FACULTY OF DESIGN
Associated Member of University of Primorska

GoingGreenGlobal International Design Week

4th INTER/NATIONAL SCIENTIFIC CONFERENCE A.L.I.C.E.

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Chamber of Commerce and Industry Slovenia
Ljubljana, Slovenia
17.11.2016

CIP - Kataložni zapis o publikaciji
Narodna in univerzitetna knjižnica, Ljubljana
7000000000
7000000000
INTERNATIONAL Scientific Conference A.L.I.C.E.
(3 ; 2016 Ljubljana)
-
000000000./ 4th International Scientific Conference A.L.I.C.E., 16th of November, 2016, Ljubljana, Slovenia ;
[editors-in chief Nada Rožmanec Matičič, Jasna Hrovatin, Damjana Celcar].
Ljubljana : Faculty of Design, 2017
ISBN 0000000000000
1. Gl. stv. nasl. 2. Dodat. nasl. 3. Matičič, Nada,
1950-281704448

ORGANIZERS
Faculty of Design, an independent higher education institute,
Assocoiated member of the University of Primorska
The Research Centre of the Creative Furniture Industry ¬–
RC31
Competence Centre for Human Resources Development in Wood Industry 2.0 – KOCles 2.0
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OPENING SPEECH
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KEYNOTE SPEAKER
Prof. Nada Matičič
CEO and Vice Dean of the Faculty of Design,
associated member of the
University of Primorska,
Member of the Board of DME

The GoingGreenGlobal – SUSTAINABLE DESIGN PARADIGMS of A.L.I.C.E. 2016 (Architecture, Landscape,
Interiors, Culture, Emotion) international conference encouraged us to search for conceptual standpoints with regard to the sustainable development of relations between the global economy and design in the widest possible context.

The questions that were addressed at the A.L.I.C.E. international scientific conference was related to the future of world economy integrations, natural and social resources management, social situation, sustainable development, migration of nations and further to the significance of designing our environment which is constantly and uncontrollably changing, even at this moment.
So we can ask ourselves, what is the real role of designers and managers on one side, as well as people or users of those products, concepts or services on the other side? What kind of culture of living deserves our utmost
attention, the highest level of consideration? Is this our creative mind of daily living? Do we have to discover a
sustainable paradigm of design that will safely and reliably take us to the next decade?

To contribute means to feel responsible. Therefore, we invited national and international experts in the field
of culture of design, and design managers with profound background in managing design concepts in various business services sectors, to attended at the GoingGreenGlobal week from 14th to 18th November 2016 with a number of events which were held in the most beautiful city in the world – Ljubljana: European Green Capital 2016, where were discussed about the specific role of design as a tool for innovation development and the added value of products, services and concepts.

Prof. Nada Rožmanec Matičič

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SUSTAINABLE DESIGN FOR A NEW EUROPEAN RENAISSANCE: THE CASE OF INTERNATIONAL PLATFORM GOING-GREENGLOBAL -

Prof. Nada Rožmanec Matičič
Faculty of Design,
Associated Member of University of Primorska

1. INTRODUCTION

The 2030 Agenda for Sustainable Development speaks about greatest global challenges, so I believe that every human being can do something for better future, better environment, better human rights, water and food for everybody. The 17 sustainable development goals and 169 targets are very ambitious plans for social, economic and environmental issues.

But what can we do in the field of creative industries?

INNOVATIVE SUSTAINABILITY STRATEGY (sustainable design paradigms) of design is the answer to many challenges. Architecture and design, part of all creative industries with their profound ability to create new relationships between people, is uniquely positioned to engender all the changes.

One of the very contemporary themes are "INVISIBLES" - design practices, which turn the invisible into visible, marginal groups into socially active individuals and rendering people recognizable in their surroundings, are the main point of the whole story.

Design is a unique creative discipline, and together with management and design management, plays an irreplaceable and very important role in any successful economy.

Tomorrow's world is already taking shape, therefore smart solutions and inventive sustainable designs offer new promoting perspectives.

We have to work towards sustainable economy and society. We need standards, processes, concepts and tools for production chains, going from idea to a product. We need sustainable performance.

Design has no borders, we have to consider the results of design products, systems or concepts with high added value and realise that the users of design phenomena are PEOPLE from the whole world.

However, we are aware of the rich potentials of our country and we build on them: Slovenia is a jewel lying between Alps and Adriatic see, rich in history, cultural heritage, clean environment, 60 % covered with wood and wonderful people!
And Plečnik's University town Ljubljana - last year awarded with Green European Capital!

Therefore I am very happy that I have an opportunity to present definition of GREEN LIVING and I think that we can all contribute to philosophy of an Integral Green Economy and Society.

2.1 GOINGGREENGLOBAL PLATFORM

Our Faculty of Design want to take sustainable development to the next level. Many interdisciplinary national and international experts, institutions, students are involved in these global projects.

Through systems of Design thinking, the "art@design" philosophy, sense design, new aims of creative industries, new design for the new world and transfer of design innovation to industry, we create future of the world. All our aims are to foster trans-disciplinary alliances and cooperation between researchers, artists and industry members as well as to offer artists novel creative tools that expand the grammar of the traditional arts, cultural heritage and national identity. We try to raise sustainable design approach and awareness in all partner countries.

Therefore we established the new international platform GoingGreenGlobal - the new brand with new - old values of GREEN THINKING DESIGN. The new brand deals with the new movement of awareness for GREEN. We have identified the psychological aspect of design:
THOUGHTS, DREAMS, FEELINGS, IMAGES, PERCEPTIONS, BELIEFS, EXPERI-ENCES, as well as the experimental aspect.

Green thinking design is not only about developing projects and turning a concept into reality, but rather, is the way of living. It is clear that the use of design as a tool for user-centred and market-driven innovation in all sectors of the economy, complementary to R@D, would improve global competitiveness. GREEN communities have a healthy environment, a vibrant economy and a high quality of live. GREEN building is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout the building life cycle; from design, construction and operation to maintenance and renovation.

The GoingGreenGlobal approach deals with a new trend that is based on raising awareness of the importance of sustainable and green design. GoingGreenGlobal combines various areas of interest, such as architecture, interior design, wood construction and production, photography, visual communications, fashion and textile design as well as design management. The approach offers comprehensive support in developing green decisions and positive changes in the production of systems, concepts and products which have an added value in the global economy. Together with the visiting experts from abroad, the visiting university professors and the local, Slovenian professors, we want to raise awareness of sustainable design which is based on the concepts of GoingGreenGlobal and "Zero Waste Design".

In the next two academic years we are going to research with 10 foreign experts and professors from different institutions from 10 European countries, Slovenian experts and national and international students-young talents and develop sustainable projects for better green living with all the tools we have at the disposal, including vastu and feng-shui models for happy life for all.

2.2 FACULTY OF DESIGN AS THE FOUNDER OF GOING-GREENGLOBAL PLATFORM

The vision of the Faculty of Design is to become a globally well-recognised institution with quality lecturers, researchers and actively engaged students. Therefore the vision of the faculty is to become the centre of excellence in creating and transferring knowledge with the purpose of equal and partnership cooperation in the process of diversifying the academic and social sphere in the region, in which the Faculty is integrated. As an educational, research and art institution the Faculty of Design aims to represent a forum, where innovations will flow in the intercultural dialogue from the research sphere in the social, cultural and economic life, initiatives from the environment will present the guidelines for further work in the academic field.

In achieving its vision, the Faculty of Design will consider its mission and five fundamental values: quality, autonomy, freedom, affiliation and openness.

The mission of the Faculty of Design is to creatively contribute to the development of a society of knowledge by encouraging human curiosity and the desire for knowledge and research mostly in the original field of work – art, and to build synergies with other higher education institutions in Slovenia and abroad.

The mission of the Faculty of Design is to actively contribute to the development of a knowledge society by promoting human curiosity and the desire for knowledge, research and creation in its core area of activity - the field of design - and to build synergies with other associations and institutions in Slovenia and abroad. We aim to educate critically-minded and socially responsible designers, who will be capable of managing the most complex design processes, because design is an artistic and scientific discipline, and a creative process of thought as such, but it is also an element of successful operation of any company. It is also a way of expressing the value of the brand and the tool to visualise strategies of a creative process.

The Faculty of Design builds its vision on the intensive internationalisation strategy, within the scope of which it cooperates with global associations and platforms that operate on the basis of strategic documents prepared by national and international stakeholders. We will extend our international activities (in particular the transfer of knowledge and experience abroad and the placement of our institution within the global value chain) to other countries, mainly BRICS countries (Brazil, Russia, India, China and South Africa) and the United States. Our main task will comprise an intensive cooperation, not only with similar counterparts, but also with technology

and business-oriented higher education institutions, where synergy can be created. We will strive to make the effects of these synergies visible and implemented in the operations of businesses, with which we cooperate actively. This is how we will be able to increase the role and visibility of design and the areas of design management. The measures taken in the internationalisation process will be directed toward a long-term cooperation with businesses in order to jointly develop new services and products, primarily for foreign markets. Since 2007, the Faculty of Design has been actively cooperating in Erasmus + programme. In this way, the Faculty has established a high quality network of international connections, which enable students and lecturers to exchange knowledge, ideas and practical experience in the world of design. The Faculty has concluded over 45 bilateral agreements with many distinguished higher education institutions, which operate in similar fields of work.
In the field of economy the Faculty of Design primarily cooperates with organisations, which acknowledge design as an added value of the final product. These are mainly businesses which develop and manufacture premium quality and technological products with a high added value.

Faculty of Design is member of various associations which are sustainable oriented. It cooperates in the GIDE association, which is an international consortium of higher education institutions in design, which cooperate with the purpose of upgrading the experience of students in the field of 3D, architecture and interior design. The group is composed of seven partner institutions from Great Britain, Belgium, Germany, Italy, Switzerland and Scotland. The Faculty of Design is the only Slovenian partner in this association.

The Design Management Europe (DME) is a cover association of institutions that operate in the field of design management, its importance in global industry is increasing every year. The Faculty of Design, which is the only institution in Slovenia actively engaged in this area of work and is launching design management in the pedagogical area, will also contribute to further development and establishment of creative industries in numerous companies.

The Faculty of Design also established the A.L.I.C.E. platform (Architecture | Landscape | Interiors | Culture | Emotions), which aims to promote and raise awareness of the importance and role of design in developing a sustainable society and design as an interdisciplinary intellectual process, which focuses on using and applying research results in final products. It is purposed for experts, professors, pedagogues and students, who cooperate on different levels with various types of contributions and in different interdisciplinary projects.

The Faculty of Design is also a member of the Design Centre of Slovenia, which operates under the auspices of the City of Design.

The knowledge, which is transferred from the Faculty of Design to Slovenian companies via innovations, patents and developmental projects, which bring companies added value in design and technological solutions and the production of new products as well as new workplaces and via students, who are employed in such companies and who use their knowledge as the potential for development, is very important. Many ways of cooperation with local and foreign companies and partners are evident on the basis of concluded contracts on projects and cooperation. The Faculty of Design cooperates in projects with an expressed artistic and conceptual approach, where design is established as a socially-engaged area of work and education. Due to its mission, which is infused in all pedagogical processes, artistic work is included in various presentations, exhibitions and publications. The Faculty of Design further develops the connections between science, development and art, the acquired additional value is not reflected only in the school's development, but also within the scope of the economic development of the entire region. Faculty of Design is actively engaged in the national and international level through The Development Centre of the Creative Furniture Industry (RC31) and through Development Centre of Interdisciplinary Technologies and Products in the Wood Industry – INTECH-LES. We are cooperating with various wood and furniture making companies in Competence Centre for Human Resources Development in Wood Industry (KOCles) where the faculty is engaged in the field of design management and sustainable development.

We aim to dedicate special attention and concern to our students. We will encourage their creativity, help them realise their plans, consolidating their profiles and give them advice on their career paths in economy. The faculty establishes a direct link with the economy through various projects, which are part of the teaching process and which are led by faculty laboratories or via the Faculty of Design Career Centre (KC) FD, where students and graduates can acquire new knowledge and enhance competences in the field of communication with potential employers, share international working experiences and gain experiences in starting their own business. As a unifying link between the industry and academics, in 2015, the Faculty of Design established the House of Design Management and Innovation (HDMI), which aims to provide support to the students of design management, help them expand their horizons, and create a space where the economy can collaborate with experts from the academic sphere in design.

In education area, the Faculty of Design cooperates with the University of Primorska (UP) within mutual academic cooperation (implementation of educational activities, reviews, national mobility etc.). Since its establishment, the Faculty of Design has also been part of the community of independent higher education institutions, within which independent higher education institutions carry out various forms of cooperation, including issues related to higher education and scientific-research work, financial issues of common concern, legal matters and the communication of common standpoints to the competent state institutions and the wider public.

The Faculty of Design strengthens social responsibility, since we are well aware of our commitments to the wider society as well as the responsibility that we are investing in local environment, where we operate and co-exist. This is our special duty, which we perform with pleasure and special pride, since the development of the Faculty is closely connected with developing the social environment, improving the flow of knowledge, with connecting educational and research work and the economy. Our work has been designed for the needs of the environment, which we can realise on the basis of obtained knowledge.

An important component of the Faculty's operations, along with respecting standards, transparency of operations and ethics, is also the care for the society and the environment, which is included in our educational, artistic and scientific activities, as well as in relations with all stakeholders. We focus on sustainable development that considers all laws of sustainable design in the senses of awareness about how significant this aspect is for our future. The study process emphasises the use of contemporary and ecological materials. Everything mentioned is proven by numerous awards and recognitions of our students in the field of ecological and sustainable product design.

3. CONCLUSIONS

The Faculty of Design develops mostly within the social environment, it will improve the flow of knowledge, it will cooperate with the educational and research spheres as well as with the economy (so-called knowledge triangles). Our work has been designed for the needs of the environment, which we can realise on the basis of obtained knowledge. We mostly want that our environment would be aware of the meaning of design and the ars vivendi philosophy, since by connecting with institutions (state–owned and private) we could design the Slovenian design centre, where young and well established creators of the modern European area could meet. The acquired added value of such centre would not be reflected only in the school's development, but also within the scope of the economic development of the entire region.

The Faculty of Design with the new International Platform GoingGreenGlobal and all other networks and competences is already developing Sustainable Design for a New European Renaissance and therefore we can be the home of the flowering of 3rd Millenium Reneissance!

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LETS PLAY AND CHANGE THE WORLD: HUMAN CENTERED DESIGN FOR CO-DESIGNING SUSTAINABLE PUBLIC POLICIES

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Abstract: Within current networked economies, innovative ideas, competences and resources are sometimes distributed in different interests and priorities or possessed by diverse people and organisations. Such diversity creates dissonance between relevant stakeholders, which leads to conflict of interests. This is problematic especially when concerned with public policies impacting public services. One example is the current issue of NHS Junior Doctor contracts in England, which has resulted in a consistent deadlock situation between British Medical Association (BMA) and government's National Health Service (NHS), in the form of repeated junior doctors strikes and communication breakdowns. The agonistic situation has lasted concurrently over a year now resulting in extreme patient discomfort and retrospectively NHS service failure. This paper takes the total communication breakdown between BMA and NHS as a ideal agonistic scenario to suggest how participatory communication design can help neutralise such agonistic spaces (Björgvinsson, 2012) created by policies unacceptable to the relevant stakeholders, and facilitate a consensus. The paper claims this as a strategy can be instrumental for stakeholders' consultations to support sustainable policy-making and prevent or/and resolve conflict incase of conflict. Informed by Actor Network Theory (Latour, 2007) the study soughts to suggest a role of relevant stakeholder consultations via HCD, empathy tools and Theory for fun (Shneiderman , 2004) as an effective framework to engage stakeholders; align ideas and resources in for public policy making in agonistic debates. Further on, the paper argues sustainability of HCD to build stakeholder engagement, understanding and empathy and neutralise agonistic situations.

Key terms: Co-Design/ Human Centered Design/ Design and Empathy/ NHS-BMA Conflict / Agonistic Spaces / Sustainable Policy making

INTRODUCTION:

Although in recent years interest has grown significantly from governments around the world in design as a methodology for connecting new ideas with people's needs, reducing risk, and shaping public services and policies (art.gov, 2014). Still the strategic power of design thinking as a problem solving activity is not fully explored (Button & Sharrock, 2000) where policies rejected by the stakeholders generate agonistic debates resulting in conflict and deadlocks. This occurs traditionally in in situations where diversity generates dissonance between stakeholders agenda's resulting in conflict of interests hence agonistic space. This can be especially challenging when implementing public policies for public services. One classic example that illustrates such situations is current issue of NHS Junior Doctor contracts in England. The new junior doctor contract proposed by the NHS has resulted in a consistent deadlock situation between British Medical Association (BMA) and government's National Health Service (NHS) in the form of repeated doctors strikes and communication breakdowns. The situation had detoriated from bad to worse over the period of almost a year now. To address such issues this paper suggests 'Human Centered Co-design Spaces' (Sanders.2011) drawing on 'Actor Network Theory' (Latour, 2007) and Theory of Fun (Shneiderman, B. 2004) as an effective framework for diverse stakeholder consultations and sustainable engagement especially for sustainable policy design. This paper argues human centered co-design for sustainable stakeholder (actors) engagement to align ideas (drivers) and identify resources (networks) in agonistic spaces such as the BMA-NHS conflict, to shape effective public policies.

1. BACKGROUND

Between 2015 and 2016 junior doctors voted for first "all out" strike in the history of the NHS. The union sent ballot papers to almost 40,000 members; a 98 per cent vote in favour was confirmed - despite fears for patients (The Telegraph, 2016). The agnostic situation has aggressively lasted on and off over a year now. This illustrates the government's failure to address this situation sustainably to date. This has cost the public and the government heavily in terms of failure of efficient health service to the public. As the situation persists, currently, more industrial action is announced by the BMA in October 2016 in the probable form of a week of total strike by the junior doctors.

1.1 BMA STANCE

BMA's worry is about how with the new contract they will have less control over when, and how much, they work, without getting enough rest to do the job properly. Many say they are exhausted and do not have anything more to give. The BMA is not happy about the demands, which could be placed on doctors: for instance, 'fatigue caused by their working patterns frequently changing times'. They demand that if the government wants a '7-day NHS', it should hire more doctors, not squeeze more out of the existing ones as this will inevitably make patients less safe. In addition, the doctors argue that there are other administrative changes in the new contract which will remove important safeguards as well. They claim that their demand is not only about them but also for the patient's safety (Spectator, 2016).

1.2 NHS STANCE

The government (NHS) claims that their main concern is patient safety (same as BMA), but from another perspective. Their focus is on patient mortality rate which according to them is more on the weekend 'they have had too many studies now telling them that newly born baby mortality rates are 7 per cent higher at weekends, emergency surgery mortality 11 per cent higher, stroke mortality 20 per cent higher, cancer mortality 29 per cent higher.' So they have devised a 7-day NHS policy. They claim that the new junior doctor contract responds to the need to make it easier for doctors to work at weekends. The government also claims that, rather than increasing pressure at weekends, the new contract will mean there is less pressure on doctors – because hospitals can employ more of them (ibid).

1.3 ISSUE AND ITS IMPACT ON GENERAL PUBLIC AND UK ECONOMY

The conflict has a huge impact on the public and the UK economy as a result. Nearly 3,000 operations were cancelled when junior doctors in England took part in the second 24-hour strike over pay and conditions. This resulted in patients' as well as financial impact (Gainsbury.2016). According to BBC (2016) formal talks broke down in January and there was mounting speculation that ministers may soon seek to impose a new contract, potentially inflaming the row further. The key sticking point appeared to be payments for working on Saturdays. Although there have been suggestions of 'patients co payment' and 'national conversations' (Telegraph.2016) by the government but its still speculative to date. Later in March, as an updated development the BBC further reported that The British Medical Association (BMA) wanted the whole day to attract an unsociable hours premium, but ministers say the hours between 07:00 and 17:00 should be paid at the basic rate. The BMA proposed accepting half of the 11% basic pay rise offered by the government in return for retaining extra payments for working Saturdays, but the move was rejected. The government says change is needed to ensure a genuinely 24/7 NHS. A new poll by Ipsos MORI shows two-thirds of the public support junior doctors - the same as it was ahead of the first strike (BBC, 2016). The most recent development is that issue persists as BMA plans more industrial action if the government keeps ignoring their demands.

1.4 SITUATION MISHANDLING RESULTING IN A WICKED PROBLEM

An overview of the conflict highlights how this issue has taken on the position of a 'wicked problem' (Rittel & Weber. 1973). Wicked problems are defined as social issues with not a single solution but various solutions strategically implemented for positive impact. The current BMA-NHS deadlock on Junior Doctor Contracts can be positioned perfectly within this definition as outwardly the issue appears simple but is inherently complex. Within the agonistic debate both sides claim that they are fighting for an effective NHS service and patient safety as the crux of their demands, although their actions are resulting in the opposite. The situation is recurrent since 2015 as it sparks up again and again followed by industrial action by BMA. The phenomenal repercussions in terms of emotional, human and economic toll have turned into a vicious cycle for the public, BMA and the NHS.

2. COMMUNICATION DESIGN FACILITATION TO IMPACT WICKED PROBLEMS:

The case of BMA-NHS conflict is a textbook example of communication breakdown when there is conflict of interest and resource devolution underscored by miscommunication between parties. However this is not a novel situation in public policy design realm (Amatullo, 2013). The deadlock between the two parties continues to sustain for almost a year now. This apparent failure of resolution by the government has resulted in limited NHS service due to junior doctor strikes, a rigid government stance and extreme public discomfort predicting crippling repercussions for the NHS in future if not resolved soon.

