her role in LightHouse she is professor Designerly Innovation at the Hague University of Applied Sciences. www.ili-lighthouse.nl

Bibliography

Aalsma, E., 2011, De Omgekeerde Leerweg; een nieuw perspectief voor het beroepsonderwijs (Dutch only)

Barad, K., 2012, Matter feels, converses, suffers, desires, yearns and remembers, In: New Materialism: Interviews & Cartographies, Dolphijn, R. van der Tuin, I.

Barad, K., 2003, Posthumanist performativity: Toward an understanding of how matter comes to matter.

Bauman, Z., 2007, Liquid Times: Living in an Age of Uncertainty

Biesta, G., 2005, Against learning, Nordic Educational Research, 25

Bilda, Z., 2012, Designing for Audience Engagement, in Interacting – Art, Research and the Creative Practitioner, Candy L., Edmonds, E., (eds.), page 163-181

Bilda, Z., Edmonds, E., Candy, L., 2008, Designing for creative engagement, Design Studies, Vol 29, Issue 6, page 525-540.

Bishop, C., 2010, Is Everyone an Artist?, Van Abbemuseum, Eindhoven The Netherlands http://www.conferenceofconferences.com/is-everyone-an-artist (accessed Sept. 28, 2013).

Boomkens, R., 2008, The Continuity of Place, From the SociallyEngineered City to the Global City, Open / Social Engineering, nr.15, http://www.skor.nl/_files/Files/OPEN15_P6-17%281%29.pdf (accessed Sept. 22, 2013)

Butler, J. P., 2005, Giving an Account of Oneself

Buxton, M., 2007, Sketching the user Experience: Getting the design right and the right design

Castells M., Fernandez-Ardevol, M., Linchuan Qiu, J., Sey A., 2009, Mobile Communication and Society: A Global Perspective, Chapter 4, The Mobile Youth Culture page 127-169.

Csikszentmihalyi, M., 1996, Creativity: Flow and the Psychology of Discovery and Invention

Debord, G., 1958, Theory of the Dérive. Internationale situationniste 2

Devens, P., Peters, P., 2008, Een geluidskunstmuseum. NRC Handelsblad, Oct. 24, 2008, page 13 (Dutch only)

Deetman, Mans, 2011, Kwaliteitssprong Zuid: ontwikkeling vanuit kracht, Eindadvies van team over aanpak Rotterdam-Zuid (accessed Sept. 7, 2013)

De Cauter, L., 2011, Notes on Subversion/Theses on Activism. In: L. De Cauter, R. De Roo, K. Vanhaesebroucek, (eds.) 2011, Art and Activism in the Age of Globalization

Den Ouden, E., Valkenburg, R., 2012, Vision and roadmap urban lighting Eindhoven 2030: research results

Dunne, A., Raby, F., 2001, Design Noir: The Secret Life of Electronic Objects

Eco, U., 1986, Travels In Hyperreality

Enns, J. T., Austen, E. L., Di Lollo, V., Rauschenberger, R., & Yantis, S., (2001), New objects dominate luminance transients in attentional capture. Journal of Experimental Psychology: Human Perception & Performance, 27, page 1287-1302.

Erasmus Universiteit Rotterdam, 2009, Erasmus Concurrentie en Innovatie Monitor 2008-2009. Rotterdam: INSCOPE/RSM/EUR

Eurogamer, 2013, Panel: Is storytelling in games getting any better? – Rezzed 2013 Developer Session, Video online, available at: http://www.youtube.com/watch?v=4Lb30OFld-s (accessed Sept. 2, 2013)

Fishler, R., 2012. Reflective Practice. In: B. Sanyal, L.J. Vale, Ch.B. Rosan, (eds.), Planning Ideas That Matter. Livability, Territoriality, Governance, and Reflective Practice, Ch. 12

Galloway, A., 2007, Seams and Scars, Or How to Locate Accountability in Collaborative Work. In Uncommon Ground, Brickwood, C, Ferran, B., Garcia, D. and Putnam, T. (eds.), page 152-158

Gaffney, G., 2007, Ludic Design: An interview with William Gaver, Information and Design, http://infodesign.com.au/uxpod/ludicdesign/ (accessed September 28, 2013)

Gaver, B, et al., 2004, The Drift Table: Designing for Ludic Engagement, CHI'04

Graham, R. D., 2013, https://twitter.com/ErrataRob/status/ 318810839513714688. (accessed Apr. 4, 2013)

Haans, A., De Kort, Y., 2012, Light distribution in dynamic street lighting: Two experimental studies on its effects on perceived safety, prospect, concealment, and escape. Journal of Environmental Psychology 32, page 342-352