To address this problematic situation this paper explores the possible role design can play in such 'agonistic space'. The exploration suggests human centered 'co-design' of public policies as a way forward to neutralise such agonistic spaces created by policies unacceptable to the relevant stakeholders and facilitate consensus. The study is fully conscious of the fact that the designer cannot completely resolve 'wicked' design scenarios but suggest they can look for [creative] ways to facilitate, accommodate and articulate 'difference', not just philosophically and politically but also in terms of physical designs (design devices), and the design strategies embodied within them to make this happen effectively (DACRC, 2013). Mouffe (2007) suggests such activity 'can play an important role in the hegemonic struggle by subverting the dominant hegemony and by contributing to the construction of new subjectivities'.

3. HCD FOR SHAPING PUBLIC POLICIES

IDEO defines Human-centered design to be all about building a deep empathy with the people that the design is intended for; generating tons of ideas; building a bunch of prototypes; sharing what is made with the target audience; and eventually putting the innovative new solution out in the world. 'Empathy is at the heart of design. Without the understanding of what others see, feel, and experience, design is a pointless task'. (Brown. IDEO). It is apparent that the new trend of governments using HCD for innovation in public policies has been welcomed to shape public policies and services recently one such example is the Policy lab UK. Organisations like the NEA (National Endowment for the Arts) that provided an international forum for discussing design in the public sector are vital in this context as whilst there is a growing community of research and practice there are significant knowledge gaps (art.gov. 2014); gaps such as engaging HCD in agonistic spaces within this realm is still under explored. Drawing on the BMA-NHS conflict this paper builds on the initial observations around HCD for sustainable policymaking, and further delves into how this can be transferable to policymaking within agonistic spaces. This leads to further questions like; a) How can the government or non-government organisations build creative hence sustainable stakeholder consultancy spaces as an evidence base for the government to shape policies that avoid in conflict? b) Can HCD engaging relevant stakeholders i.e. general public, BMA and NHS policy makers help resolve this issue? c) Can empathy tools in combination with Theory of Fun possibly contribute to neutralise such an agonistic debate as the BMA-NHS conflict? d) How can design professionals and academia explore/devise design methods collaboratively that work in such political context in conjunction with other innovation approaches?

3.1 HUMAN CENTERED CO-DESIGN INITIATIVES IN POLICY MAKING

Design Council UK has played a significant role in design for policy making by working with the government; non-government and academic associations to explore the role of human-centered design in the public realm. For example initiatives like 'Learning from Abroad: When Government Meets Design' represents human-centered design practice in the U.K. and U.S. governments. Design Council U.K, The Public Policy Lab, New York; Policy Lab, Cabinet Office U.K are some of the pioneering initiatives that explore design within policy shaping and share insights on how useful design can be to create public services around the people who use them, to introduce new methods into the civil service skill set, and as a tool to aid the process of public policy development. For example the new Policy Lab was officially launched by the Open Policy Making team in the UK Cabinet Office and now works with policy teams to improve the 'pace, quality and deliverability of policy in the Civil Service'. It focuses on a clear way to embed learning in live policy development and day-to-day working. It's significant because much design work has taken place on service delivery in the UK but very little on the policies, which sit behind frontline services. The primary objective of this is an interest in design, as a methodology for connecting new ideas with end user needs within central government(Design Council UK, 2014). Similar is the case in the US. The use of design as a strategic tool is changing and a host of research centers, labs, and not-for-profits are engaging to lead some of the world's most advanced thinking on how design methods can be used to tackle 'super-wicked' problems. These include ChangeLabs, DesignMatters, School of Design Strategies at Parson's New School, and The Lab @ Office of Personnel Management (art.gov, 2014).

3.2 CO-DESIGN TOOLKITS

Co-Design Toolkits, for example DIY tool kit by NESTA, IDEO Methods Cards etc., are creative methods engaging empathy tools to effectively design sustainable strategies based on stakeholder values. These entail methods like scenario planning, personas, journey mapping, cultural mapping that help identify contextual values to address issues effectively. The contribution of such design led methods is major as these facilitate generation of collective thinking spaces by developing creative tools and methods to assist co-designing as a value mapping and design tool. The evolving principles can be instrumental to devise effective strategies for sustainable policies. The principles as framework could be easily transferable to address issues like the BMA-NHS conflict effectively.

3.3 SIGNIFICANCE OF HUMAN CENTERED CO-DESIGNING:

The significance of engaging or designing such bespoke tools is to help identify significant actors networks and drivers in the context that can further help facilitate a way forward to impact issue addressed in a sustainable way. It's a reflective creative process that allows all stakeholders to be a part of the design process, be it designing of a product, idea, experience or system. Hence the democratic dynamics of creative co-design methods allow the politics in an agonistic context to neutralise by involving all parties in a democratic collective decision making process. Design kits like DIY by Nesta, Methods cards by IDEO, Policy Design KIT by Policy lab UK can be an effective solution to explore issues such as the BMA-NHS conflict in a fun and creative way. As designers engaged in social innovation and public realm are always exploring areas for further research and work, and welcome wider views this paper asserts that methods can be further enhance by the games design (CRN.2016) approach to problems solving as an alternative to the traditional debate. The BMA-NHS conflict can be prime case for the policy lab to tackle. However, even though consistent for a year, still they have not engaged with it as yet. This reflects on how the positive impact of HCD to resolve agonistic debates is still under-recognised and remains underexplored.

3.4 CO- DESIGN AND THEORY OF FUN

Sustainable engagement results in sustainable change be it social, public or commercial change that one aspires for. Game design based approached like the Theory of Fun (Koster, R. 2013) allows stakeholders within co-design sessions sustainable engagement by providing a shared language that is neither coercive nor aggressive or even boring but fun and entertaining. Such innovative thinking can further enrich designing HCD practice for policy making especially in agonistic spaces like the BMA-NHS conflict. It can One good example is the Conflict-Resolving Game (CRN, 2016) is a new and challenging alternative to the traditional debate. Instead of the competitively based debate, it uses a non-adversarial approach, with an opportunity for a constructive dialogue, which can be on going. The Conflict-Resolving Game asks participants to build on, and add value to, each other's points. It rewards creative response to another's statement, rather than opposing it. Unlike traditional Debate, the Conflict-Resolving Game turns opposition into co-operation. It teaches participants to respond with well-developed reasoning, and design innovative options to resolve difficult or controversial issues together. In some ways, the Debate and the Game serve similar purposes. Both can investigate facts, focus attention, teach about an issue in depth, and value presentation style, voice projection, appearance, body language and logic. In the Conflict-Resolving Game, the win/win approach is stressed and winners emerge on both sides. Defeat is replaced by a problem-solving partnership (ibid). The approach is innovative, productive and entertaining to retain engagement in a sustainable manner. This paper suggests same principles can be applied within co-designing spaces to explore the BMA-NHS conflict, which persists to date.

4. KEY INSIGHTS:

Innovation teams consisting designers, academics and relevant stakeholders engaging HCD co-design practice for policy making especially in agonistic space, can facilitate designing of sustainable public centered policies.

1. The key is identifying actors (stakeholders) drivers (values) and networks (helpful tools) to develop human centered co design spaces for effective communication that neutralise agonist agendas enough to reach consensus.

2. The notion of co-designing comes extremely useful here as it draws on engagement collective thinking and making hence trust building between debating parties.

3. Creative practice can facilitate generation of spaces that are interesting, innovative, and productive as well as promote empathy for consensus on ideas and issues.

4. Particularly, bringing together diverse stakeholder groups generating more ideas for legislation and policy change introducing rich ethnographic insights into policy development mapping out the whole policy development process whilst retaining a detailed view of different steps (Policy lab, UK).

5. The value of ethnographic methods and design thinking helps develop (re)framings of a social world to an organisation understand what it exists for (Policy Lab, UK).

6. The opportunity is for government to address the complexity of society by understanding people better in the context of their lives, and then changing the focus of policy responses, especially when things are changing. Rupert Gill said there was an appetite for this within the civil service. "We hope to get insights we wouldn't get elsewhere and use them to create interventions we wouldn't otherwise have thought of (Policy lab, UK).

Such co-design session are be important conduct for sustainable policy designing work in UK policy development, and can help avoid conflict retrospectively wastage of time resources and human discomfort.

4.1 LIMITATIONS: (INFORMED BY RESEARCH AND POLICY LAB UK)

1. Not enough practice and research in the area value of Design in Policy making

As knowledge of how and when design adds value to policy development is limited evidence of impact and clear examples are not available. Lessons on the best language to communicate design and policy work, spaces used, gaining endorsement from leadership and ways to support uptake of new methods introduced in training session are also required.

2. Creative practice over taken by traditional data need hinders such initiatives

Policy lab UK identifies this as a barrier to such approaches within policy making. The culture within which policy making takes place is dominated by the need to produce evidence that is statistically valid, the small sample sizes associated with ethnographic research may not be seen as valid in this context.

3. Accountability to the governing bodies

In case of the government Ministers have to give an account to parliament about their policies. Hence they feel more confident about analysis from large data sets. But there is a contradiction here, in that ministers also get first hand access to, and are influenced by, stories from their constituents – a kind of field data with very small samples sizes.

4. Political Dimension of such interventions

Acknowledging the political dimension of such interventions supposes relinquishing the idea that to be political requires making a total break with the existing state of affairs in order to create something absolutely new. Although these barriers exist HCD co-design methods have the attributes of coming such barriers effectively through creative mediation and facilitation.

5. CONCLUSION:

Design is looked upon as a change agent to create a new agonistic approach and to embrace diverse even conflicting political positions amicably. Design could stimulate a public debate and eventually deliver some sense making linked not just to the design profession but also wider public notion of involving designers and the wider community. Design led innovation spaces can help facilitate relationship between the aesthetic dimensions of 'participative', 'collaborative' or 'socially engaged' policymaking and the politics of community education, engagement and empowerment.

Design could have a social value, by introducing more voices to this debate in a democratic manner, which is not fully recognised especially by data driven initiatives. Participatory design can address the need to respond effectively to both side's (organizations) view points democratically. Fun based Co-design methods can facilitate effective engagement of diverse groups. Such co-design spaces can help create explicit communication channels rather than conflict and contribute positively to resolution of issues by clarifying agendas. The BMA-NHS conflict illustrates this claim as: a) the viewpoint of the government seems reasonable and correct to them however this is not the case with the BMA who have opposing ideas, b) The BMA, cannot see the benefit to society, do not see how it could benefit them personally or patients so it does not meet their consent. The role of design in the whole scenario could be to engage stakeholders, identify commonalities and disagreements. This can facilitate negotiation and compromises in creating a future strategy that works for both rather than just arguing with existing legal definitions.

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RECYCLED / DISCARDED / ECO MATERIALS AND COSTUME DESIGN / INSTALLATION

-

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Abstract - The paper is a presentation of theoretic and practical processes and results of applied costume design workshops on the topic of recycling, organized from 2013 to 2015 by the Faculty of Textile Technology, University of Zagreb (Department of Costume Design) (Croatia), Faculty of Applied Arts, Belgrade (Serbia) and Faculty of Design, Associate Member of the University of Primorska in Trzin (Slovenia). Workshop authors were costume designers Ljiljana Petrović, Ivana Bakal and Mateja Benedetti. The brainstorming workshops allow costume designer to choose the best approach to costume design and making. For the process itself it is less important whether costume designer is dealing with well-defined dramaturgic structure within the traditional theatre, or visual theatre grounded in visual elements, i. e. with costume design/installation or object that turns into subject only when placed into a given performance space. The elements of costume construction are recycled materials exclusively, such as old newspapers, plastic materials, wire constructions or rejected objects. In the context of contemporary art and design these works of art send out strong ecological messages, and at the same time reveal the possibility of creating works of art with minimum financial investment, which is an indispensable quality in the everyday routine of costume designers. Recycling and ecology seem like a natural choice of materials and methods in a world overwhelmed by pollution and financial recession. As materials, they need not be seen as "a lesser" evil only, but can also be seen as both, triggers of artistic creativity, and of a different attitude towards society, i. e. environmental protection. The results of works of art created out of eco/recycled/discarded materials are often equal in quality or even more creative and innovative than traditional materials used in traditionally oriented costume design.

costume design / recycling / visual theatre

1. INTRODUCTION

In the spring of 2012 as I was putting together artistic programs for the following year I invited my colleague Silva Kalčić to join me in creating an exhibition on contemporary art and fashion. The exhibition was accompanied by a series of workshops organised in collaboration with eminent professors and artists in the region. After the workshops on costume design, photography and wood weaving were completed an exhibition of student works created in the workshop was opened in the renowned Karas Gallery in Zagreb. Since then Recycling EDU international workshops continue to be held in Zagreb at least once a year, in collaboration with our colleagues, professors at comparable institutions of higher education in the region, with two workshops and costume/installation exhibitions having being held so far, one in Belgrade and one in Ljubljana. Workshop participants were students from the three countries of the region.

Up to the present the Recycling project was realised through exhibitions: in Karas Gallery in November 2013, in Kombank Arthol Gallery in Belgrade in June 2014, in Zagreb City Museum in January 2015, in Slovene Ethnographic Museum in Ljubljana in July and August 2015, and in Karas Gallery in December 2015.

Student works exhibited were of highest aesthetic standards.

The main goal of the workshops is to acquire specialist knowledge and improve creative and individual approach as a supplement to the standard curriculum, i.e. to acquire knowledge beyond formal lectures and workshops within the curriculum, all in collaboration with eminent artists/professors at comparable educational institutions. Through brainstorming innovative creativity is stimulated, followed by construction of a costume/installation using ecological and recycled materials. In addition to raising awareness of different possibilities of creation, awareness of environmental protection and saving of material resources is also raised.

Figure 1: Introductory lecture at the EDU workshop titled "Costume as object / Costume as a composition of signs" led by Ljiljana Petrović, full professor, Zagreb 2013, Photo: Sanja Jakupec

2. METHODOLOGY:

TEXT AS ORIGINATOR OF THE VISUAL, OR VISUAL THEATRE AS ORIGINATOR OF TEXT

The method wherein a text was used to instigate creativity of workshop participants is the most frequent method wherein students themselves choose a text or a character they wish to visualise through a costume or an installation. As opposed to this method, the one based on the visual theatre takes as its starting point an image created by the student/author of the work, and only then refers to the written explication of the work which was previously given a title.

Visual theatre in Peter Weitzner's (2011) theory comprises of object, figure and performance theatre. Its authors were often painters, and only then directors. It gives its creators primarily a visual/artistic dimension through the freedom of artistic expression, and creates a text only in the second instance.

3. BRAINSTORMING IN COSTUME DESIGN WORKSHOPS

The method is based on unconscious, random and unselective creative thinking which can be realised by way of fast sketches, or descriptions of what comes into mind first. By way of this method students can be given a plot of a play, or a character or an artistic template such as a painting or a sculpture, or a mythical character ... or a student can be given to choose from recycled or ecologically acceptable material to create and installation. Such a randomly created installation is then attributed dramaturgy or a performance task by the student/author.

One of the basic hypotheses of the brainstorming method is that there could be nothing wrong, namely, that each and every association an author might have is correct.

4. BRAINSTORMING METHOD AND VISUAL THEATRE

Brainstorming method is a frequent originator of visual theatre since its starting points with the visual artists are often the same – to create an image which initiates action, or to create and idea of action as a starting point of a work of art. Student/artist in a glimpse of consciousness completely unconsciously creates something that is meaningful. In the production phase, through independent choice of techniques and media for the realisation of work, such work can be rid of initial vagueness.

5. OVERVIEW OF COSTUME DESIGN WORKSHOPS

5.1. FIRST EDU WORKSHOP

First costume design workshop was held in Zagreb, at the Faculty of Textile Technology, University of Zagreb from 4 – 7 November 2013 under the title Costume as object / Costume as a composition of signs.

The workshop was led by Professor Ljiljana Petrović, costume designer and full professor at the Faculty of Applied Arts, University of Arts in Belgrade, Serbia. The workshop was based on conceptual and experimental approach to costume-installation design, the relation between costume and body interacting with its environment. Artistically, costume was treated as a communication medium through the use of different innovative expressions in visual art: media mixture, redesign, deconstruction, recycling, aesthetic interventions and manipulation of different materials. The stress was on the dynamic factor of the costume, integration of different elements, the poetry of costume design, its sculpture value, its mutability, harmony/disharmony, costume as provocation in the interior/exterior, costume in the service of dramatic form, narration, stories, costume inspired by an epoch, a film, a painting, an event, a photograph … Story gives meaning to the perception of a presented costume. Students designed the costumes independently from the sketch phase to the end, from different types of recycles fabrics, paper, and paper and metal foil suitable for artistic interventions, as well as manual and machine sawing. The colours were limited to white, cream, black and grey.

Workshop participants were students of art colleges from the three countries of the region.

Figure 2: Works by Katarina Radović, student of Faculty of Applied Arts, University of Arts in Belgrade, Slađana Buljan and Davor Ivanec, students of Faculty of Textile Technology, University of Zagreb, Zagreb 2013, Photo: Sanja Jakupec

Figure 3: "Fire" by Irina Samoborac, student of Faculty of Applied Arts, University of Arts in Belgrade, Zagreb 2013, Photo: Sanja Jakupec

5.2. SECOND EDU WORKSHOP

Parallel to the first workshop in Zagreb at the Faculty of Textile Technology, from 4-5 November 2013 a second costume design workshop was held titled Costume/Environmental/Garbage. The workshop was held by costume designer and associate professor Mateja Benedetti from the Faculty of Design in Trzin, Slovenia.

Through the lecture titled Costume design and ecology in theatre and opera, the presentation of costume design for operas Rusalka, Napoli, Italia and the play Oliver Twist (recycling and industry in theatre) constructed for the Mladinsko Theatre, and through the presentation of her own ecological fashion brand Terra Urbana, the artist led the students for two full days through the art of costume design from discarded materials.

Workshop participants were students from the three countries of the region.

Figure 4: Introductory lecture at the EDU workshop titled "Costume/Environmental/Garbage", led by Mateja Benedetti, Zagreb 2013. Ph

Figure 5: Work by Lara Bernot, student at the Faculty of Design in Trzin, Slovenia, Zagreb 2013, Photo: Sanja Jakupec

Figure 6: Works created in EDU workshops exhibited in Karas Gallery, Zagreb, 2013, Photo: Sanja Jakupec

5.3. THIRD EDU WORKSHOP

Within the scope of EDU workshops from 4 – 8 November 2013 wood weaving workshop was held, namely reed and brushwood were treated as subject and medium of contemporary art, product design and fashion in a workshop titled Modernisation of tradition.

Workshop was held by painter Toni Franović and sculptor Ana Elizabet in collaboration with artisans Vladimir Rumec and Dragutin Francek Matoš. "The manufacturing business of wood weaving in Legrad in Koprivnica – Križevci County used to employ over two hundred people, while there are less than ten today. Five students from the University of Zagreb – from the Academy of Fine Arts and graduate students of costume design from Faculty of Textile Technology – learned the techniques of cutting, processing, drying and weaving of objects based on designs on site. Weaving reed and brushwood in a manufacture way, left unchanged by centuries, one can create new fashion languages, and not only wine decanters, baskets or garden chairs" (Bakal, 2014).

Using natural and ecological materials students mastered wood weaving which has resulted in an interesting diploma creation by a student Aleksandra Koluder. On the other hand, student Anamarija Belamarić created a brushwood installation which was in its basic form, yet from a different material, used by students in the subsequent workshop which was an inter-school collaboration at the University of Zagreb to design costumes/installations for dances in opera project Orfeo ed Euridice.

Workshop participants were students of the Academy of Arts and Faculty of Textile Technology, University of Zagreb.

5.4. COSTUME DESIGN WORKSHOP FOR ORFEO ED EURIDICE

The fourth example are workshops for the production of Orfeo ed Euridice (Christoph Willibald Gluck's opera first performed in 1762) which resulted from a collaboration of different school of the University of Zagreb (Academy of Music, Academy of Dramatic Art, Academy of Fine Arts and Faculty of Textile Technology) which gave the students of Faculty of Textile Technology an opportunity to acquire practical experience essential for work in a professional theatre. The premiere was held in the Vatroslav Lisinski Concert Hall in March 2014, while the workshops were held in the lecture rooms of the Faculty of Textile Technology.

Workshop leader and mentor for students of Faculty of Textile Technology was Ivana Bakal, Ph.D., assistant professor, who teaches Applied Costume Design I and II within the graduate program at the Department of Textile and Clothes Design of the Faculty of Textile Technology. She was assisted by selected staff of the Faculty of Textile Technology.

Thirty-eight students of the Faculty of Textile Technology participated in the workshops. Applied costume design course was envisaged as a synthesis of lectures and practice modelled after the Bauhaus

Figure 7: Wood weaving workshop, reed and brushwood as a subject and medium in contemporary art, product design and fashion, titled "Modernisation of tradition", Legrad, 2013

school and its set design workshops . For many students (of acting, directing, production, costume design, painting, sculpture, graphic art, singing, music etc.) of the University of Zagreb, this was the first encounter with performance art, with the production of an opera, and with the act of collective creation. Over 120 original costumes made of unbleached linen (ecological cotton material) were created for the project, as well as over one hundred papier-mache masks/head pieces made of old newspapers and decorated with cut-outs of old DVDs. Additionally, over one hundred bowler hats were made of recycled sponge. Costumes and installations were of high quality and adapted to the demands of the performance, as well as live of the broadcast on the national television. In exhibition form the project was presented in Bernardo Bernardi Gallery in September 2013 as part of the exhibit of the Public Open University Zagreb, at the Prague Quadrennial (Czechia) in June 2015 as part of the national student selection, and at the Zsolnay Centre in Pecs in July and August 2015 as part of the exhibition Interactions – Contemporary Applied Art of Croatia.

Once exhibited in galleries, works constructed in these workshops get an additional level of meaning with different readings of viewers. As such, as an open work of art, those are ultimately formulated in the eyes of their beholders (Umberto, 1965).