Halverson, M., (eds.) 1982, Sonic Art – an exhibition organized by Marlin Halverson, Class of '82, San Bernardino

Healey, P., 2012, Communicative Planning: Practices Concepts, and Rhetorics. In: B. Sanyal, L.J. Vale, Ch.B. Rosan, ed. 2012. Planning Ideas That Matter. Livability, Territoriality, Governance, and Reflective Practice. Ch. 13

Hegarty, P., 2007, Noise / Music A History

Hoorn, van, M., (eds.) 2010, Creatieve MBO-opleidingen tussen talentontwikkeling en arbeidsmarkt, Cultuur + Educatie, Jaargang 10, issue 29 (Dutch only)

Huizinga, J., 1944, Homo Ludens, a study of the play-element in culture

Jonides, J., Yantis, S.,1988. Uniqueness of abrupt visual onset in capturing attention. In: Perception and Psychophysics 43(4), page 346-354

Jossey-Bass, Solnit, R., 2006, A field guide to getting lost

Kelly, J., 1985, Conversation with Doug Hollis. Places: Forum of Design for the Public Realm, 2, 50-58

Kester, G. H., 2011, The One and the Many: Contemporary Collaborative Art in a Global Context

Lambregtse, C., 2008, AWVN: Sociale innovatie, lessen van toppers (Dutch only) http://www.kennisbanksocialeinnovatie.nl/nl/kennis/kennisbank/sociale-innovatie--lessen-van-de-toppers/317 (accessed Sept. 30, 2013)

Landry Ch., 2010, Think Culturally, Plan Imaginatively and Act Artistically. In: H. Venhuizen, (eds.), 2010. Game Urbanism. Manual for Cultural Spatial Planning

Lave, J., Wenger, E., 1991, Situated Learning: Legitimate Peripheral Participation

Lofland J., Snow, D.A., Anderson, L., Lofland L.H., 2005, Analyzing Social Settings: A Guide to Qualitative Observation and Analysis, 4th edition

Malinowski B., 1967, A Diary in the Strict Sense of the Word

McLuhan, M., 1964, Understanding Media: The Extensions of Man

Müller, Alt, Schmidt, Michelis, 2010, Requirements and Design Space for Interactive Public Displays

Nelson, H., Stolterman, E., 2003, Design Judgment – Decision Making in the "Real" World

Nigten, A., 2012, Art and hyper-reality. About art, media and technology, page 182, in Windows of your eyes Kunst in de openbare Ruimte, Boekholt, M., (eds.) English translation available at http://www.hanze.nl/artandsociety (accessed Sept. 30, 2013)

Nigten, A., 2012, New Roles for new Humus Layer, Science Guide, English translation available at http://www.hanze.nl/artandsociety (accessed Sept. 30, 2013)

Nigten, A., 2007, Processpatching, Defining new Methods in aRt&D

Nigten, A., (eds.) 2010, Real Projects for Real People, Volume 1

Nigten, A., (eds.) 2012, Real Projects for Real People, Volume 2

Pickering, A., 2009. The politics of Theory: Producing another world, with some thoughts on Latour. Journal of Cultural Economy, Special Issue: Assembling Culture. Vol. 2, Iss. 1-2, 2009. Retrieved at: http://www.tandfonline.com/toc/rjce20/2/1-2, (accessed Sept. 30, 2013)

Reiss, J. H., 1999, from margin to center: the spaces of installation art

Riple, A., 2008, Airport Screeners Dress for Respect, Time, http://content.time.com/time/nation/article/0,8599,1815529,00.html (accessed 18 Aug. 2013)

Roots, G., 2002, Designing the World's Best: Public Art

Rosan, (eds.) 2012. Planning Ideas That Matter. Livability, Territoriality, Governance, and Reflective Practice. Ch. 12

Sanders, E. B., Stappers, P. J., 2008, Co-creation and the new landscapes of design

Sengers, P., Boehner, K., David, S., Kaye, J., 2005, Reflective Design, Proceedings Critical computing: between sense and sensibility page 49-58

Sengers, P., Gaver, B., 2006, Staying Open to Interpretation: Engaging Multiple Meanings in Design and Evaluation, DIS/ACM 1

Sennett, R., 2012, Together: The Rituals, Pleasures, and Politics of Cooperation, 1st edition

Schellinx, H., 2012, Ephemeral Sustainability 1 – Sound Art [Online]. Available: http://resonancenetwork.wordpress.com/2012/12/15/ephemeral-sustainability-1-sound-art/ (accessed Aug. 2, 2013)