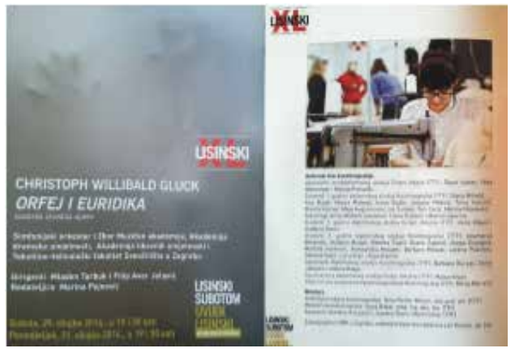

Figure 8: "Orfeo ed Euridice" programme booklet

Figure 9: Sketches for "Orfeo ed Euridice" costumes, mentor Ivana Bakal, doc. dr. art.

Figure 10: Photographs of the performance of "Orfeo ed Euridice", Vatroslav Lisinski Concert Hall, Zagreb, 2014, Photo: Sanja Jakupec and Stela Horvat

6. RESULTS AND CONCLUSION

Work on interactive workshops has resulted in new knowledge and newly acquired skills in costume/installation construction. Thus the students have acquired practical knowledge in the basics of costume production which is essential in contemporary theatre. Equally important is the methodology of work with students and innovative approach applied in workshops, such as brainstorming workshop and transfer of knowledge of alternative procedures from mentors (who transfer their life-long experience) to students who are in the process of being formulated as artists. Elements of costume construction are exclusively recycled materials such as old newspapers, plastic materials, wire constructions or discarded objects. In the context of contemporary art and design these works of art send out strong ecological message, and at the same time reveal the possibility of creating the works of art with minimum financial investment, which is an indispensable quality in everyday routine of costume designers. Recycling and ecology seem like a natural choice of materials and methods in a world overwhelmed by pollution and financial recession. As materials, they need not be seen only as "a lesser" evil, but can also be seen as both, triggers of artistic creativity, and of a different attitude towards society, i. e. environmental protection. The results of works of art created out of eco/recycled/discarded materials are often equal in quality or even more creative and innovative than traditional materials used in traditionally oriented costume design.

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DESIGN FOR SOCIO-ECOLOGICAL RESILIENCE. AN INTERDISCIPLINARY LOOK INTO A STATE-OF-THE-ART ON SUSTAINABLE BEHAVIOURS

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Abstract – In human systems, being resilient means adaptable rather than adapted : being able to explore diverse alternative rather than returning to initial state. Since “every piece of design encodes a hypothesis about human behaviour” (Greenfield, 2013), design discipline is key to understand and influence our energy uses towards more sustainable ones. This paper presents the outlook drawn from an interdisciplinary state-of-the-art study, in order to build a resilience framework based on the design & science nexus. The first finding is that energy uses have become so unconscious that they encourage passive thus massive consumption. Since one does not need to learn how to be a consumer but how to be a practitioner, we take the stance that reinvesting active practices is key to sustainability. This calls for an incremental process, starting with friction to raise awareness and engage participation. Human curiosity naturally stimulates the emergence of prosumers (Toffler, 1980). The challenge is to provide them with a wide panel of open (Simondon, 1958) solutions, multiple tactics (De Certeau, 1990) that will be adaptable to various, unforeseen contexts. This virtuous process goes beyond nudge (Thaler & Sunstein, 2008) to ensure long-term change. It requires interdisciplinary work, taking scientific legitimacy as a starting point to develop a broader vision of innovation and progress enriched by design empathy.

Design & science / Adaptability / Socio-ecological resilience / Tactics / Nudge design

1. THE PARADOX OF ADAPTABILITY

1.1. BIOLOGICALLY ADAPTED OR ADAPTABLE?

The notion of energetic system is complicated to grasp, since energy is neither produced nor consumed, but perpetually converted. Nothing is lost, nothing is created, everything is transformed, but this does not mean that overall balance is neutral. In an uncertain context regarding the future of energy uses, the question of our adaptation and/or adaptability is key. Should we rather be adapted to existing systems, or strive to preserve a range of complementary tools that enlarge our spectrum of action? For species, remaining adaptable expends more energy than being adapted, but in the long term, diversity is a resilience factor.

Figure 1. Adapted vs adaptable… Which one has survived ?

Biologists recognize neotenic characteristics, meaning the retention of juvenile traits, in human species (Bolk, 1926; Gould, 1983). Besides morphology, the extraordinary plasticity of human brain could explain how we have been offsetting the laws of natural selection by cultural adaptations. From a psychological perspective, human neoteny is linked to curiosity and opening up to the world (Lorenz, 1970).

1.2. ADAPTABILITY AND THE HUMAN SYSTEM

But humans are not fully biologically determined, they also shape their environment through their activities and artificial artefacts, causing a massive socioecological impact (Simon, 1969). For large scale systems as well, we argue that the key issue for resilience is adaptability rather than adaptation. It should be clarified that, from a psychological or ecological point of view, resilience can not be defined as in mechanics. As returning to initial state is impossible, being resilient rather means being able to rebuild “on other grounds” (Tisseron, 2013). In this line, socioecological resilience relies on fostering adaptable solutions and paths.

The theories coined by two French philosophers provide a view on what form this shall take. Gilbert Simondon (1958), through the concept of open objects, advocates for devices that withstand the evolution of uses. Being fixable, hackable or improvable along with changing context, they remain adaptable therefore resilient. Considering tactics, Michel De Certeau (1990) focuses on the diversity of effective uses. Contrary to strategy, which is synoptic, unified and projective, tactical ways are multiple and adaptive to contingent situations. In this way, it is counter-productive to prescribe “appropriate” behaviors – rather preserve latitude for individualities, thus stimulating adaptability through diversity and creativity.

2. ENERGETIC FLOW & HUMAN BEHAVIOUR

2.1. THE IMAGINARY OF ENERGY

Since “every piece of design encodes a hypothesis about human behaviour” (Greenfield, 2013), design discipline is key to understand and influence our energy uses towards more sustainable ones. All objects embed values, symbols, biases… delibarately assumed or uncouciously conveyed by their designers (Heschong, 1979). This narrative content piles up into all the artefacts that shape our world, as incorporated imaginary that we inherit and on which we also build.

In particular, since our use of energy is mediated by switches, control devices, interfaces… we expect all these energetic objets to express a techno-imaginary (Balandier, 1996) attached to electricity. To reveal this layer, in-between reality and symbolism, we conducted a state-of-the-art study on objects aimed at visualizing domestic or collective energy consumption, be they consumer goods, intermediary objects (Gaver, 1999) or prospective concepts, both in domestic and collective spaces. All these objects inform and allow users to monitor energy consumption. As energy is invisible in itself, they need to materialize it through tangible representations, often refering to a vernacular imagery. Red color to express heat, graduated bars… Data visualization, digital interfaces and more traditional devices such as switches, all offer concrete representations of energy that evoke the transformation of flows into stocks. Whereas flows are unseizable and infinite, stocks can be grasped and quantified.

Figure 2. Unseizable flow vs quantified stock

But the massive and unconscious use of energy made by our society denotes a very different representation. We are still deep inside the myth of electricity fairy, considering it a due commodity. But energy is no magic and implies costly production and conveying processes. Besides, fossil energy sources will inevitably run out. Neglecting this reality as we do, means closing eyes on entropy, scarcity and vulnerability of the existing system.

Figure 3. Flow consumption vs stock management

This passive consumption attitude towards energy extends in many fields of our lives. We are surrounded by stocks appearing like continuous and infinite flows. Vending machines, phone bundles, streaming media… feed us as invisible umbilical cords. What was meant to be convenient ends up maintaining people into dependencies they are not even aware of. Besides, it depletes everyday experiences, that are worth living in full awareness.

Figure 4. Passive consumption vs ritualised practice

2.2. FROM CONSUMPTION TO PRACTICE

It is important to distinguish between use and practice. “An object we use in a deliberate way opens up a field of know-how by means of which the individual who is deliberately using it is himself transformed, his know-how being itself indeterminately and uniquely open, exploring what is possible” (Stiegler, 2004).

This engagement in practice finds support in neurosciences, in particular thanks to Donald Norman who intensively studied the cognitive and emotional aspects of design. In line with Simondon or De Certeau, he points that interaction involves full body and mind engagement, through visceral, behavioural and reflective levels (Norman, 2013). We take the same stance here that reinvesting active practices is key to a more sustainable energy use.

One does not need to learn how to be a consumer but how to be a practitioner. Sustainable behaviours, just like rituals or know-how, involve mimicry, experience and knowledge. Perpetually calling for challenge (Schaeffer, 2015), human curiosity and desire to explore are natural levers of change. But it takes an incremental learning process to ensure long-term behavioural change. Design tools are relevant to pilot and accompany such transformation.

Following section describes a few means of action towards what we call enlightened automatic sustainable behaviours. First, we take the stance that raising awareness shall come through friction. Then, stimulating engagement requires minimizing the perception of efforts made by shedding light on rewards instead. Finally, opening perception allows to access enriched experiences that are both satisfying and full of sense.

3. A FRAMEWORK FOR DESIGN

3.1. FRICTION

As argued above, we believe that responsible behaviours rely on people’s awareness and choice. Design precisely aims at proposing contextualized and individualized scenarios. On the other hand, designers often use technologies to solve problems and enhance fluidity of experience, even to automation. This apparent contradiction suggests another way for designers : enhance friction “aiming at highlighting and suggesting behavioural alternatives to established routines” (Laschke et al., 2015). Friction can be used as an impulse to change behaviours. This differs from nudge (Thaler & Sunstein, 2008) which scope mainly covers subconscious mechanisms for a short-term impact.

As demonstrated by the so-called IKEA effect (Norton et al., 2012), people value more what they have invested labor in. Hence, conscious and active participation is key to actually change behaviours. For users, this means following a curve from awareness to appropriation and full incorporation, leading to enlightened automatic sustainable behaviours.

3.2. POSITIVITY

Nudge theory proved that incentives are way more efficient than punishments to influence behaviours (Thaler & Sunstein, 2008). It is then more relevant to propose inspiring adventures, to give people tools for action and decision, than to propagate alarming messages that have no empowering impact.

For users who used to rely on frictionless commodity supply, the path towards more responsible behaviour implies efforts. Engagement is subject to a subtle balance, conceded sacrifices will be judged acceptable only if perceived benefices surpass them.

Figure 5. Offset efforts for acceptability

For instance, in the field of energy, we observed an increasing number of people choosing chimneys over convectors to heat their homes. Though making a fire is indeed burdensome, it seems that the practice is more rewarding than just turning a heater on. The satisfaction of engaging in the process offsets its disadvantages. In the end remains a positive balance of the experience – the best way to ensure its renewal.

For designers, this represents an almost operative framework to rely on. The challenge is to enrich experience in its sensorial, emotional and social dimensions, as well as purpose and meaning.

3.3. ENRICHED EXPERIENCE

“An experience is an extraordinary situation developed over time that modifies human being in a conscious and unique way” (Ocnarescu, 2013).

As experience unfolds over time, a satisfying flow needs to articulate the pre- and post- experience (Karapanos et al., 2009). People only engage in actions that are purposeful (pre-) and memorable (post-). Hence, meaningful experiences enhance the value of time, making differed satisfaction appear preferable to urge. To recall previous metaphors, this is what happens when young humans give up breast-feeding and learn to cook their own meals; or when one makes a fire instead of turning the heater on. Rituals transform long and complex experiences, stretching over time in a pleasant way.The dynamics of experience is also about relations (Schaeffer, 2015). While commodities are delivered in a direct and concentric way to still consumers, practice/experience require positioning themselves in a network of actions and relationships.

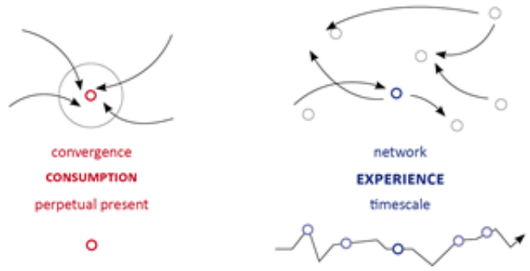

Figure 6. Consumption vs experience : different dynamics

Commodities satisfy our reptilian brain, just like food fulfils hunger. On the contrary, complete experiences appeal to higher dimensions of perception: the limbic brain (collective feeling), the cortex (trust, purpose) and the conscience (overall meaning). As illustrated by the psychiatrist Roland Jouvent, our brain is “horse” and “rider”, primitive and reflective at the same time (Jouvent, 2009). Opening perception allows heightened forms of satisfaction such as social relations, substance and meaning of actions.

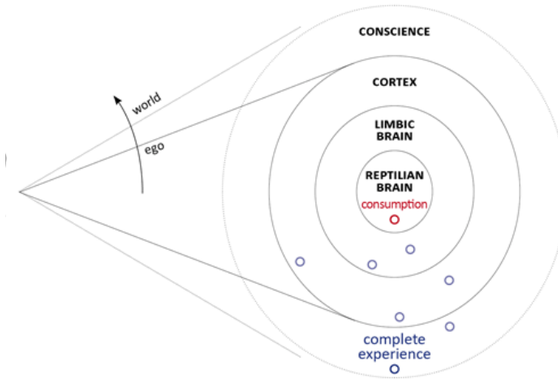

Figure 7. Opening perception

4. CONCLUSION & FURTHER DEVELOPMENTS

From a state-of-the-art study of energetic objects, this interdisciplinary analysis has extended to a framework for dialog and collaboration between designers and scientists, with the aim of fostering sustainable behaviours. Further developments would imply crossing references from thermodynamics and social and human sciences, to nourish a shared vision of socio-ecological resilience.

Furthermore, we take the bet to utilize design as integrator, for a concrete transformative effect. In this line, investigating further how to maintain a “neotenic state” of design artefacts is key. From a design point of view, the challenge is to actualize Simondon’s notion of openness, in an era where design does not only concern artefacts but all the forms of living together.

Acknowledgements: The author wishes to thank Petros Chatzimpiros, Yves D’Angelo, Michèle Descolonges and Christophe Goupil (Laboratoire Interdisciplinaire des Energies de Demain (LIED), Paris Diderot University, Paris, France) and David L’Hôte (Strate School of Design, Sèvres, France), for inspiring conversation and continuing work.

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INTERACTION BETWEEN CREATION OF INNOVATION PROCESS AND DESIGN MANAGEMENT IMPLICATIONS: YOUNG TECH START-UPS IN ANKARA REGION - TURKEY

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ABSTRACT - This paper is elaborating good practices and knowledge in entrepreneurial innovation process and design management implication among young technology Start-up's in Turkey. Young entrepreneurs are generally aware of design management process benefits while developing and communicating technology on the market with the customers. Design management is the power tool in improving performance of the company at all stages of the entrepreneurial process to reach economic benefits and growth. In the last years, researchers in business and academia have begun to study the impact of design management contribution into entrepreneurial innovation process among Start-up's and fast growing companies. For this reason, there was selected a group of 60 tech Start-up's among 10 different Techno-parks of Universities in Ankara region and examine with mix research methods of qualitative questionnaire and interview to find out the level of integration of design management activities within each company while co-creating and communicating innovative technology, prototyping with their clients and customers in the problem-solving process. Main point is how much are young entrepreneurs aware of design management advantages while introducing and practicing entrepreneurial innovation process for technology. Most of tech start-ups are endorsed own and unique approach to design management process. Therefore, this paper focus and discussing common key factors of design management activities which are typical for successful tech Start-ups in Ankara region and reflect certain entrepreneurial culture and managerial style toward facilitating innovative technologies.

KEY WORDS: Design management, Entrepreneurial process, Tech Start-up's, Innovation process, Innovative technologies, Managerial style.

1. DESIGN MANAGEMENT AND START-UPS INNOVATION PROCESS

Design management has become an important part of successful business management, especially in the business development process phase of the Start-up when depends on innovative products and/or services that reaches consumers and the wider market.

Design and designers are associated with creativity, while management and business are associated with innovation. While creativity is defined as the process that results in ideas that are novel, innovation is defined as the process that creates value to both the business and the consumer. The conventional view on design management has essentially been the same as in project management.

At this stage, it is acknowledged that creativity is a necessary, and probably the most important, factor in innovation process, in many ways experts see innovation as a management function whilst creativity is seen as a 'creative' function itself (Keely, De Bes 2013). This would lead to a conclusion that creativity need not be managed and that design management is meant to manage innovation as a function. Isaksen & Akkermans (2011). A Leadership Lever for Innovation state that 'Although creativity and innovation are distinct constructs, there is an emerging consensus that creativity has to do with the generating and communicating of meaningful new ideas and connections, and innovation has more to do with the use and implementation of them'. With specific reference to design, in its various forms from graphic design to industrial design, interior design, interaction design, service design and so on, the role of creativity and innovation need to be defined in the back drop of acknowledged definitions of design and design management.

A Start-up which facilitate design management, has many benefits on the market. Such a company can improve innovation process, customer experiences, makes more stronger brand name, achives higher visibility and can improve performance effeciency at all stages of the process. Finally, the company with DM strategy is able to make higher profit and reaches fast growth. Design oriented companies stimulate culture of design thinking system among employees. We define design thinking as a process for practical, creative resolution of problems or issues that looks for improved and innovative future results. Design management is becoming a commercial necessity, as it enables a company to successfully deploy design for innovation purposes, stay in line with the market needs, solve the problems of customers, and realize benefit. When design management is an explicit part of management processes, it will have greater impact on business performance and help secure a market position for the long term (Berginc, 2014).

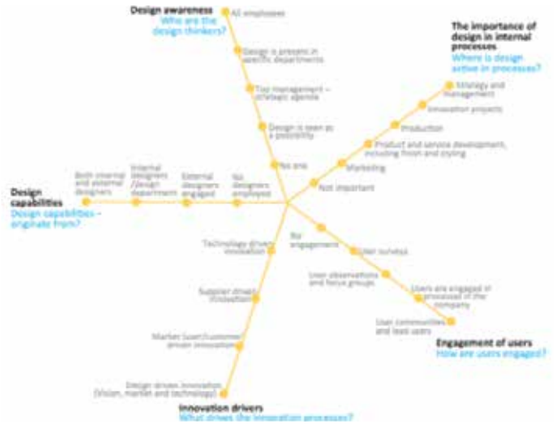

Figure 1: Network of factors which support design management process within the company
Source: Storvang et (al) 2014.

Techno-park Start-ups' practices in Turkey are relatively new and when compared to the practices of the developed countries, they are still at the early stage of development. Similar interpretation can be made for the innovative Start-ups that operate within the techno-parks. Techno-parks are the places where innovative entrepreneurs prevail and create dynamic, fast growing and scalable Start-ups.

2. METHODOLOGY OF RESEARCH

This research was carried out by using a face to face interview method with 60 Start-ups founders operating in Ankara Techno parks determined by simple random sampling method in August and September 2016. For this purpose, it was prepared a qualitative questionnaire of the research which consisted of closed-ended in sum 25 questions prepared by the author. Before the interviews, appointments were made by telephone, then the interviews were conducted. Collected data were analysed by means of excel and other statistical programmes and are partly presented in this paper.

For the surveyed group, it was previously organized a short seminar where we presented the purpose of survey and design management process explanation.

The design management process had been explained for the next stages:

1. No use of design. In such businesses, design is a hidden aspect of product development. It is generally the task of non-design disciplines to develop the functionality and aesthetics of a product.

2. Design as styling. Design is seen as the final styling of a product. The task may or may not be undertaken by professional designers.

3. Design as process. Design is not an end result, but rather a work method adopted at an early stage of product development and requiring the involvement of several different disciplines, including design.

4.Design as strategy. Design has been adopted as a central aspect of the Start-up base, used as a means of encouraging innovation, (Ramlau & Melander, 2004).

Further on, the objective of the research was to analyse the status and needs of technology-intensive start-up companies and the way they innovate. Generally, each measuring Start-up should be on the market at least three years. All of Start-ups are part of the entrepreneurship ecosystem of the Ankara. The aim of the research was to find out different approaches in developing innovations and produce important recommendations to improve business support to innovate and to improve ecosystem in Ankara for technology-focused Start-ups being established by young entrepreneurs.

Most of the participants (53.3%) have undergraduate degrees, 35% have graduate, 10% have doctoral, and 1.7% have high school level education.

3. RESULTS AND DISCUSSION

Education level of the target group of young Start-ups: 16% computer engineering, 16% mechanical engineering, 12% electrical engineering, 5% chemistry and 51% other branches (garden plants, biochemistry, biology, biomedical, biotech, industrial engineering, pharmacology, physics, physics engineering, space technology and aviation, civil engineering, business management, statistics, geophysical engineering, chemistry, mining engineering, mathematics, mechatronics, architecture, molecular biology and genetics, software engineering, agricultural engineering).

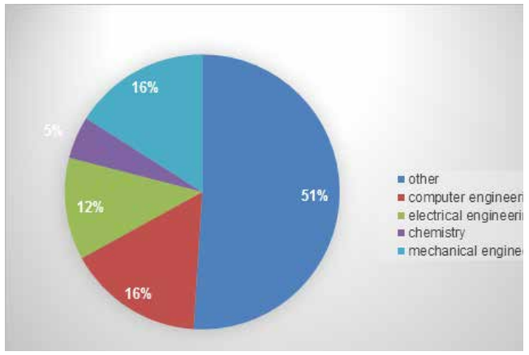

Figure 2: Academic background of entrepreneurs

The research showed that the average number of employees working full-time in technology-focused companies established by young entrepreneurs is 4,4 employees. The Information Technologies sector has the highest number of average employees. Figure 3 below shows companies according to the number of founders; single person companies 48.3%, companies with 2 founders 38.3%, companies with 3 founders 8.3%, and companies with 4 founders account for 5%.

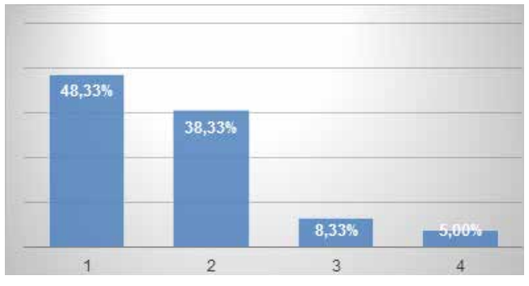

Figure 3: Founder number of the initiatives

Figure 4 shows the participants' position within the company; 77% general manager, 17% co-founder, and 6% others (administrative affairs supervisor, operations officer, project manager, manager responsible for technology).

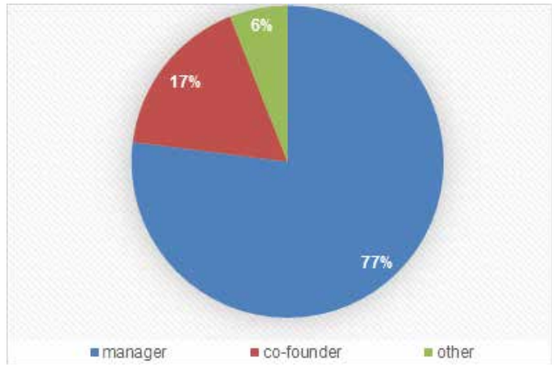

Figure 4: Entrepreneurs' status/positions within the company

Table 1 shows the distribution of participant's answers to the question "Before setting up your company did you have any industry/business experience?". While 62.5% of the entrepreneurs have corporate business experience, and 21.4% have university staff/instructor experience, 19.6% of the participants do not have any job experience.

	Percentage
Corporate business	62.5%
University staff / instructor	21.4%
No experience	19.6%
Family business	8.9%
Public	7.1%
Research institute	3.6%

Table 1: Experience level before setting up a company

The distribution of the sectors in which the companies operate is given in Figure 5 below; 33% information and communication technologies, 13% medical / pharmaceutical, 12% production, 10% defense and 31% other sectors.

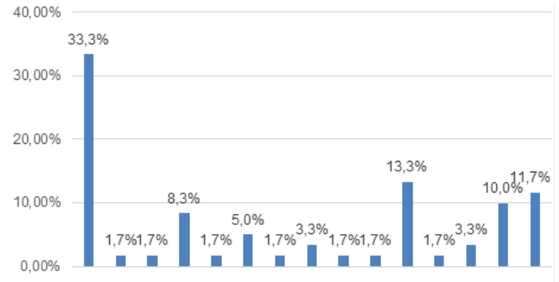

Figure 5: Sectors in which the companies operate

The participants' main motives for establishing their company and their percentages are shown in Table 2 below. While 91.5% of young entrepreneurs had a new business idea and achievement motivation, 45.8% had the motivation to specialise in their field by innovating. Criteria such as family business, unemployment, improving life style, having an agreement, with a 3.4% ratio, are not regarded as effective motivations for entrepreneurs.

	Percentage
I want to be successful with my new business idea	91.5%
I want to specialise in the technology field I have chosen and innovating	45.8%
Family business	3.4%
The idea has come from my teammates	3.4%
I was unemployed and I wanted to change my lifestyle	3.4%

Table 2: Main motives for establishing the company

Obstacles to the growth of the companies described by the participants and their percent distribution are presented in Table 3. The major deficiency for the entrepreneur is the challenges in accessing finance with a 70.7% ratio. After that, other important shortcomings are with 43.1% delays in the payment of public funds, and with 37.9% the lack of public and tax incentives.

	Percentage
Difficulties in accessing finance	70.7%
Delays in the payment of public funds	43.1%
The lack of public and tax incentives	37.9%
Access to innovative team members, staff	32.8%
Lack of supportive legislation	31.0%
Strong competition	20.7%
The lack of expertise	13.8%
My company's current low image	5.2%

Table 3: Major obstacles to the growth of the company

Figure 6 shows that 96.7% of young entrepreneurs think that their company is currently in an innovative and entrepreneurial development growth stage, and 3.3% gives the answer "I do not know".

Figure 6: Company's current status of being at the stage of innovative and entrepreneurial growth stage

Figure 7 shows that 94.8% of the participants who replied to the question "Do you think that your company is currently introducing and practice design management process for innovating new technologies?" with the answer "Yes", think they are innovative in the area of production (product or service), and 5.2% are not so sure and ready yet.

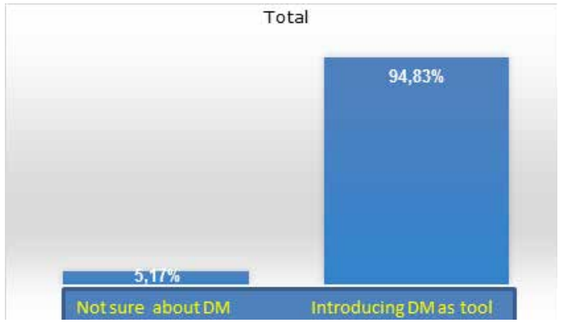

Figure 7: The design management consideration for new innovative technologies

Design management process was previously discussed with target group in preliminary few hours survey training. Majority of them were already using design thinking method of work as styling or on higher level as design management process to produce innovative product and technologies. Majority of them have been already practicing different problem solving techniques to generate innovations. Finally, they consider lots of attention to engage creative and innovative team members. They think that design management has many alternatives such as innovative culture, entrepreneurial culture, intrapreneuring, project innovation lab, hub and similarly.

CONSLUSIONS

Kootstra (2009) claims that design driven businesses are better innovators than other businesses. Kootstra claims that design driven businesses are better innovators than other businesses. Various studies have demonstrated that design can be the major force for innovation, influencing innovation on different levels (e.g. Montana et al., 2007; Perks et al., 2005). But only as well managed process can design unleash its full potential and enable businesses to use design for innovation (Knošková, 2011). However, there is a very strong correlation between entrepreneurship DM, designer thinking and design leadership, as a form of design-entrepreneurial management in Start-ups, which are part of the ecosystem. DM is particularly popular among tech entrepreneurs, as a result of a lack of resources and investments, Start-ups use DM as a competitive tool of promoting creative and innovative solutions to launch new technology products on the market. Every company is using it's own way to promote the level of creativity and design process. Important is that such a company adopt the design management culture as process on high level and communicate such a strategy with the customers, clients and suppliers.

The survey has shown that majority of tech Start-ups' which are the part of Techno-parks in Ankara are generally aware of benefits to use design management as the process to improve innovation level of their product, no matter that their process is not conducted in systematic way as the steps model of DM rocommend (Kootstra, 2009). Nevertheless, all Start-ups are in the eraly stage of growth phase and have in coming period enough time to improve their methods of DM appoach, if they consider DM method as part of enrepreneurial culture of the company.

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RURAL TRADITIONAL ARCHITECTURE - A POTENTIAL FOR RURAL DEVELOPMENT IN KOSOVO

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Abstract - Difficult economic situation in Kosovo and small chance for accelerated development of the villages indicates the urgent need for finding options that are effective for providing immediate results. Identification of potentials in Kosovar villages and their role in the development of entire Kosovo society is a very important issue. Sustainable development of agriculture and tourism in the villages based on traditional architecture and indigenous values of vernacular architecture in villages and traditional organization of rural settlements can be of great importance to the rural area is quite impressive for the entire Kosovo society. The rich natural and cultural resources in Kosovo are an excellent basis for the development of agriculture and the development of massive and other alternative types of tourism can complete the entire activity, the purpose of economic development in rural settlements. Previous development of indigenous architecture in Kosovo, the identification of potential and determining the context of sustainable development is imperative for the development of Kosovo society.

Keywords: village, resources, sustainability, bioclimatic architecture, vernacular architecture, authentic values of Kosovo

1. INTRODUCTION

The issue of defining the strategic principles for sustainable life based on international trends of bioclimatic architecture and especially on the experience of local builders. Identification of natural and cultural potentials and finding a mechanism for the development of the concept of sustainable architecture of the rural areas can be considered as a starting point for planning future steps in the process of architectural design in accordance with tradition.

The conclusion of the up to date development architecture villages in Kosovo, defining resources and identifying the context of sustainable development are of great importance for the development of Kosovo society.

The experiences show that so far autochthonous cultural development suggests no rational consumption and the saving philosophy in all the aspects to include field of energy efficiency as well.

2. DEVELOPMENT OF RURAL SETTLEMENTS IN KOSOVO

As it usually happened in the region, the village and its general development is neglected in all aspects. Our rural areas during the second half of the twentieth century are shaped based on paradigm of confrontation between town and village, industrialization and land reclamation, social and private property, large arrears/conglomerates and small insignificant individual economies. This paradigm excluded, or in other words neglected integral and poli-sectorial/ multi-sectorial in comparison to the city of complementary development. This

subsequently has impoverished rural resources that are now hindering the implementation of new economically sustainable rural development models.

Even though there was no official census since 1992, the group age structure of the population is largely young, so that more than 50% of the population younger than 15 years. The high population growth rate even though declining, still remains the highest in the region (16% annually) adding to the issue of development. “Rural populations generally live in households with a large number of members (average 7-8 per person), gathered in family groups.”

“For some rural households (about 20%), the main source of income (in cash) comes from members who are employed (in the public or private sector), mainly in the cities. They work in the cities and bring their salaries back to the village. Some households depend on money sent to them by their members who work away from home or abroad, and for some families, especially in remote areas, funding of social security or pensions are the main source of income. For most rural households, however, especially in remote villages, the main economic activity is agriculture with regard to the generation of income and / or the provision of healthy food. “ . Many of these settlements are isolated and often with no appropriate access to public transport and infrastructure as well as far from basic services such as schools, clinics and others utilities.

2.1. SOCIAL DEVELOPMENT OF THE RURAL SETTLEMENTS

It is estimated that in Kosovo the number of employees counts approximately 260 000 people, of which almost half in the private sector, while the rest in the public sector and various international and non-governmental organizations. A considerable number of employees are within the informal sector . About 40% of Kosovo citizens are unemployed (youth unemployment is estimated at between 50% and 75%), while 45% live below the poverty line.”

Poor financial situation in health care, inadequate management, few and poor state of health facilities, long distances, the transition to the inadequate health care development to private sector, poor monitoring of the development of technology and science in Europe and the world are the biggest reasons for the generally poor state of health and health care of population that is considered the worst in the entire South-East Europe. Rural areas are poorly covered by health care are due to the large distance of health facilities.

Kosovo has a fairly large number of students in schools (over 430,000 accommodated in 959 primary and 80 secondary schools) which is twice as high in comparison with the countries of the former Yugoslavia. While the number of students in a school in Kosovo is 413, in Serbia is 217 and Croatia 214 . In rural areas, the students due to the poor infrastructure, long distances and economic difficulties often quit further education.

A large number of children and often a complex family structure (a few couples in one household) where members sometimes reaches three-digit number, affect the organization of the family household. Family relationships in some cases are reminiscent to the “kibbutz democracy” as in the settlements Kibbutz in Israel , where one or more family members employed mostly abroad and send money to family, while others take care of the family and farm in the countryside.

RURAL POTENTIALS IN KOSOVO

2.2. NATURAL RESOURCES

Natural resources in Kosovo are representing a good basis for the development of agriculture and especially tourism (picture 1, 2, 4 and 5) that in correlation with an adequate accommodation may directly contribute to economic development of the village.

Sl.1. Mountains „Albanian Alps“, Istog

Sl.2. Village environment, Junik

Kosovo is divided into five specific tourist regions of which the Albanian Alps (Cursed Mountains) and Sharri region depicted by an extremely wealthy nature . These two regions enable primarily development of winter tourism, as well as other forms of tourism. In particular natural resource can be included and the following two tourist attractions: The marble caves and waterfalls of River Mirusha. In addition to winter tourism, Kosovo has appropriate conditions for the development of the rehabilitation of tourism. Two natural Thermal Springs (Kllokot spa and Peja Thermal spa) for decades have successfully provided rehabilitation services.

Sl.3. Division of Kosovo territory into regions

For those natural resources, of crucial importance are the road infrastructure and transport connections. The most developed type of traffic is road traffic that experienced the greatest development during the last few years. Road infrastructure has improved in the entire territory of Kosovo, but a special development is considered a successfully started of the highway construction of the first 40 km Vrmnica (border with Albania) - Merdare (border with Serbia). Air traffic has also developed with “international airport in Pristina, which has been proclaimed several times by the International Organization for civilian traffic as the most successful mean of transportation in the category of up to 1 million passengers.”

The potential development of Alternative Tourism such as: recreation in nature, cultural tourism, religious tourism, rural tourism, agro-tourism and tourism of special interest (patriotic tourism, post-war tourism, diaspora, etc.) are also of a great importance.

On the other hand agriculture of the last decades is gradually losing pace with current trends in Europe and the world. Although, two large valleys, especially the Dukagjini Valley provides conditions for an excellent resource for the agricultural development. Fruit growing, especially viticulture in the south-eastern part of Kosovo are quite productive which enabled production of domestic alcoholic drinks such as brandy, pear brandy, apple brandy, quince and especially wine. In good resources one may include herbs, animal husbandry and beekeeping.

Sl.4. Waterfall Mirushe (source: Internet) Sl.5. Peja Thermal Spring (source: Internet)

2.3. CULTURAL POTENTIAL

Kosovo's cultural heritage can be considered as very rich. A number of archaeological sites, churches, mosques, baths, covered markets, the bazaar; bridges are an excellent resource for the development of cultural tourism (Fig. 6-8, 11, 14 and 16). These potentials, although largely devastated, somehow are preserved from complete demolition in rural areas. In the urban areas the original architecture is largely devastated, while in some cases there was a complete collapse either due to the negligence or due to malicious policy.

Sl.6. Hamam, Prizren

Sl.7 St.Peter Church, Zvečan

Sl.8. Potkalaja, Prizren

The traditional rural architecture is characterized by functional simplicity and constructive rationality that makes its design very clear and expressive, "Using the long stacked experience emanating from a deep understanding of the natural environment - built from natural materials found in situ with the accomplished physical qualities, structural assemblies and the specific details proven by its purposefulness and physical endurance over the time, many of these building achieved the attributes of architecture .

Despite the fact that it was not build by an architect, but non-professional, uneducated ordinary rural craftsman, the farmhouse is carefully located on the sunny locations, in vicinity of the water source and rationally constructed to correspond to specific requirements in each of the cases (picture 8).

The typical farmhouse is distinguished by the following characteristics (image 9-15):

• Simple outlines on the basis and the section

• A simple pitched roof (gabled or hipped)

• Large overhanging eaves - whenever built material allows

• Solid visible Foundation

• the use of local materials

• Harmonious compositions of the facade and perfect integration with the environment

Depending on the geographical and morphological characteristics, the village residential house developed into several types with specific compositional, functional and aesthetic features which mostly date from the eighteenth and nineteenth centuries. In his book "Kulla shqiptare" by Fejaz Drančoli, it was emphasized that in the rural areas of Kosovo, six types of residential buildings are identified.

2.3.1. HOUSE MADE OF WOODEN BEAMS (WOODEN COTTAGE)

House of wooden beams or "shepherd's cottage" is one of the types of houses that are still found in the high mountain areas of Albanian Alps (Figure 9). It is built of wooden beams, with stone foundation and consists of one single room only. There is an information that in some cases this type of house is found build with two separate rooms as well with the first serving and dwelling room with fireplace while the other as a bedroom.

image 9. Wooden timbers cottage (source: Fejaz Drančolli, „Kulla shqiptare")

2.3.2. HOUSE WITH PORTICO

House with portico or "house with a balcony," as it is often called in the local population (Figure 10), is very present in Drenica, Lap and Lipjan surrounding area. Its main characteristic is the portico itself (balcony), wherefrom this type of rural house got its name. The ground floor is divided into two spaces, one used for sheltering livestock, while the other rooms intended for a fireplace and food storage. The first floor has much more dynamic organization characterized by bedrooms in which, almost necessarily, a fireplace (chimney) is placed.

Image 10. House with portico (source: Fejaz Drančolli, „Kulla shqiptare")

Sl.11. House with portico, Mon Zhubi, Gjakove

2.3.3. HOUSE WITH AN OPEN PORCH

This type of village house is the most abundant and is located almost throughout the territory of Kosovo, mainly in the plains, but also on the hilly areas (Figure 12). The main feature of this house is an open porch . Basically the facility is ground floored and has several rooms accessed from outside out of which one is larger and serves as the guests room (the Chamber of men).

2.3.4. GROUND FLOOR HOUSE WITH A PORCH – AREA OF THE GUEST ROOM

This type of single space house is still located in the southern part of Kosovo (Kacanik and Ferizaj); while in Podujevo its main purpose is to accommodate the visitors. This facility is usually located/built along the wall of the residential house.

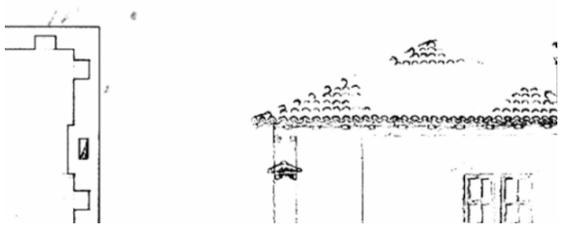


image 12. Ground floor house with porch (source: Fejaz Drančolli, „Kulla shqiptare")

2.3.5. HOUSE WITH AN ATTICS

House with attics (Figure 13) is perhaps one of the most valuable specimens of the house with a clearly articulated function and inventively combined construction of stone and wood. In the present example of this type in Radavc-Peje, one can clearly recognize clearly divided function of housing, economic part and the area for reception of guests. Each of these facilities has a separate access. The economic part has an access directly from the courtyard while a guest room on the first floor has an access via the external staircase.

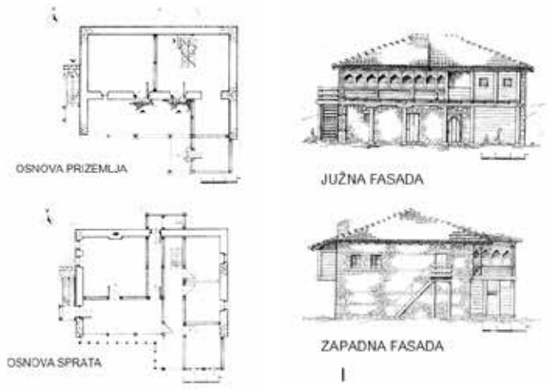


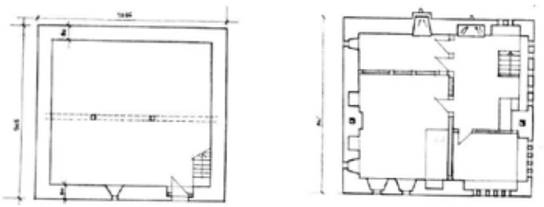
Image 13. House with attics (source: Fejaz Drančolli, „Kulla shqiptare")

2.3.6. FORTIFIED STONE HOUSE - "KULA"

While previous types of the rural residential architecture can be found elsewhere in the other countries in Balkans, the type of the fortified stone houses, with its characteristics represents a genuine type bound solely for the territory of Kosovo (Figure 15)

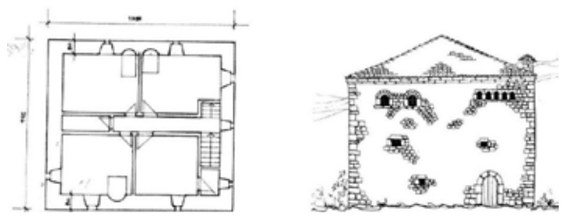
Sl.14. Stone Manson of Nezir Peshi Junik Pepsh (source: the Author)

Originality consists also in its functional aspect, composition and material (Fig. 14). Although this type can be found in many different forms, most often it is built as a two-level or three-level structure. Within this variety of residential house, the function is clearly divided: entering point and the economical part in the ground floor, dwelling part on the first floor, while guest rooms on the second floor with a separate access (via staircase).



OSNOVA PRIZEMLJA
OSNOVA 1. SPRATA

Image 15a. Fortified stone made house (source: Fejaz Drančolli, „Kulla shqiptare")



OSNOVA 2. SPRATA
FASADA

Image 15b. Fortified stone made house (source: Fejaz Drančolli, „Kulla shqiptare")

2.3.7. ARCHITECTURE OF THE MODERN DAY VILLAGE

The dynamics of the rapid economic development, modernization of living standard and the growing presence of consumer's awareness led to the loss of sense and sensibility for the beauty of traditional architecture. Great financial power of individuals, new materials and modern construction techniques are misleading the residents of rural settlements, and even more the architects and civil engineers. Such trend in Kosovo began during the '70s, while it reaches the momentum in the last ten years with certain characteristics:

- Massive and hazardous constructions

- "Competition" on who will build a bigger house

- Superficial and inadequate access of the architects to the is sue of building houses in the village compared to the culture of utilized space.

- Negligence of the rural development and the lack of adequate strategies.

Copy-making of the urban residential house in the rural environment (16) destroyed the sense of an old builder for a rational construction. Despite the evident development during the last decade, with an exception of a higher grade of hygiene, today's country house does not correspond to modern principles of rural residential houses which should be built be it in a function of sustainable construction or in terms of sustainable rural development.

Migration from rural to urban areas, especially irrational investment of residents whom are temporarily dislocated and working abroad, in some cases have resulted in the constructions of a surplus of housing and living space.

Sl.16. New village residential architecture, Miloševo

3. CONTEXT OF THE SUSTAINBALE LIVING

Irrationality of humans to natural regenerating resources (food, water, forests and living beings in general) and in particular towards the dilapidated resources (oil, gas, coal and minerals) have compromised the existence of life on the so far only liveable planet – the Earth .