Schön, D.A., 1987, Educating the reflective practitioner

Schön, D.A., 1983, The Reflective Practitioner: How Professionals think in Action

Sharma, N., Push Technology – Long Polling. International Journal of Computer Science and Management Research, Vol. 2 Issue 5 May 2013 – http://www.ijcsmr.org/vol2issue5/paper398.pdf (accessed Sept. 18, 2013)

Stolterman, E., 2008, The Nature of Design Practice and Implications for Interaction Design Research. In International Journal of Design Vol 2, No 1, Retrieved from http://www.ijdesign.org/ojs/index.php/IJDesign/issue/view/8 (accessed Sept. 30, 2013)

Tandavanitj, N., Adams, M., Row-Farr, J., 2003, Where On-Line Meets On-The-Streets: Experiences With Mobile Mixed Reality Games. Chi Letters, Volume 5, Issue 1

Thomas J.M., 2012. Social Justice as Responsible Practice: Influence of Race, Ethnicity, and the Civil Rights Era. In: B. Sanyal, L.J. Vale, Ch.B. Rosan, (eds.) 2012. Planning Ideas That Matter. Livability, Territoriality, Governance and Reflective Practice, Ch. 14

Tomkins, C., 1988/1994, Onward and upward with the arts – Hear. In: DES JARDINS, G. (eds.) Max Neuhaus, sound works; volume I, inscription; volume II, drawings; volume III, place

Vertovec, S., 2006, The Emergence of Super-Diversity in Britain, www.compas.ox.ac.uk/fileadmin/files/.../WP.../WP0625_Vertovec.pdf (accessed Oct. 18, 2013)

Wenger, E., 2006, Communities of practice http://www.ewenger.com/theory (accessed Sept. 1, 2013)

Wenger, E., 1998, Community of Practice: Learning as a Social System. Systems Thinker. June 1998. Retrieved from: http://www.co-i-l.com/coil/knowledge-garden/cop/lss.shtml (accessed Sept. 30, 2013)

Xavier, Pot, F., 2012, Doorgeven is aanpakken. Tussenstand van 10 jaar sociale innovatie, NCSI

Zaera-Polo A., 2012, The Sniper's Log. Architectual Chronicles of Genration X. 1st edition

Miscellaneous (on line) sources

BeamIt, INTK (Castanheira, David and Guerra, Rui, 2010) – http://www.intk.com/projects/beam-it (accessed Sept. 18, 2013)

Brusaw, J. Brusaw, S.,1979-present, Solarhighways, United States, http://www.solarroadways.com/intro.shtml (accessed Sept. 30, 2013)

Commission of the European Communities, Making a European Area of Lifelong Learning a Reality, 2001, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2001:0678:FIN:EN:PDF (accessed Sept. 8, 2013)

Dear Esther, 2012 The Chinese Room, computer game: Windows, Mac, Linux http://dear-esther.com/ (accessed Sept. 30, 2013)

HTTP Specification, RFC2616 – http://www.w3.org/Protocols/rfc2616/rfc2616.html(accessed Sept. 18, 2013)

Key, E., Kanaga, D., 2013, Proteus, computer game: Windows, Mac, Linux, http://www.visitproteus.com/ (accessed Sept. 30, 2013)

Playnetic BV, 2012-13 Audionetic playgrounds http://www.gamenetic.nl/en/ (accessed Sept. 22, 2013)

Processing, programming language http://processing.org/ (accessed Sept. 30, 2013)

Studio Roosegaarde, Heijmans, 2012-13, Smart Highways, The Netherlands, http://www.studioroosegaarde.net/project/smarthighway/info/ (accessed Sept. 22, 2013)

University of Twente, 2010, Vibrations, fizzling source of energy, http://www.greenfudge.org/2010/11/10/the-netherlands-toexperiment-with-energy-producing-asphalt/ (accessed Sept. 12, 2013)

Web-sockets Specification, RFC6455 – http://tools.ietf.org/html/rfc6455 (accessed Sept. 18, 2013)

1910 Street-trafic system patent, http://www.google.com/patents/US976939 (accessed Sept. 16, 2013)

THE PATCHING ZONE

kosmopolis rotterdam

t.ranslocal

BLAST THEORY

ZADKINE

crisp
CREATIVE INDUSTRY
SCIENTIFIC PROGRAMME

STICHTING DOEN

FONDS VOOR CULTUUR PARTICIPATIE

SNS REAAL FONDS

Education and Culture DG
Culture Programme

ALCATEL onetouch.

Prins Bernhard Cultuurfonds

VSBfonds.
iedereen doet mee

City of Rotterdam

Stichting Bevordering van Volkskracht