Careless industrial development and great air pollution have become a major challenge for the planet Earth and its global warming. The crisis that prevails in recent years in the world as well as world politics upon eco-principles point to the need for a deeper analysis of the current state of the elements of sustainability staring from the village level, then to the relevant representative sample of households, through pre-defined parameters. Analysis made on such principle on natural, economic, human and physical resources, provide picture of the current situation, its causes and consequences, and while assist to define the level of sustainability, capacity and potential directions of development. Further development and transformation of the village, household or yard as a spatial framework of the household and the environment where such processes are developing are presenting basis for the future development of the village. The rich forestry and pasture complexes, favourable conditions for agriculture and animal husbandry, pleasant climate, and other natural, environmental and cultural values should be the main components of a "Pure" and sustainable development of the rural settlements in Kosovo.

Sl.16. daily living in Villages, „Sheep shearing", and Šar mountains (source: CoE, Pristina)

While agriculture and livestock guarantee the continuity of the genuine, tourism from the economic aspect may cause other issues. "In the context of saving the village from the abandonment process, the question raises whether tourism is actually a viable model for its development and preservation? From the aspect of the economy, affirmative, it is. From the aspect of preservation of the identity of the village - partly, while in terms of environmental sustainability, which is enormously propagated in the case of villages, and sustainability of the very rural communities, eco-tourism and ethno-tourism are not ideal models for sustainability of the village. The future of rural areas can be seen more in the transformation of villages into the eco-village - in its sociological, economic and environmental terms."

The elements of the natural and cultural heritage should also be seen as a possible potential for economic development and improvement of the rural areas. Necessary inventory of the environmental and cultural heritage and its classification are the first emergency procedures with an aim to above all,

conduct its preservation. The abundant resources of natural and cultural heritage in Kosovo should be cautiously considered as options for rural development given that their inadequate use in the development of tourism can seriously disrupt the ecological balance of rural areas.

4.1. TRANSFORMATION OF THE EXISTING BUILT CAPACITY

Unplanned development of rural settlements has caused irrational construction of housing. Excess housing space, designed for residents who live in Western Europe and the United States appears sometimes in the form of independent houses (often abandoned) and represents one of the resources of the built environment. By identifying such built resources and having small interventions on them, one could achieve to transform such capacities for rental or even develop a business, such as tourism and hotelier, and offer it to the market for sale or rent.

This or any other form of the built environment, used in such manner may contribute to revival of the rural life be it from economic or social aspect.

3.1.1. ENGAGING CURRENT RESIDENTIAL CAPACITIES FOR LIVING

Unused dwelling space in the villages is representing one of the resources of the built environment, which in its present form of underutilization is a burden. The fact that in Kosovo there is usually a small distance between the dwelling house in the village and workplace in the city can to some extend be considered an advantage. On the other hand the price of housing in urban areas is dramatically higher than the price in rural areas, which makes the idea of living in the village while working downtowns very acceptable. In addition to this, life in the countryside is less polluted, peaceful and safer from some aspects, which adds to making village an interesting place to live. In some ways, the interest in a different form of housing other than in cities is confirmed by the emergence of entirely new settlements in suburban zones (settlement Marigona, Fortes, etc.) that unfortunately, with current shape is neither a form of city dwellings nor a form of countryside dwelling housings.

3.1.2. AGRICULTURAL AND LIVESTOCK BREEDING DEVELOPMENT

The quickest and most effective way of developing the villages without doubt is the development of agriculture and livestock breeding (fig.16). Moreover, if properly approached to this very important economic sector, it may instigate other development processes in the countryside. “Clean food” organic without pesticides, livestock farming with natural food, and other, are very important for the development of, for example, rural tourism and especially eco-tourism.

3.1.3. DEVELOPMENT OF THE RURAL TOURISM

Rural tourism with many positive economic and social effects can be seen as a tool for rural development and elimination of poverty, especially in the long term.

The un-touched nature, healthy food, agricultural activities and original daily life in the countryside are increasingly becoming the need for people to rest and escape from an everyday city life full of stress.

3.2. THE NECESSARY INTERVENTIONS TO CREATE FAVOURABLE CONDITIONS FOR THE DEVELOPMENT OF RURAL AREAS

3.2.1. EDUCATION AND TRAINING OF THE LOCAL POPULATION

The essential elements of generating basic settings of architectural conceptualization based on spatial redefinition of contented and spatial concept of rural architecture in Kosovo are very complex and require a comprehensive approach. In such cases, education is a must in order to preserve the positive attributes such as tradition, family customs and a large number of young people who needs to be kept in the countryside and who should initiate the development of the village as a whole. Hence it is necessary that the education approaches, to change the attitude of society towards the female gender as one of the essential conditions of integrated rural development, just as much more creative approach to the organization of the rural households, which should become one of the axis of villages development.

3.2.2. IMPROVING THE EXISTING INFRASTRUCTURE

The biggest issue in the whole issue of rural development in the broader context is the infrastructure (rural roads, water and sewage systems, heating, etc.) just as much as residential buildings.

Often there is a lack of basic installations, and when there are, they are of insufficient capacity. Therefore, to be able to do anything, the problem of infrastructure has to be resolved at the outset. Although this issue is without doubt the greatest, interests for its sooner resolution is expressed by foreign donors and development banks as well as with the government itself for what some funds could be directed.

To raise the culture of living in rural areas are needed beyond the intervention starting from an ordinary education, training and workshops from one side and concrete investments within rural residential buildings.

3.2.3. REHABILITATION OF THE OLD COUNTRYSIDE HOUSES

New trends of the integrated approach to the rehabilitation of cultural heritage and rehabilitation of the principles of bioclimatic architecture should be imperative in the transformation of old village houses and ancillary facilities in the countryside. Particular attention should be paid to mountain cottages that can be successfully transformed into very attractive apartments for foreign tourists. Such revitalized houses could be offered to the domestic and foreign tourists as an opportunity to familiarize with the culture of housing in Kosovo, dietary culture and the manner households and rural life is organized in general.

Old apartment buildings described in Chapter 3 and 4 indicate the extraordinary possibility of revitalization of almost all types of old houses for tourism. Clear division of residential building for family and guestrooms is a perfect ground for transformation of same facilities for tourists, provided that the future guests, unlike the past, have to pay for all the services offered during their stay. The common guest’s room, chambers for men, are often large enough to be converted into a small restaurant, which can be used by tourists and residents of the village.

3.2.4. IMPROVING LIVING CONDITIONS

Rural development is closely linked to the development of common standards in the countryside. Unimaginable is any kind of development (social, economic, etc.) if this does not contain the development of housing culture. In this direction in suburban rural areas, economic development has contributed to improving living conditions, which may not be the case to remote villages. It is necessary to divide but in a very functional manner the residential part from the part livestock is hold. The division between “clean” and “unclean” part of the household, the introduction of sanitary facilities in the transition from “impure” in the “clean” part of the household head is important to contribute to the improvement of sanitary and hygienic living conditions of the respective habitants. Other very important substantive elements of housing, starting from the installation - electricity, water, wastewater, heating, and up to high quality solutions of sanitary facilities, kitchen and other complementary spaces would contribute to quality standard in the rural life.

3.2.5. IMPROVING SERVICES

The development of public transport is one of the most important preconditions for the implementation of rural development policy in particular the transformation of the rural residential architecture. Public transport and roads are interdependent and contemplate each other.

For the qualitative life in the rural areas all other necessary services (security, administration, health, educational, cultural, etc.) should be well-organized.

3.3. THE FUTURE OF THE VILLAGES ACCORDING TO THE PRINCIPLES OF THE BIOCLIMATIC ARCHITECTURE

After the first major energy crisis (1973), many countries have regained consciousness and joined the new alternative energies, energies that are not produced from fossil sources (oil, coal and gas). Initially, solar energy is the first and main orientation in the strategies of these countries, while soon after other forms of renewable energy resources like geothermal energy or of bio-mass. The modalities of utilizing solar energy in architecture (passive and active use of solar energy) soon produced fantastic results. Today, through solar energy and other alternative energies, the buildings have managed to produce all the needed energy. (“Zero energy buildings”) or even more, the houses that produce as much as 40% more energy than is needed (“Living House” of the international Bureau - AART architects) .

3.3.1. PRINCIPLES OF BIOCLIMATIC ARCHITECTURE AT VERNACULAR RURAL BUILDINGS

The exploitation of the gifts of nature is found at other creatures as well. “As a prominent examples are the Persian dogs, which position of two openings in their shelter, always placed below the top, instinctively and properly adjusts as per pressure differences in container formed by prevailing streams and thermal upheave, while termites achieve effect by the same design that looks completely different” (see pic.17)

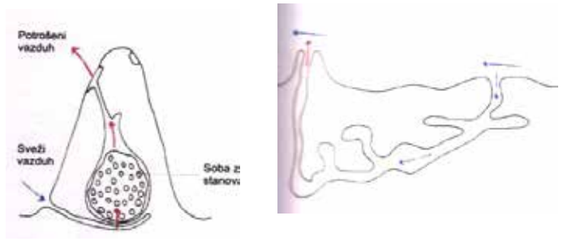


Image 17. Natural ventilation of the shelter of Persian dog and termite
(Source: Klaus Danijels, „Technology of ecological building“)

The current energy situation, technological developments and scientific knowledge on bioclimatic architecture in no case can be compared. While, on the other hand, the error would be even greater if the information collected for centuries by ancient craftsmen is neglected based on approach “whatever is old (and domestic) does not apply.” If we care-

fully analyse the traditional architecture some elements that not even great thinkers and modern day experts propagate in influential institutions, can be revealed. The original approach to the values of such traditional architecture we may find in the scientific work of Prof. Dr. Hadrović "bioclimatic architecture – Searching path towards the heaven", in which the principles of bioclimatic architecture found in the deeds of the vernacular authors are more appropriate, better understood, and that's why such architecture is easier to deploy in a daily use (see pic.18).

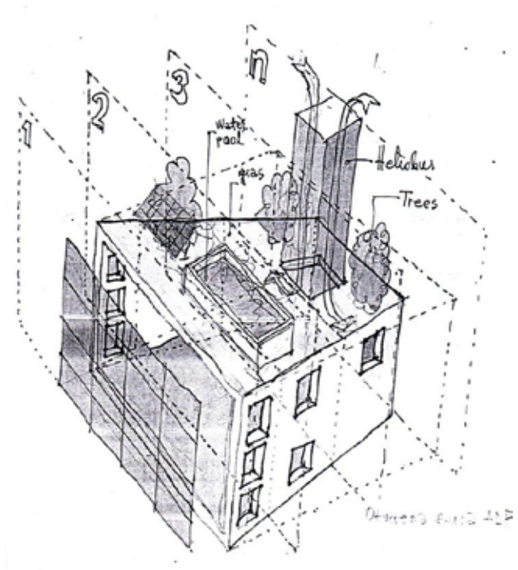


Image 18. Architectural defined space-range of architectural possibilities
(Source: Ahmet Hadrović, „Bioklimatska arhitektura - Traženje puta za raj")

3.3.2. MODERN APPROACH TO DESIGN OF BIOCLIMATIC ARCHITECTURE

The contemporary approach to designing bioclimatic architecture is based on the principles of the most appropriate location for the facility, maximum energy saving from loss, production of renewable energy for its own use, the use of building materials from the surrounding areas with large percentage of recycling characteristics and the use of rain water for its own needs.

Bioclimatic design approach includes the following principles such as:

- Winter and summer protection of the building, by using adequate façade and sealing holes in the facade

- The use of solar energies for heat during the winter period and illumination throughout the year

- Protection of buildings from summer heat, especially with shadows (shading) and with adequate treatment/isolation of façade.

- Removal of heat, which cumulates during the summer in the building on the environment by using natural resources (passive system and cooling techniques)

- Improving and adjusting the interior (for example, better ventilation, the accumulation of heat or cool air in the walls)

- Providing favourable isolation in combination with the daylight controlling in order to ensure sufficient and equally distributed indoor light.

- Improvement of the microclimate around buildings, through bioclimatic design of outer space and generally on built environment, respecting and in compliance to all the above-mentioned principles. "The highlight of bioclimatic and environmental design can be considered the ecological suburb Hammarby in Stockholm. Suburbs that for years served as garbage dumps and toxic waste obtained a mission to build a sustainable energy eco-city with approximately 22,000 apartments constructed of non-harming materials to the nature and humans (Wood, glass, stainless steel special kind of concrete)"

- In this direction researches are oriented towards the new isolation material such as "transparent thermal isolation that operates on the basis of transparent glass filled facade panels (glass, filling, transparent foil), to achieve maximum transparency of the facade with an excellent thermal isolating ability. Residential buildings are small with three to four floors and two to four apartments per floor. The apartments are airy with lots of glass surfaces and views over the lake Hammarby. Each room has underfloor heating with gas, which is obtained by processing municipal bio waste produced by Hamarbi citizen for which collection an underground vacuum installation is set. The same biogas is used in the kitchen, just as well as supports the launch of the public transport of Hamarbi conducting no air pollution.

Modern approach to design bioclimatic architecture requires simultaneous and coordinated function of all principles in order to complement each other throughout the year.

3.3.3. BIOCLIMATIC REHABILITATION OF THE EXISTING BUILDINGS

It is not enough just to build a new building on the principles of bioclimatic architecture but also the existing buildings should undergo the rehabilitation process following these principles. Rehabilitation includes the following steps:

- Removal of causes that loose heat from the interior, occurring due to inexistence of technical isolation of the external structural elements of the building

- Placement of well-isolated windows and doors

- The introduction and control of mechanical ventilation

- The use of passive solar systems for heating of rooms, as well as installation of solar receivers and solar system for water heating and photovoltaic panels to generate electricity

Although at first glance it seems that the rehabilitation of existing buildings by the principles of bioclimatic architecture is unnecessary, however, such an undertaking is not only an imperative of time, but also a cost-benefiting in a very short term.

FINAL CONCLUSIONS

Constant transformation in the region, wars, invasions, permanent inter-conflicts and disagreements, etc. have had a negative impact on the overall development of almost all the territory of Kosovo, in particular the rural areas... Such an unstable situation in the past directly influenced the development of certain types of rural residential houses, such as rural fortified stone house (kulla). In the functional development the concept of the house had also sporadic impacts such as for example the need to allow guests access freely into household avoiding a direct contact with the family members. These old houses represent a rich resource which, due to excess of its housing capacity can be easily transformed so to contribute to development of the village. The revitalization of existing old houses and systematization of new constructions solid ground for sales, rent or new businesses development in particular tourism activities with orientation towards eco-tourism, can be created.

The existing natural and cultural resources while improving infrastructure, standards of living, public transport and awareness of inhabitants on the value cultural and historical heritage, healthy food, environmentally organized agriculture, etc., are an excellent basis which would contribute to the development of rural areas in Kosovo.

Humans should abandon the irrational use of energy and begin rationally access the energy consumption in future. The world needs to turn towards renewable sources with an entirely new philosophy toward environment. Planning and design in rural areas in the future must have a bioclimatic rational approach both in production and energy consumption in order to develop yet protect the existing resources. The provision that the construction of new architectural structures needs to rely more on the experience of domestic craftsmen and less on expensive technology and materials. "It remains a big question whether the construction of such facilities (even if it is a privilege of the wealthiest) may relieve global energy needs on Earth, and so indirectly contribute to preservation of the natural environment."

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3D SIMULATION AND VISUALISATION OF CLOTHING COLLECTION

-

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Abstract – Nowadays the new product development process can be done using the conventional procedure using a real clothing prototype, or virtually, using modern Computer Aided Design (CAD) technologies that enable virtual prototyping and three-dimensional (3D) simulation of behaviour of garments in a virtual environment. The paper describes the development process of women's dresses collection using 3D prototyping technologies to replace the conventional way of developing real products with virtual clothing prototypes that allow insight into the appearance and performance of the product. The purpose of this study is to present the clothing collection of women's dresses using a 2D/3D CAD system for interactive design and modeling of two-dimensional (2D) garment patterns, 3D simulation and visualisation of patterns, textures and colours of fabrics and seams applied to garment model. For this purpose 2D patterns of a women's dress have been developed with the Optitex PDS module and different textile patterns were used to make 3D simulations and a visual presentation of the dresses collection.

3D prototyping / Simulation / Textile and Clothing Design / Computer Aided Design (CAD) / Sustainable Development

1. INTRODUCTION

Clothing industry strives to reduce development costs and shorten the time component of the development of new products. The new product development process can be done using the conventional procedure using a real clothing prototype, or virtually, using modern computer technologies (CAD-Computer Aided Design) that enable virtual prototyping and three-dimensional (3D) simulation of behaviour of garments in a virtual environment. The purpose of the introduction of computer design and 3D prototyping is to replace the conventional way of developing real products with virtual clothing prototypes that allow insight into the appearance and performance of the product. In virtual prototyping, we develop a garment from start to finished product with the help of suitable and up-to-date computer hardware and software. This allows a significant reduction of garment re-modification, which provides savings in time, energy and material at the same time. The process also offers more opportunities for creativity in designing the new clothing products. Advantages of virtual prototyping of new garments are not only in a great responsiveness and lower costs, but also in the more efficient use of planning time required for a new clothing product and a realistic presentation of 3D-shape of garments, including the texture of textile fabrics and their mechanical and physical characteristics (CELCAR et al., 2013, RUDOLF et al., 2008; JEVŠNIK et al., 2009, JEVŠNIK et al., 2012; STJEPANOVIĆ et al., 2012).

The paper presents the development process of women's dresses collection using 3D prototyping technologies to replace the conventional way of developing real products with virtual clothing prototypes. Figure 1 presents the process of 3D virtual prototyping of garments. The purpose of prototyping is to build a virtual model that instead of developing a real product. Virtual prototypes can then be presented to the client for evaluation and confirmation. The final model/product can then be quickly and easily modified and produced. In recent years, a strong development of computer technology enabled substantial changes in the way of development of new clothes and a shift from the conventional to virtual prototyping (STJEPANOVIĆ et al., 2012). The aim of the development of a new dress using computer-based prototyping is to achieve a controlled system of product development, to eliminate errors and to incorporate improvements based on feedbacks from clients or consumers even before the physical manufacture of the product takes place. A big advantage of the computer-based prototyping of new clothes is a greater responsiveness, on the one hand, but significantly lower costs on the other. The expert modeller is experienced enough to prepare, according to the sketch of the dress from the basic pattern, a 2D modelled garment pattern that can be with an adequate computer programme converted into a 3D form – a virtual dress. The final shape of the dress is therefore achieved without undue costs usually needed to produce prototypes of the dress (PILAR et al., 2013).

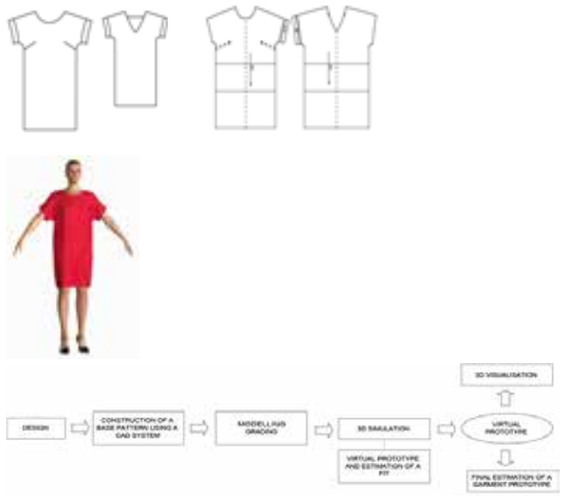


Figure 1. Diagram of the 3D virtual prototyping process (PILAR et al., 2013)

The aim of this research is to present the clothing collection of women's dresses using a 3D system for interactive design and modelling of 2D garment patterns, 3D simulation and visualisation of patterns, textures and colours of fabrics and seams applied to garment models. For this purpose 2D patterns of a women's dress have been developed with the Optitex PDS module and different textile patterns developed by students of the Faculty of Design were used to make 3D simulations and a visual presentation of the dresses collection.

2. MATERIALS AND METHODS

Our research focuses on the study of the development of dresses' prototypes using 3D virtual garment prototyping technology. For this purpose knitwear material with mechanical properties, as well as weight and thickness of knitwear, were chosen from the Optitex database. A single knit jersey with fabric content of 88% polyester and 12% elastane was used for 3D simulation and virtual prototyping of dresses, see Table 1.

Material and structure of a knitwear	Values
Surface mass / W [g/m²]	198
Bending rigidity / [dyn *cm]	315
Stretch X / [grf/cm]	161,6
Stretch Y / [grf/cm]	161,6
Shear rigidity / [dyn *cm]	128
Coefficient of friction / [-]	0,01
Thickness / [mm]	0,0147

Table 1. Mechanical parameters of a knitted fabric

Firstly we developed basic block pattern for women's dress by using OptiTex PDS module, which was then modelled according to design of a dress, see Figure 2. The dress patterns were constructed for women size 36 with followed primary body measurements: body high=168 cm, bust=84 cm, waist=66cm and hip=90 cm.

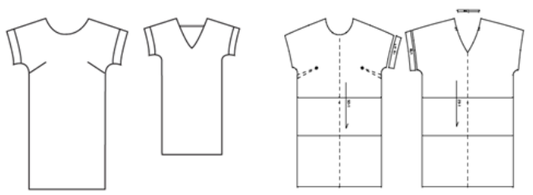
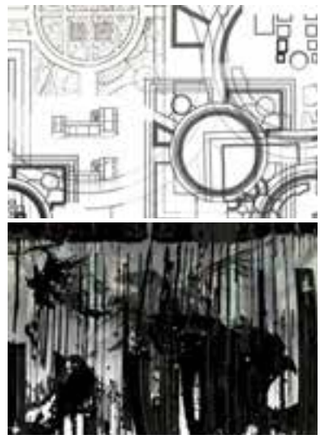
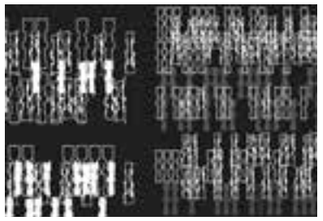


Figure 2. Technical drawing and 2D patterns of women's dress

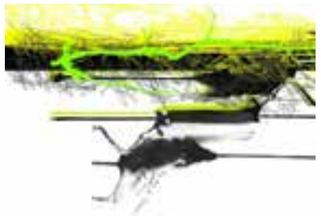


a. and b. By Julija Divjak



c. By Lina Brajlih

d. Pattern from the Optitex database



e. By Tomaž Grosman f. By Tina Vraneš g. By Črt Krašovec

Figure 3. Textile patterns designed by students of Faculty of design and the textile pattern selected from the Optitex database

On the basis of the developed 2D dress patterns, and selection of fabric with mechanical properties (see Table 1), 3D simulations of women's dresses were performed by using the OptiTex PDS/3D module. Once the material properties and patterns' seams were set and synchronized, the obtained planar patterns were placed around the virtual human body model with primary body measurements. Furthermore, sewing and draping was performed in order to simulate the fitting of a women's dress on a 3D model of a human body. The Optitex programme (PDS/3D module) allows using textile patterns from the Optitex database or use designer's own textile pattern with the Texture Editor tool. The Texture Editor tool enables to change the size, orientation, and repeatability of textile patterns and in this way influence the visual appearance of the garment. Figure 3 shows different textile patterns designed by students of the Faculty of Design (Figures 3a-c, and 3e-g) and the textile pattern (lace pattern, Figure 3d) selected from the Optitex database. The designs of textile patterns were prepared with Adobe Illustrator and Photoshop programmes.

3. RESULTS AND DISCUSSION

Figure 4 presents 3D virtual prototypes of dresses simulated from a single knit jersey, which was selected from the Optitex database in different colours, as well as different textile designs (such as lace, see Figure 3d). Different colours and textile designs were easily selected with the Textile Editor tool in the Optitex PDS/3D module.

a. *b*

c. *d.*

e.

Figure 4: 3D virtual prototypes of dresses simulated from a single knit jersey
selected from the Optitex database in different colours and designs (a. pink, b. blue c. black d. grey and d. black lace)

The visualisation of 3D virtual prototypes of dresses made with Optitex system enables a quick and demonstrative 3D graphic presentation of the collection of women's dresses in different colours and/or types of materials. The colour of the garment is freely chosen from the colour palette, which defines the visual properties of textile material (Figures 4a-d). An arbitrary texture of the textile material (such as lace, Figure 4e) can be uploaded (used) from the Optitex library. While, where the customer has already chosen the material, this can be included in the Optitex library and applied to the selected dress in a 3D environment.

3D virtual prototypes of dresses simulated by different textile patterns developed by students of the Faculty of Design are presented in Figure 5. Developed textile patterns were selected with the Texture Editor tool in the Optitex PDS/3D module without changing any parameters of the textile pattern (such as size, orientation, and repeatability of textile patterns, glow, shines, transparency, and colour). When developing dresses collections with designer's own patterns, the Optitex program has several advantages, as it allows a fast and accurate entry of the sample designed with any graphic software like Adobe Illustrator and Photoshop. This is a big advantage for the designer, as the new sample can be tested in a 3D environment. Finding the perfect pattern and thereby including changes is much faster and cheaper for the designer. The presentation of dresses collection becomes even more comprehensive and demonstrative for the client, whilst decision-making is much easier.

a.

b. c. d. e.

a.

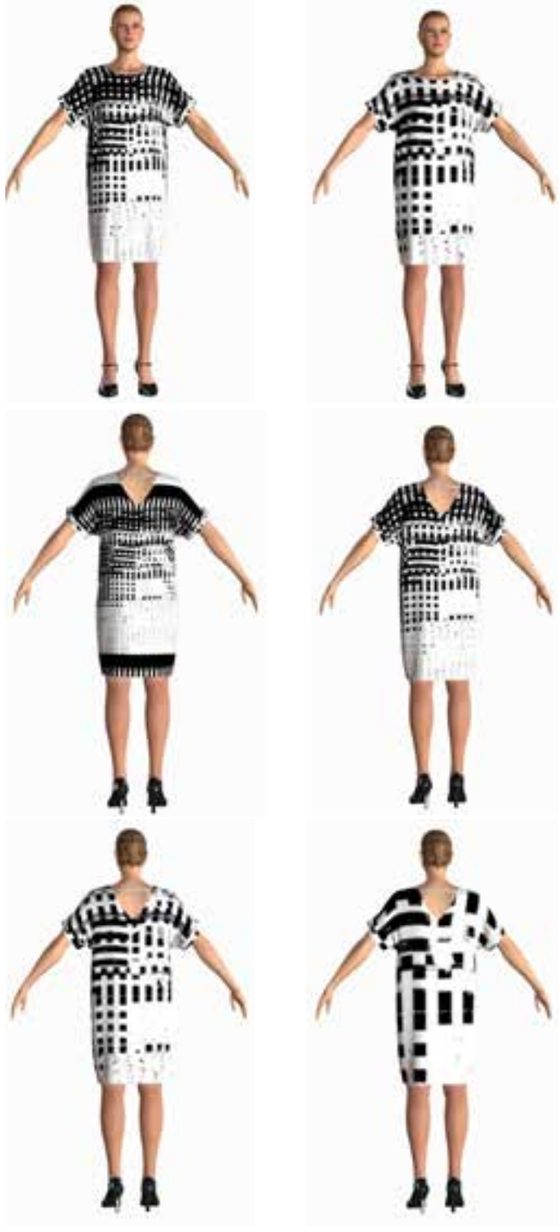
Figure 5: 3D virtual prototypes of dresses simulated by different textile
patterns developed by students of the Faculty of Design: by J. Divjak (a. and b.),
by T. Vraneš (c), by L. Brajlih (d), and by Č. Krašovec (e)

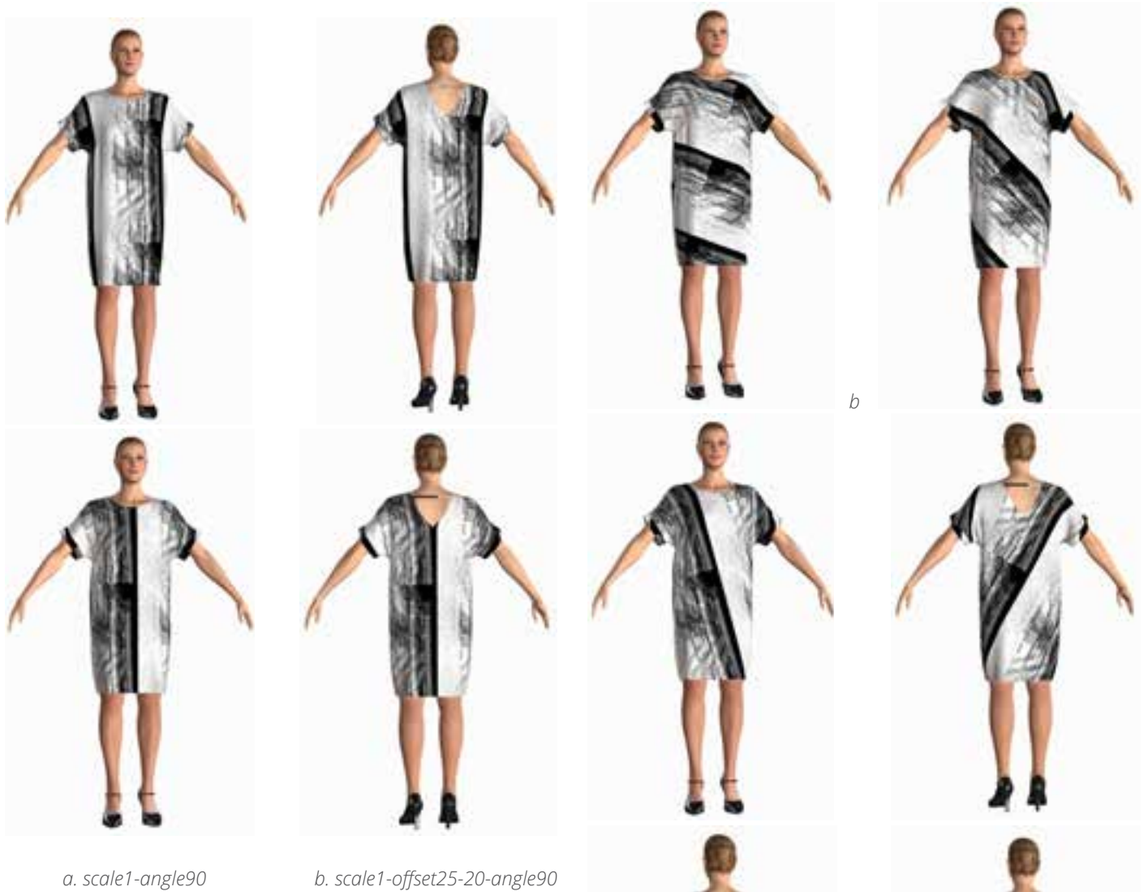
Figures 6, 7 and 8 present 3D virtual prototypes of knitted dresses simulated by a textile pattern developed by Tomaž Grosman. The textile pattern was maximazed and minimazed (scaled up and down), as shown in Figures 6 a-g, and rotated by 90°and offset in different directions (x and/or y), as shown in Figures 7 a-c with the Texture Editor tool in the Optitex PDS/3D module. Figure 6 shows the options, available to the designer for the modification of the pattern to be printed, i.e. maximazing and minimazing of the size of the pattern. The appearance or the look of the garment depends on the repeatability of the pattern, and on the positioning of the sample on the dress. By changing the orientation of the sample, however, the designer may apply the same pattern in different ways, as shown in Figures 7 and 8.

a. scale 1 b. scale 2 c. scale 3 d. scale 5 e. scale 10

f. scale 0.5 g. scale 0.3

Figure 6: 3D virtual prototypes of knitted dresses simulated by a textile pattern developed by T. Grosman, which was maximazed and minimazed (scaled up and down)





a. scale1-angle90 b. scale1-offset25-20-angle90

Figure 7: 3D virtual prototypes of knitted dresses simulated by a textile pattern developed by T. Grosman, which was rotated by 90° and offset in different directions

a. b. c. d. e.

Figure 8: 3D virtual prototypes of knitted dresses simulated by a textile pattern developed by T. Grosman, which was rotated by different angles and offset in different directions

(a. scale1-offset25-20-angle120, b. scale1-offset25-20-angle150, c. scale1-offset25-20-angle20, d. scale1-offset25-20-angle 45, e. scale1-offset25-20-angle7)

Today, the use of sublimation prints enables the dresses to be designed quickly and customised to the desires of end users. The Optitex PDS/3D module, in which both, colour and patterns that can be modified by changing their orientation and displacement, can be freely inserted, makes the development of a new collection of dresses in a virtual 3D environment relatively quick and does not cause additional costs when creating new "physical" prototypes. This ultimately contributes to a more sustainable design and development of dresses' collections as well as the reduction of costs for the development of new dresses prototypes.

4. CONCLUSIONS

3D computer technologies are closely linked to all textile fields ranging from the designing and constructing of fabrics and garments, virtual human body presentations, interactive virtual prototyping to virtual fashion shows and e-trading. Visualisation of a garment within a virtual environment is an exciting branch not only for textile/clothing designers and engineers, but also for retailers (sellers). Computer technologies enable all participants (designers, engineers, and sellers) to adopt quick responses to market requirements and perform quick fabric and garment design modifications thus allowing their garments to be sold more globally.

Based on the results of our study we can conclude that the virtual presentation has a great potential as a tool to evaluate the prototype of a garment in a relatively simple and quick way, especially when designing collections of simple dresses for leisure and sports, where variegated colour combinations are expected. Designing a new collection of clothes represents a challenge for the designer, a challenge that the Optitex programme makes easier to handle and enables the designer to focus on the final appearance of the garment in a 3D environment, and at the same time this view of the garment is closer to the user that can identify themselves with the selected dress. Furthermore, the progress achieved in the field of virtual presentations of garments presents a very important and promising link for e-tailoring chain of the future for enhanced sustainable development of new products.

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SUSTAINABLE TEXTILES FROM KOMBUCHA CULTURE

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Abstract – The paper provides an overview of sustainable textiles which are the result of a research of interdisciplinary approach on the interface between biology and technology. Presented are some achievements in this field, where science and nature jointly discover advanced solutions for a more sustainable future. Biodegradable materials grown from living cultures of microorganisms, have already been developed and are disscused in this paper. Bacteria can today create a fully biodegradable cellulose structure (around any object, such as a chair) which could be an alternative to synthetic and composite materials. With biological wine fermentation, live microorganisms can even form seamless garments and E. coli bacteria form a solid structure in contact with the light. Bioengineered pigments of bacteria, which may be an alternative to the conventional dyeing and printing textiles, are also being developed, as well as textiles that grow on the reprogrammed cell plants, such as BioLace which grows on the roots of hybrid berries. The process of developing textiles from Kombucha culture is also presented and disscused, as well as possibilities for the development of new sustainable textile and clothing products.

Textiles / Microorganisms / Kombucha / Sustainable Development / Sustainable Design

1. INTRODUCTION

The development of novel textiles in the last decade is based on novel technologies, ranging from genetic engineering, biotechnology, nanotechnology to the microelectronics and informatics, which together with the interdisciplinary approach create the opportunities for textiles with new potential. First textiles produced by using new technologies have been developed and some of them are already commercially available, such as nanofibers, genetically altered natural fibres (Bt-cotton), man-made fibres made from naturally renewable raw materials, smart (intelligent) materials, wellness and medical textiles, bio-based and other sustainable textiles as well as other functional and high-tech textiles (RIJAVEC - BUKOŠEK, 2009).

Many of the new developments in textile designs are driven by consumer concerns about sustainability and the environment. Leading designers are already advocating a holistic, cradle-to-cradle approach that considers the textile's entire life cycle, and minimizes its environmental impact (QUINN, 2013). Today many textile specialists and designers are working together to encourage manufacturers to use environmentally friendly materials and develop socially responsible methods for clothing production. Some designers use recycled materials, while others prefer organic fabrics, such as hemp, cotton, bamboo and raw silk. Popular inorganic choices include biodegradable textiles, recycled plastics and renewable melt-processable fibres that can be woven into fabrics and made into nonwoven interior textiles. A handful of textile designers are forging alliance with science to create sustainable textiles, exploring the extent to which biomimetics, biochemistry and epigenetics can create new solutions. Evolution has enabled animals, plants and microbes to create a plethora of techniques and materials that could significantly improve textile design (QUINN, 2010).

The paper provides an overview of sustainable textiles which are the result of a research of interdisciplinary approach on the interface between biology and technology. Presented are some achievements in this field, where science and nature jointly discover advanced solutions for a more sustainable future. The process of developing textiles from Kombucha culture is also presented and disscused, as well as possibilities for the development of new sustainable textile and clothing products.

2. TRENDS IN SUSTAINABLE TEXTILES

Today's textile designers are interpreting sustainability in a variety of ways. For some, petitioning manufacturers to use organic materials and environmentally friendly processes enables them to work more responsibly. Many designers use recycled materials, while others prefer organic fabrics such as organic cotton, Ingeo fabric (PLA), Cocona, hemp and raw silk. Biodegradable textiles, recycled plastics and renewable melt-processable fibres that can be woven into fabrics and/or made into non-woven textiles are also popular choices. Some designers develop socially responsible methods for fabric production, creating jobs for marginalized workers that boost local economies. A handful of textile designers are forging alliance with science to create sustainable textiles, exploring the extent to which biochemistry can create new fabrics. Others look for natural know-how, exploring the insights into nature that researchers in biomimcry reveal. Biomimetic researchers identify processes used by animals, insects, plants and microbes to create materials and techniques that can significantly improve design. Plant fibres, pine cones and peacock quils have provided inspiration for new types of textiles, even leading designers to conceive of fabrics that "grow" on the wearer's body (QUINN, 2013).

Revolutionary innovations are to be expected for the next decade on the interface between biology and technology. This applies both to the basic materials for the synthetic materials industry and the packaging industry and for the manufacturing mechanisms in the textile industry as well. By every process which uses renewable resources and bio-technological procedures with the aim of producing materials or affecting their characteristics, the biologization of industry is moving forward. An increasing number of projects are aimed at replacing conventional materials used so far with bio-based solutions. Bio-based processes use naturally occurring organisms or enzymes. Bio-based manufacturing processes generate by-products that are not hazardous, and that can be reused and/or are disposed of through biodegradable methods.

Nowadays, a lot of research is performed on the development of biodegradable materials and polymers, which can "vanish" from the Earth surface after being used. Natural and synthetic fibres/materials which are biodegradable or can be broken into pieces to recycle and produce textile fibres again are called recyclable fibres. These are recycled to produce recycled fibres, and then converted into textiles (QUINN, 2010 and 2013).

2.1. AN OVERVIEW OF SUSTAINABLE TEXTILES AND PRODUCTS

The Bio Couture atelier, founded by Suzanne Lee in 2003, has explored the use of living cultures of microorganisms (yeast, bacteria, fungi and algae) to grow biomaterials like cellulose into sustainable, biodegradable and compostable clothing like vegetable leather.

By cultivating harmless bacteria that bond active enzymes and cellulose fibres into a textile-like material, she developed in 2004 together with David Hepworth from biotech company Cellucomp a plant-based membrane without using any manmade derivates. The Bio Couture membrane is grown in a tea and sugar solution, similar to the kombucha bacteria culture. As the bacteria synthesize the sugar nutrients, they expel compounds that form the cellulose fibers. When bacterial cellulose dries, it can be cut and bonded to produce garments. Suzanne Lee presented range of jackets, skirts and shoes (Figure 1), made from bio based membrane produced by bacteria in a vat of liquid to produce bacterial cellulose – a material that has similar properties to leather (DEZEEN, 2014; TRENDLAND, 2012; QUINN, 2010)

Figure 1. BioCouture Biobomber jacket, Bioshoe and Bioskirt (DEEZEN, 2014)

Jannis Hülsen present the Xylinum research projects (Xylinum Stool and Xylinum Cones, Figure 2) where uses living organisms to grow geometrical objects. The aim of the Xylinum research project is the development of a renewable material with potential for industrial purposes. The title Xylinum is the name of the bacterium which produces an artificial cellulose material. This bacterium consumes sugar and builds a cellulose fibre structure around any given form. Within a growth period of three weeks each cellulose cone is ripening in a suspended mould. Hereafter different material properties can be added through simple chemical processes-the result is added to a sculptural assembly. The shape of the single cones as well as the way they are assembled is inspired by natural patterns of regularity, such as reptile scales or flower seeds (HÜLSEN, 2011; HÜLSEN, 2013).

Figure 2. Xylinum Stool and Xylinum Cones - The material that grows into three dimensional shapes (HÜLSEN, 2011; HÜLSEN, 2013)

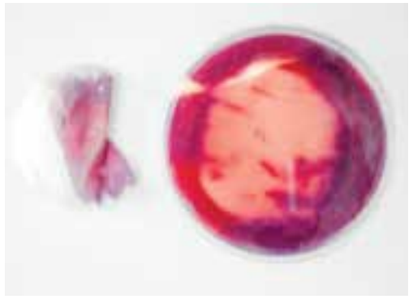
Micro'be, the fermented fashion project, developed at the Bioalloy laboratories, uses a colony of Acetobacter bacteria — the kind that ferment wine into vinegar – to create 'micro fibrils of cellulose', a material similar to cotton which is used to fashion the garments (Figure 3). While the research team initially started creating the Micro'be' fabric from fermented red wine, they've now moved on to producing it from fermented white wine, beer and even Guinness. The idea for the cellulose clothing came about when scientists noticed a skin-like layer covering a vat of wine that had been contaminated with bacteria and had gone bad. The spoilage was a result of a colony of acetobacter, transforming the wine into vinegar. The by-product of this activity is the formation of the cellulose substance that eventually ferments in sheet form which the team then removes from the liquid, fashioning it into apparel, be it a dress or a vest. During its early stages of development, the Micro'be material smells like red wine and feels like sludge when wet, however, the cotton-like cellulose dress ultimately fits like a 'second skin'. The bacterium ferments the alcohol into a raft of microbial fibrils that float just above the surface. Once extracted, the two-dimensional sheets are fashioned into clothing or fitted seamlessly on a person's body to create a second skin (FRANKLIN-CASE, 2005; BIOALLOY, 2016)

Figure 3. Micro'be fermented fashion (BIOALLOY, 2016)

Figure 4. Biolace – Lace doily growing on strawberry plant roots (DEEZEN, 2013)

"BioLace" is a design-led research project that investigates the intersection of synthetic biology and textile design to propose future fabrication processes for textiles. "Biolace" proposes to use synthetic biology as an engineering technology to re-program plants into multi-purpose factories. Plants could be genetically engineered to produce textiles at the same time as food, according to this project by designer and researcher Carole Collet. She believes that by 2050 advances in biological technologies could enable the "hyper-engineered" plants to be grown in huge greenhouses with their roots embedded in a mineral nutrient solution. The project proposes four genetically-engineered plants including a tomato plant with high levels of a nutrient called lycopene that could help improve the skin's resistance to sunburn and protein-rich edible lace growing from its roots, and a basil plant that could produce anti-viral medicines as well as perfumed lace for use in decorative fashion applications. A strawberry bush (Figure 4) with black lace growing from its roots would yield black strawberries enriched with enhanced levels of vitamin C and antioxidants, while a spinach plant could produce micro biological sensors for use in electronics at the same time as providing a multi-mineral food supplement (DEEZEN, 2013).

Figure 5 shows several other sustainable materials and products that has been developed as the result of a research of interdisciplinary approach on the interface between biology and technology. "Faber Futures" is a design project where programmable cell biology meets more traditional technology. The Rhizosphere Pigment Lab explores the botanic provenance of pigment-producing bacteria in a unique microbiology textile design studio. By growing bacteria as an ink factory and using traditional textile screen print techniques, "Faber Futures" presents the first collection of textiles produced by traditional screen printing but using dyes produced by bacteria (Figure 5a). The research is a work in progress, with the synthesis of bacteria to produce a predetermined colour chart as the ultimate goal (THISISALIVE, 2013; NATSAIAUDREY, 2016). Samantha Murray combined the shapes of classical sculpture with the "texture of gummy lollies" to create fruit-scented forms, called Sweet Suspension, Figure 5b (ECOUTERRE, 2012). Sustainable materials can even be manufactured from food ingredients, such as Transient Consumables (clothing you can eat, Figure 5c) by Diana Kovacheva (CARGOCOLLECTIVE, 2016), Cultivated Couture – Micro Nutrient Couture (Figure 5f), brewed from gelatin and seaweed by Emily Crane (CRANE, 2010), and the Fruit Leather Rotterdam project which turned food waste into (fruit) leather, Figure 5d. Fruitleather Rotterdam is currently developing a new, eco- friendly process that converts leftover fruits into durable, leather-like material (FRUITLEATHER, 2016). Packaging that creates its contents when exposed to a specific light wavelength-objects (cup) made from living organisms have also been developed, Figure 5e (THISISALIVE, 2011). Amy Congdon researches tissue engineering that could be used to grow new biological textiles for the fashion industry. She developed Bio collections (SS 2082 Extinct', Figure 5h, and AW 2082 'BIO NOUVEAU') which include a broach made from cells that the wearer might choose to graft onto their skin as well as a hybrid necklace grown out of a mixture of different animal scales and leather (CONGDON, 2016). Young Ju Do created home-degradable and biologically nutritious jewellery and accessories, called Compostable Accessories (Figure 5g). These are created from organic materials that, once used, can decompose into the natural environment, providing food for bacteria and microbiological life (YOUNG JU DO, 2012).



a. Faber Future pigments b. Sweet Suspension c. Transient Consumables d. Fruitleather Rotterdam e. Cup made from living organisms f. Micro Nutrient Couture g. Compostable Accessories h. SS 2082 Extinct' collection

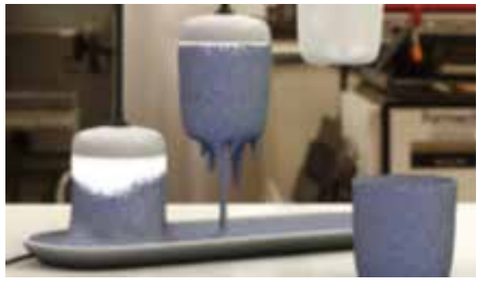


Figure 5. Sustainable materials and products

2.2. SUSTAINABLE PRODUCTS FROM KOMBUCHA CULTURE

Products developed from Kombucha culture are presented in Figure 6 (ETSY, 2016; BLUM, 2016; TRENDLAND, 2012; DEEZEN, 2014-1; PAYNE, 2014 and 2016).

a. Kombucha earrings by J. Lapp; b. Kombucha fabric by Andreablum; c. Briefcase from Harvest: A biotextile future by A. Payne, D. Brough & P. Musk; d. Bio bowl by S. Lee

e. Kombucha products of QUT fashion students from Brisbane; f. Sammy Jobbins Well's Skin project; g. Kombucha bag by S. Lee

Figure 6. Sustainable products from Kombucha culture

3. METHODS - DEVELOPING SUSTAINABLE MATERIAL FROM KOMBUCHA CULTURE

The Kombucha culture is often called a »scoby« which stands for symbiotic culture of bacteria and yeasts. The culture is placed in sweetened black or green tea and allowed to ferment. After fermentation process, the microbes produce micro-fibers of cellulose that float to the surface of the fermenting liquid and fuse together, forming a transparent skin as gelatinous mat. After 2-8 weeks the mat can be removed from the liquid, washed and dried (2-4 days) for use as a naturally produced bio textile. Once dry it is a leathery, textile-like material that can be sewn or used in place of fabric and other soft materials.

5. RESULTS AND DISSCUSION

The results of the development of Kombucha culture into sustainable textiles are presented in Figures 7 and 8. Figure 7a shows the first step of adding live Kombucha culture to sweetened green tea. The fermentation process (growth and harvest) is presented in Figures 7b and 7c. Figure 7b shows the fermentation process after two weeks, and Figure 7c after six weeks, where transparent skin in matt appeared. After eight weeks, the gelatinous matt was removed from the liquid and the wet, transparent skin was suitable for drying on the wooden sheet, as shown in Figure 7d. Figure 7e shows the drying process on the wooden sheet, which takes two to four days and depends on environmental conditions. The obtained dry, leathery-like sustainable material is presented in Figure 7f. Figure 8 shows the dry and wet, leathery-like sustainable material where we note that the dry material was smaller and thicker for about one to two milimeter in comparison with the wet material.

Figure 7. The results of the development of Kombucha culture into sustainable textiles

a. Adding of live Kombucha culture to sweetened green tea b. and c. The fermentation process-growth and harvest (b- after 2 weeks, c-after 6 weeks) d. Wet gelatinous mat (transparent skin-after 8 weeks, suitable for drying) e. Drying on the wooden sheet (2-4 days) f. The dry, leathery-like sustainable material

Figure 8: The dry and wet, leathery-like sustainable material from Kombucha culture

6. CONCLUSIONS

According to our research results, we assume that the structure formed from the Kombucha culture is suitable for the development of fashion accessories, jewellery and clothing, as well as for interior design products. In the next phase of research, we will focus on dying and printing the resulting structure with natural dyes/pigments and, thus, forming a structure that could be used for the purpose of designing and developing sustainable textile products for both interior design and fashion accessories.

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DEVELOPMENT OF A CORPORATE CLOTHING IDENTITY – HOTEL SLOVENIJA CASE STUDY

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ABSTRACT - The corporate clothing identity provides the company to strengthen its objectives and provide employees with authority and professionalism. It helps the consumer to built trust and confidence into the relationship with the brand that is essential for the tourism. Proper corporate clothing identity helps to reinforce the company's values. Consumers are therefore able to connect to brand identity and see branding elements at every point of the consumer/company employee interaction. Corporate clothing identity brings awareness to employees of the importance of the company's objectives. It makes easy to be employees more easily identifiable to one another as well as to the costumers. The case study has been done on a corporate clothing identity for the Hotel Slovenia in Portorož, Slovenia. New corporate clothing identity has been designed as a part of an entire renovation and redesign of the hotel that is about to be transformed from a four to five-star hotel. Corporate clothing identity includes designs for employees across the company to identify them vertically and horizontally, from concierges to maids and cooks. It enables others to read in visual language instead of reading the company's core values and goals. Smartly and uniformly dressed employees will look of more professional and provide the costumer with a better impression of the company what id essential in the tourism.

Key words: corporate clothing identity/ tourism / branding

1. INTRODUCTION

Clothing is visual metaphor that reflects relationships with different social settings. Visual metaphors are frames whose basic element is a concept of schematic images that act as structures of our mental performances and are under subjective interpretation. Some scholars define the difference between fashion and clothing in term of styles that (un)change in time and space. Uniforms, as part of fixed clothing, are clothing that change very little in time but change substantially through the place. In opposition to fashion style, that changes substantially in time and very little in place. However, if we take into account that we live in a time, which is extremely short, and space is very large, than the definition of both styles begin to overlap. Due to the exceptional extent and accessibility of the space that a person can occupy and reflect with hers/his style, the individual segments of the spaces begin to emerge and consequently also fixed and fashion style begin to overlap. The structures of designing uniforms (corporate clothing identity) begin to be more strongly influenced by fashion.

Polhemus and Procter (1978) are connecting fixed style with anti-fashion and fashionable style with fashion. They claim that anti-fashion is a model of continuity in time and fashion model changes over time. Anti-fashion can overlap to fashion wherein the position within the complex class society improves (Barnard, 1996).

Merriam-Webster dictionary defines uniform "dress of a distinctive design or fashion worn by members of a particular group and serving as a means of identification; broadly: distinctive or characteristic clothing". The most important words in the definition are "means of identification", that define the core of the corporate clothing identity. The latter namely identifies horizontally and vertically employees among themselves and in relation to the consumers of their services. It is also notable that Merriam-Webster dictionary uses distinctive design or fashion in the definition of the word uniform. It is significant that design is essential in the development of corporate clothing identity and that sometimes it can be influenced by fashion or reflects fashion trends. In that context, the uniform is far more than merely clothing that protects us from weather conditions and physical danger. In tourism in particularly, because uniforms are the first impression of the hotel that the client experience. Therefore the visual impact is stronger and more important factor than just fundamental criteria of protection. Today it is even more important when hotels are becoming lifestyle brands. Therefore fashion designers are more often commissioned to design unique uniform collections in particularly when we talk about the luxury hotel brands. There are examples of designer uniforms that set glamour to the uniforms and proof that a fashion designer is a surplus for the designing corporate clothing identity. The examples of such practices are Yohji Yamamoto design for the Royalton Hotel in New York, Narcisco Rodriguez for Park Hyatt New York, Nicholas Oakwell for Rosewood in London and David Peck for JW Marriott Houston Downtown, just to name few. The latter has also produced 150 pages style guide that helps employees with styling different combinations and variations.

Through its clothing identity we express and communicate with oneself and its surroundings. Clothing and fashion are characterized by the occurrence, by which social relations between people are built, experienced and understood (Barnard, 1996). Our clothing provides information about our identities and is simultaneously formulated in the process of social interaction. There is three identified and accepted identities: social identity, identity of roles and personal identity (Sika, 2014)). Due to the facts that the uniform combines all three identities and that clothing (as is fashion) forms a hybrid of our public and private identities it crucial that employees are integral part of in the development of designing corporate clothing identity process. At the uniformed groups the individuality of each employee subordinates to the communication power of the group. The uniformed persons with their clothing communication clearly show not only affiliation to the group, but also their position/rank within the group (Šterman, 2015).

Structure of clothing and fashion is based on the meaning and interpretation (Barnard, 1996). In hotel industry the clothing tells to the client what is the hotel all about. In the corporate clothing identity the meaning and interpretation are the result of the corporate organizational structure, brand image and, especially for the hotel industry, regional placement of each hotel. For some hotels companies, the uniforms are providing customers with the authentic local experience and can be implemented in the forms of the clothing as well as in the patterns. The importance of this can be seen from the uniforms for the SO Sofitel hotel chain. They did not formed a uniform collection of clothing corporate identity for all of their hotels worldwide, but designed rather specific collection of uniforms, that reflected the cultural context of each local environment of the hotel. Designers who designed the uniforms were Christian Lacroix for Sofitel SO Bangkok where it is visible the interpretation of the Thai culture, Karl Lagerfeld for Sofitel SO Singapore, where one can discern the history of the hotel and Kenzo Takada for SO Sofitel Mauritius. Even more, management encourages the employees to "complement their own designer uniform with their own personal pieces". (http://www.sofitel.com/gb/luxury-hotel-experience/so-sofitel.shtml. On Line: 1. 4. 2017. Accessed 1. 4. 2017.). In addition the designers also designed special collections of home products SO Sofitel that sell in the SO Boutique. The reflection of the local environment of the hotel in the uniform empowers the authenticity of the hotel brand.

The uniform is a feature of a hotel. Its style tells what is hotel about. It must combine most of the essential definitions of the hotel. The uniform must strive at the same time for the esthetic perfection but also not forget about the practical side of the item. The design has to comprise proper fabrics with the effective lifespan, comfort and also reflect the local weather conditions. In the present hotel industry the fashionable impact of the uniform is becoming more and more the core of the designing the uniforms. In uniforms the fashionable impact can be seen in details, because the uniforms are going to be in use for many years. Creating the design that would look good on vast number of the employees is challenging task for every designer.

Therefore is in the development of the uniforms very important that designers get clear and defined brief from the hotel management, that includes the specific characteristics of the uniform that are crucial for individual post (e.g. for hotel industry that means the minimum and/or maximum length of the individual clothing, additional comfort supplement). Not defining those elements can lead to not getting uniforms that satisfied the needs and desires of employees (Šterman, 2015). And, if employees look good and feel good in their uniforms, than they are more motivated and that is something very noticeable to the customer.

The corporate clothing identity has to reflect also the interior design of the hotel. Since the space in defined within the material value and the abstract value, both of them have to be detected in the design of the uniforms (Devetak, 2015). The details of the certain forms, colors and textures should be part of the design development of the corporate clothing identity. Interior themes and motives are the vantage point for the development of corporate clothing identity design.

2. METHODS

The project corporate clothing identity for Hotel Slovenia has been developed in 2016. The project started in February and has been accomplished in September. It includes vertical and horizontal job scheme, which was decisive for the visual profile of systematization of each employee (Figure 1).

Concierge (female/male)		Chef (male)	Housekeeping Manager (female)
Receptionist (female/male)	Hostess (female)	Restaurant Manager (male)	Housekeeping Supervisor (female)
Porter (male)		Waitress/Waiter for the restaurant	Housekeeping (female)
Bellman (male)		Waitress/Waiter Tapas bar	Cleaner (female)

Figure 1: Systematization of employees

The initial structure has changed due to the reduction of the costs by the client – the hostess, the bellman, the restaurant manager and the cleaner were later not included in the structure of the development of the uniforms.

The client gave the brief with three main requirements:

1. To use main color scheme of Visual Identity, whereby the main colors are black and white, the distinguished color of the Visual Identity Pantone 564 only to be used as a focus and in traces,

2. To use local heritage,

3. To develop possibility combining several garments among themselves.

The vantage point for development of the corporate clothing identity has emerged from the traditional dress of hotel location region – šavrinka's dress. From the clothing there were taken three form details that have been later in the design process modified and updated.

The first element is a scarf that is worn on the upper part of the body and the front ends cover each other. That has been updated in a plastron that is designed throughout the female line of uniforms. The second element is the use of fine pattern of geometric shapes that is seen in šavrinka's dress. In developing the collection of uniforms is therefore used a pattern that has been designed specifically for uniforms for Hotel Slovenia. The patter consisted of a rhythmic combination of rounded rectangles in warm grey color placed on a base of specific color required in the brief. During the design process that specific color has been adjusted according to the interior design requirements, therefore it was tuned with the interior color scheme of the renovation of the hotel that took place at the same time. That pattern was used for the female and male line of the uniform collection. The third element was used in the development of male line. In the traditional dress they used wider trousers along the leg and the jackets are longer in a form.

The collection that was chosen by the client in some segments follows the results, which were obtained by Sonja Šterman in her study (2015). It is the highest values have criteria with properties that are part of the functionality (design, maintenance, ergonomics and combination ability) and quality and properties (materials, characteristics and production). The Hotel Slovenia case study shows, as opposed with the results of the above mentioned research, that the communication power of the corporate clothing identity is significant for the hotel industry. The elements of the communication power such as identification externally and internally and hierarchy recognition have high value by the decision makers in the tourism.

3. RESULTS

Figure 2: Concierge male and female

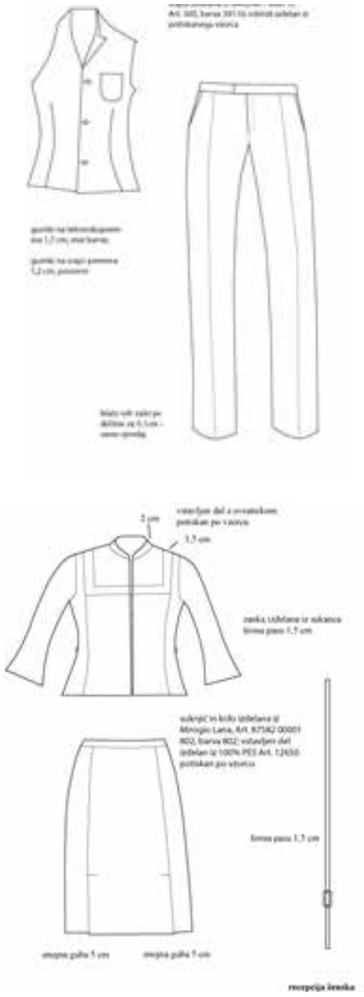

Figure 3: Receptionist male and female

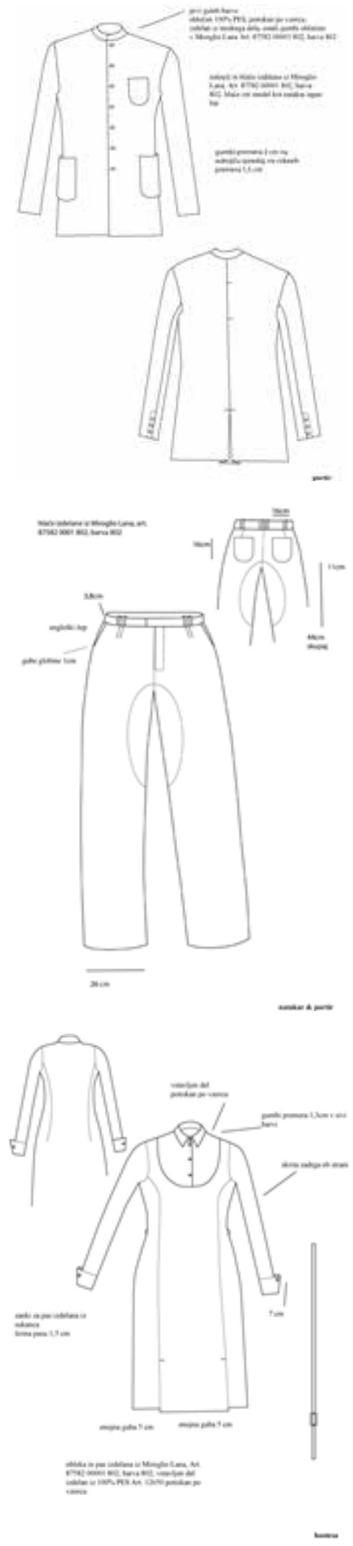

Figure 4: Porter male and hostess female

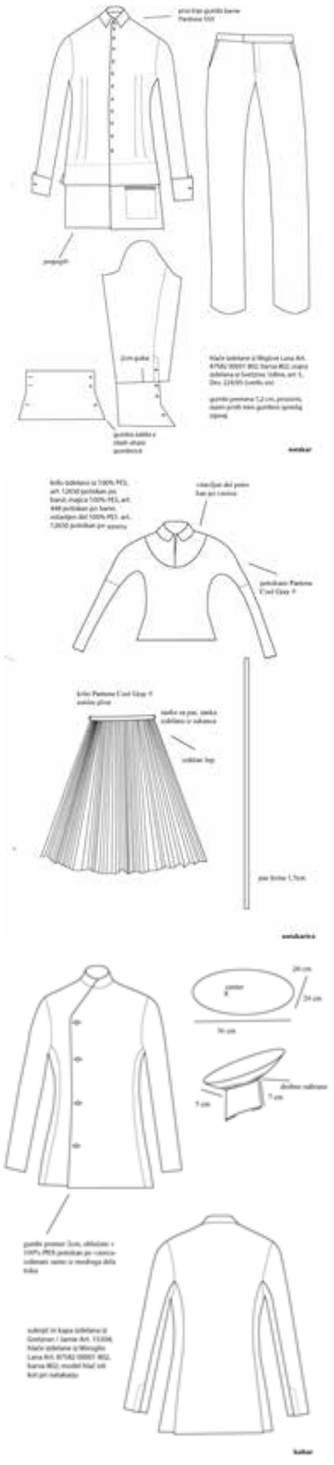

Figure 5: Waiter/waitress restaurant and chef

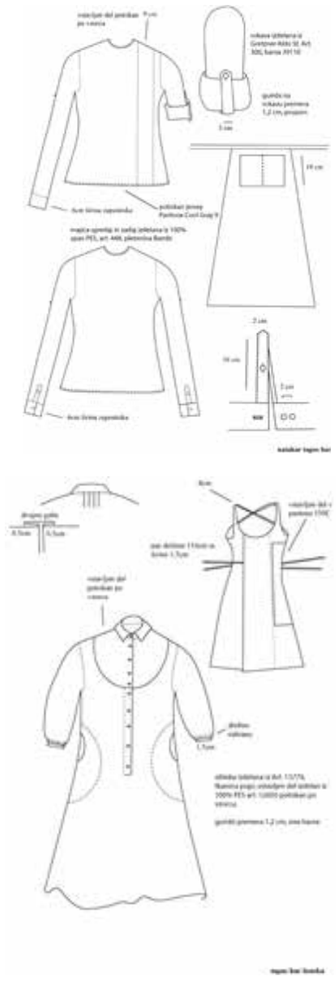

Figure 6: Waiter/waitress tapas bar

Figure 6: Housekeeping Manager, Housekeeping Supervisor and Housekeeper (all female)

4. CONCLUSION

The Hotel Slovenia case study shows that the communication power of the corporate clothing identity has an important and significant meaning of the decision-making in the hotel industry. Communication power of uniforms is used across the company in different levels. By using the visual language as the only mean of communication we establish the inner identification among various ranks of employee within the hotel without implementing any ranking sign that is generally valid. The internal hierarchy is well established and recognized also externally and is identified by the customers of the hotel service. We can conclude that the visual language in its communication powers has the unprecedented strength and scope. As Barnard (1996: 28) points out, the messages that we sent by clothing (even more important for uniforms) have its recipient in which we want with nonverbal communication (uniform) accomplish something. In this context there are three important cases:

1. The intention of the sender, 2. The effectiveness of the transfer process, 3. The impact on the recipient.

These three important factors and their clear definition of the meaning of individual elements within them are crucial in the development of high-quality design of corporate clothing identity. In defining those three relations lie the key to the communication power of the uniform and its importance of the overall appearance of the hotel brand. The impact of the message on the receiver is reflected in the cohesiveness among the employers and their better performance, in the ensuring the confidence of the customer in the brand values and in helping the customers to identify the employers easy. All of which provide better business performance.

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TOOLS AND GUIDELINES FOR VEGETABLE GARDENS IN COMPANIES

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Abstract – The paper reports on how urban agriculture, as a sharing system, is becoming a way to increase aggregation, grouping, relationships in a local context, which could turn into an emotional resource within the urban context.

This paper will examine the design of community gardens within semi-public spaces in corporate areas (buildings and green areas). The main research objective is to improve the quality of urban landscapes by answering citizens' need for social interaction and fostering the role that community plays behind it. Through co-design sessions with different communities related to specific companies, the design output aims at the creation of a systemic space made by a vegetable garden and convivial spaces. This would strengthen internal local connections, and trigger positivity and better performances among employees. The expected result is a set of design tools and guidelines that allow companies to deal with the creation of vegetable gardens by defining the layouts, the functions and the experiences.

Social innovation / Urban Agriculture / Service Design / Spatial Design / Co-design / Communities

1. INTRODUCTION

Current literature reveals how "urban vegetable gardens" are a growing phenomenon and increasingly engaging in urban metropolises. However, with the definition "urban vegetable gardens", we could be referring to any of a number of experiences: community and shared gardens, urban gardens, "Guerrilla gardening"; all green space solutions, with a northern European and North American tradition, which are spreading throughout Italy and in other parts of Europe. Community gardens, are not only "food, community and culture makers"; they can even produce hope, as opportunities for the collective imaginary (Hou, Johnson, & Lawson, 2009). This paper will focus on green areas with an agricultural purpose, and above all, those addressing a community of people within a work environment (companies etc.), to increase socialization and collaboration among employees.

Community gardens are no longer considered as marginal or only related to suburban areas. Nowadays they play a role in integration, rather than social segregation, a trait which coincides with The Young Foundation definition of social innovation: in other words, they are innovations that are both positive for society and enhance society's capacity to act by dealing with social innovation. This is because they are new ideas (products, services and models) that simultaneously meet social needs and create new social relationships or collaborations (Murray, Caulier-Grice, & Mulgan, 2010a). It is about tapping into the ingenuity of charities, associations and social entrepreneurs in finding new ways of meeting social needs that are not adequately met by the market or the public sector ("2020 Flagship Initiative Innovation Union," 2010).

Within this framework, this paper aims at understanding how urban agriculture could become a sharing system, a way to increase aggregation, grouping, and relationships in the local context, even those that have no traditional connection to it (i.e. work environment).

The expected results are some sets of tools and guidelines to set up community gardens in company spaces, including both spatial and service design solutions.

2. URBAN AGRICULTURE AS AN E-MOTION

2.1. CREATING OF A SYSTEMIC SPACE FOR SHARING.

In the contemporary city, we experience a convergence of tensions and expectations, a horizon of values, practices, and attitudes. An evolving movement is bringing people to live "individually together" (Bauman, 2002) and is an opportunity for sharing that is expressed in lighter forms: local aggregation, grouping, community, trust, and social relationships that turn into both an emotional resource and a source of well-being and safety.

Beginning with the development of opportunities to create participatory spaces and the social bond of heterogeneous populations, these new practices are considered to be similar to many urban strategies (in the sense proposed by De Certeau, 2001). This is because, in creating everyday things, they generate cohabited spaces where there was nothing; these spaces are defined by conviviality (Illich & Lang, 1973) in the system of relations that is generated.

In this sense, urban agriculture turns into an "e-motional" resource; these green spaces become "emotional touchpoints" (Guseynova, 2013). How to find an emotional touch point with the user is a result of a process generated by the sharing of these spaces, an e-motion as a driving mechanism, fuel, from its etymology, which turns into active engine for the operation of the entire system.

Social integration and participatory management are inserted into a multifunctional space with a mix of functions to meet the needs of the community behind it. The approach that will be used will emphasize the fact that a space grows together with the community for which it is designed and the future of that space depends on the community itself and the relationship that creates that specific community has a unique bond and motivator in the space itself.

Sennet (R. Sennett in Bauman, 2002) defines the city as a human settlement in which there is a great probability to encounter strangers; the purpose is to be able to turn that casual meeting in a sharing experience.

2.2. THE DEFINITION OF THE COMMUNITY BEHIND A SPACE: HOW THE CITIZENS' NEEDS COULD IMPROVE THE DAILY LIFE.

The citizen of megacities can rightly be defined as a wanderer, with multiple-identities, fragile in real relationships and in some personal relationship behaviors, tending more and more towards the virtual realm while also being co-operative and participatory (Lega & Piccinno, 2012). He seeks real urban places that allow and facilitate concrete exchanges in relationships through their physical and material nature, emotional places capable of supporting performances destined to transform and change functions. They are "Heterotopian places"(Foucault, 1994).

A new landscape is emerging from the margins and interstitial parts of towns and cities where conditions of diversity exist. The landscape is "theatres of strong dynamics" (Gilles, 2004) and in this context, collaborative communities have their foundations in groups of people sharing interests and needs.

They are "local discontinuity" (Manzini, 2015) – or better – groups of "social inventors" who, in the face of critical social and technological conditions, find ways to do things that are new and more sustainable than traditional ones, which were inefficient. Groups of "ordinary people" who make the extraordinary possible, if given the opportunity, "heroes" of everyday life with an incredible sense of togetherness as a fuel of their actions. Heroes that are not "professional" creatives, nor members of a social elite invested with institutional roles, they are forward-looking people, capable of sharing their vision with others. They are "professionals of the everyday experience", but they are also different because they are able to see and face these problems in a "slightly crazy" and authentically "creative" way, going beyond the obviousness of dominant ideas about how such problems are "normally" resolved (Meroni, 2007).

First of all, people are observers of details, the smallest things can generate a mechanism of understanding of the real needs of everyday life; the ability to transform everyday objects into enjoyable products that provide pleasure and satisfaction.

In this sense, everyone could become a designer, with the combination of good observation skills and good design principles, in order to design our lives, our rooms and the way we do things (Donald A. Norman).

We could also mention Communities of practice, groups of people who share interests or passion for what they do and learn how to do it better as they interact regularly.

Members of a community of practice are practitioners. They develop a shared repertoire of resources: experiences, stories, tools, ways of addressing recurring problems—in short a shared practice. This takes time and sustained interaction.

And simultaneously, this is an element that cannot be left to spontaneity; it needs a way to become self-aware and coordi-

nated in order to address the improvement of daily life, starting from its own actors.

3. DESIGN WITH AND FOR A SPECIFIC COMMUNITY: EMPLOYEES IN COMPANIES

There are companies where outdoor spaces are not only marginal areas for basic functions (parking, reception, walking paths etc.), but places to involve employees in activities to reinforce the sense of belonging to the work community or even just to give them some opportunities to relax. Of course, the first objective of communities inside the companies is the completion of the working day. However, the efficiency of such activities could be implemented by others that stimulate their creativity and offer a better place to work. In the United States, "Corporate Gardens" are green areas where a new horticultural trend has been launched. These gardens are the center for social practices to make free time in the company (lunch break, after work etc.) truly "productive".

E. M. Burke identifies that a successful company today, should pursue two goals. First, it must redesign its community and operational practices in ways that respond to the community's expectations that increasingly define how a company should operate. Second, it should take advantage of the public's shift in attitude and design its community involvement programs to support its business goals and enhance its competitive advantage (Burke, 1999).

Vegetable gardens could be inserted in this framework; in the work environment, they could benefit the landscape, for both the company and the individual. It is a prompt and sustainable health strategy, a fun and healthy way to reassess metropolitan urban areas; it is also natural, anti-stress and able to improve the welfare of employees with very low costs.

3.1 SYSTEMIC APPROACH IN COMPANIES' SPACES

The company, as a working place of a community, can be considered as a real system in which a group of people takes care of itself and its operating principle.

The creation of micro operating systems (community gardens) within the macro-system (the company) could be able to remove or reduce the social distress in its various forms and, consequentially, increase the level of the community's well-being.

A community garden implies multiple subjects aiming at taking care of a space by improving relationships and cooperation with each other, going beyond an individualistic approach in order to produce economic, business and social values.

This implies the beginning of an age of complementarity, integration, and, above all, cooperation and hybridization (Tognetti & Venturi, 2013).

"Corporate garden" is the name given to a micro system that creates a social and emotional dimension that is no longer implemented by people other than us. There, we are the protagonists, the main actors. A business concept of hybridization where two dimensions merge, the everyday aspects of work meet the social dimension with the creation of internal local connections to promote positive and better performance: horticultural activities. Corporate community gardens aim at both social and environmental sustainability through the improvement of eating habits, the "cultivation" of social networks, the increase of awareness about healthy food and the power of collaboration.

This new space for the corporate system, thus provides a strong integration between cultivated space and convivial space by offering a place linked to urban agriculture and available for participatory and enjoyable activities. When not used, corporate gardens are empty attractors and conveyers of energies and flows that express its meaning through the active relationships within its context. (Lega & Piccinno, 2012)

4. DESIGNER'S ROLE AND DESIGN OUTPUT

A corporate garden cannot be established without awareness and coordination,

The approach in its design is based on a user-centered perspective, the involvement of stakeholders through participatory design and rapid prototyping has proven to be useful in social innovation (Murray, Caulier-Grice, & Mulgan, 2010). However, a number of failed projects have also stressed that designers need to develop new approaches to be able to contribute in this new field (Mulgan, Tucker, Ali, & Sanders, 2007).

With the statement "design is never done" they mean that professional designers should transfer their abilities to the actors enabling them to "continually respond, adapt and innovate" (Burns, Cottam, Vanstone, & Winhall, 2006).

To approach the design of a corporate garden, a chart of the main elements has been made. The chart helps to choose among several existing models and components in defining a spatial layout and in creating an efficient vegetable garden. Furthermore, it helps to adapt the format to several contexts. Depending on the budget, time, space and the specific maintenance required, the community could choose items and module them in a layout, trying to set up a system of cultivation as accessible and productive as possible.

To do this, research was done by visiting and listing some best practices in different parts of the world: Milan, Shanghai and Ljubljana.

A spatial survey has been conducted to understand how each element was organized in the space in question. It was also fundamental to highlight that every space has a specific identity, and inside the space there are features tied to the community for which it is designed. This survey is a process that lasted months, requiring the surveyors to get close to places, but especially to local cultures. The survey conducted on sixteen practices in the three different contexts that were divided into five areas of expertise depending on their functional purpose: "Corporate gardens" (the object of this paper), "educational gardens" (tied to a school space), "connection gardens" (which have as their main goal the social function), "commercial gardens" (depending on a commercial activity) and "picking gardens" (with the food as primary objective).

By comparing elements and functions it is clear that the cultivated area and the convivial area do not have a constant percentage, but vary in each typology. We find a high percentage of cultivated areas in "connection gardens" and in "picking gardens", an average percentage in the "educational" and "corporate" ones, but a lower percentage in the commercial ones. However, the percentage of the convivial areas - such as places for meeting, relaxing, and socializing among employees - is remarkable especially in corporate gardens. The percentage in the "connection", "educational" and "picking" gardens in poorer, as is the average in those that have commercial purpose.

It's not the size of the site or how many meters the space occupies that is considerable, but its relationship with other areas connected to the other spaces. In "corporate gardens", the percentage of the agricultural activities will often be lower than in convivial gardens, according to the survey. The garden could be a new space for relationships, with a multi-functionality quality characterizing all the functions it's designed for.

In this framework, the project that takes shape shows how multifunctional factors determine, the guidelines for the elements distribution inside the space. It is impossible to separate the convivial sphere because of its function and, combined with the professional sphere; both are able to produce an adaptable multi-functional space. To choose the percentage in the functional layout, the designer plays a fundamental role, calibrating the different functions depending on the needs of the community. Even in the phases of prototyping and implementation of the project, the definition of the functional layout will determine the characterization of the space (figure 2).

Figure 2. A sample of percentage in the functional layout

The definition of this balance between the parties is based on an a priori definition of some hypothetical values for the company. These parameters are not rigid, but malleable in respect to the community addressed for the project. Here are some examples of parameters for defining the values for the company: adults, workers and local communities, the initial financial contribution, multiculturalism, coexistence of different needs, curiosity to experiment new activities, the creation of a connection between colleagues.

4.1 A TOOLKIT TO DESIGN "WITH AND FOR": HOW TO GUIDELINE USERS' NEEDS

When applying design to the context of social innovation, there are some strengths to take into account: visualization techniques that support the involvement of diverse stakeholders in the process, a user-centered approach as a complement to top down methods, fast prototyping to rapidly test models in practice, a systemic approach that revolves around food, energy or care systems (Murray et al., 2010b).

That is the fundamental reason to help creative people to guideline their needs.

As the research has shown, at the basis of this new corporate systemic space is a strong integration between cultivated space and convivial space. Here, these participatory activities are linked to the green space itself in an active way, both connected and established in the space, without a direct contact with the agriculture activities.

Figure 3 (on the left) illustrates the percentages and the tripartite division of the convivial function, related with the time factor and its relative timeline activities.

Figure 3. A sample of convivial function and cultivated area

The concept of hybridization is also applied to the definition of convivial areas, which become more and more open.
The first part, called “meeting” refers to the time during the workday that is tied to primary activities - the space’s goals; they include conferences, business meetings and co-working area in a pleasant environment.

The afternoon, called “relax time”, provides a short coffee break and a lunch break, it’s when the space becomes part of a moment of connection between colleagues. The evening hours, are more focused on events or parties, such as cooking, yoga classes or fitness activities in general, but also team building activities.

The cultivated area has been defined as part of a sustainable health strategy, a natural space that is anti-stress and can improve the welfare of employees in a fun and healthy way. In terms of elements, it will not include characterization depending on the target, although there will be highlighted recommended items related to the target and the community addressed. As shown in the figure 3 (on the right) the items used are irrigation, compost, tools etc. There is not a stark choice of specific elements, but there are recommended items for the defined target (the company in our case) and the relationship with the relative convivial area.

For example, you may prefer more advanced elements in terms of technology or maintenance (depending on the financial contribution), or containers for compost and tools, given the multi-functionality of the space, but without any rigid and fixed definition by the designer. The next step involves the placement of these elements and the combination with the user-friendly functions suitable for this community.

To compose the masterplan, there is a definition of a layout using a square shape, with a reference surface area of 200 sq.m. Assuming the diagrammatic configuration of the space, it has been defined in a precise place: the terrace of a company (inside the building).

The spatial sequence diagrams involve the presence of three functions that follow a timeline of activities, generating a multi-functionality of the space. The cultivated area and the convivial area dialogue perfectly. They are daytime, in a business meeting with a flux of concentration in the convivial area; the afternoon, in a dining situation as an exchange between colleagues; the evening, extra-work, for example an event organized by the company. After the definition of geometric lines generating the space as exemplified in the diagram (figure 4), the multifunctionality of the space is obtained through the use of fixed elements, outlining the layout, and semi-mobile and mobile elements which change the function, and finally the internal flows.

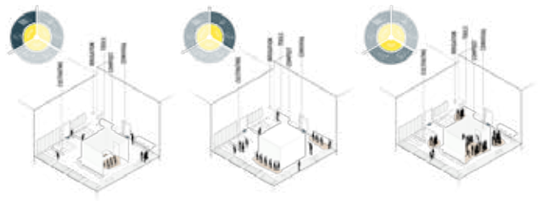

Figure 4. Masterplan composition

5. FUTURE EXPECTED RESULTS

This paper attempts to highlight the existing weakness in the spatial approach to design urban community gardens. A detailed research was carried out by the authors in three different geographical contexts to envision a greater understanding of the spatial dynamics in them. During the research activities there has been a direct contact with those communities who were taking care of the urban green spaces, overcoming cultural and language difficulties It helped to develop and create the guidelines to be applied in corporate contexts. Further, the research highlights how the design of spaces and services is linked to the community for which the space is designed.

This is a community of non-designers, people from different backgrounds but sharing a common goal of sociability. They are in need of guidelines that merge their needs into a space that encloses them. This paper has set out to go beyond the research carried out, by directing the guidelines for a precise target: a company.

Through some guidelines and a toolkit that simplifies the composition of the space, the expected results are a greater diffusion of the proposed methodology for an increase of the number of shared gardens in the urban context.

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HOW EDUCATIONAL PROCESSES AND SOCIAL ENTREPRENEURSHIP CAN SUPPORT AN URBAN REGENERATION IN MILAN

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Abstract – The goal of this contribution is to illustrate the design and educational process of collaboration between the BSc Interior Design Studio at the School of Design - Politecnico di Milano and the social enterprise maremilano that is orientated towards the urban regeneration of Cascina Torrette di Trenno area (Zone7 of Milan).

The Cascina Torrette di Trenno is one of several abandoned Milanese farmhouses – which constitute a distinctive legacy from the city's strong agricultural identity of the past – that in recent years have been granted to teams of organizations and social enterprises, by the Municipality of Milan, to be developed into new, long-term, public spaces with the support of local governments, foundations and companies. Students have been involved in a series of self-constructing workshops organized by maremilano and ConstructLab organizations, to experiment a site-specific and integrated design approach in the local urban context.

This, as many others, is a design process that activates social practices through the enhancement of new public spaces, where the urban regeneration of neglected areas triggers processes of social inclusion and cultural innovation and contributes to a more general shift towards a new culture of living in contemporary cities.

The process is expected, on the one hand, to result in the experimentation of open source experiences to enhance sense-making processes in urban territories , and, on the other, to continue developing inclusive educational strategies within the Politecnico School of Design,.

Social innovation / Urban regeneration / Active learning / Social inclusion / Co-design / Spatial design

1. FRAMEWORK

During the 3rd year of the BSc programme at the School of Design – Politecnico di Milano, students are involved in a 1-year process that starts with the Final Design Studio (5-months), followed by 5-months for the elaboration of their Bachelor thesis. These are fundamental steps in the School course and are closely linked. The Final Design Studio goal is "to provide the tools to critically interpret the project within the cultural, social and technological transformation context; students are asked to prepare an interior/environmental/spatial design, with particular attention to functional, typological, structural, and technical issues" (retrieved from the course prospectus of the School). This studio aims at developing wider critical and technical abilities in design students, and is the main and the most complete project developed during the bachelor programme. In the elaboration of their final thesis, students are asked to enlarge upon the studio project and/or the related theoretical research, under the supervision of the same teaching staff.

In the academic year 2015-2016, the BSc interior design class (conducted by professors Davide Fassi, Laura Galluzzo, Anna Meroni and Silvia Girardi) was involved in an educational process based on spatial and service design approaches, applying participatory design methodologies through co-design and prototyping activities. Students, in fact, had the possibility to develop design solutions in a real context, co-designing with real users and testing results through a final prototyping event.

In the elaboration of the thesis, students were asked to test and apply the same methodologies and research processes in a different context and with different stakeholders. The Politecnico School of Design set up a collaboration with Mare Culturale Urbano (Mare) and ConstructLab organizations, the aim of which was to involve design students in a series of workshops (February to May 2016) for the realization of furniture for a new urban community space through participative self-construction. The context is Cascina Torrette di Trenno in Milan, a renovated farmstead in the Milanese San Siro neighbourhood, which is the core of an ongoing territorial development triggered by Mare. The district is a multicultural area, located in the north-western suburbs of Milan, poor in cultural and aggregation spaces.

The research team dealing with this educational process is the Polimi DESIS Lab. It belongs to DESIS Network, an international association including more than forty international universities dealing with the development of design research and activities to help, improve and implement social innovation using design tools and methods (www.desis-network.org). This team includes design experts in service, interior, spatial and strategic design.

The collaboration set up between the Politecnico School of Design, Mare and ConstructLab will be the focus of this paper.

1.1 MARE CULTURALE URBANO (MARE) AND CONSTRUCTLAB AT CASCINA TORRETTE DI TRENNO: A SYSTEM OF PLACES AND ACTORS FOR URBAN REGENERATION

The School of Design set up a collaboration with Mare Culturale Urbano (Mare), an innovative start up and artistic production centre active in the west area of Milan, and ConstructLab, a collaborative construction practice that has several projects in Europe to its credit.

The aim of Mare is to promote and support a new model of territorial development for the suburbs: starting from a strong connection with the local dimension, Mare develops processes of social inclusion, urban regeneration and cultural innovation. Mare's operating model is based on the coordination of temporary residencies that interact with the social context to generate contents with a strong impact on specific urban territories (http://maremilano.org). Similar European examples are the Matadero in Madrid, le 104 in Paris or the Vooruit in Gent.

The Mare organization was founded in 2012; in 2013, the Milan Department of State Property launched a call for development proposals for a neglected area in Via Novara 75 in Milan (Zona 7); the area was granted to Mare in 2014 and is now under construction. The building, 6000 m², will spread over three levels, hosting a theatre and concert halls, 3 movie theatres, 2 audio recording studios, 5 rehearsal rooms, workshops, exhibition areas, multipurpose spaces, a guesthouse, a bar/bistrot, a bookshop and a fully equipped public green area suitable for adults, children and dogs. This place will become the "Mare Culturale Urbano", which literally means "urban cultural sea". The name plays with the fact that Milan doesn't have any sea. So, by deliberately referring to something that is lacking, it is declaring its intention of bringing something to Milan that is not already there: a new cultural centre. While awaiting the end of the construction works in Via Novara 75, Mare found a temporary headquarters: the Cascina Torrette di Trenno, close to the future cultural centre. The Cascina is part of a wider social housing project, "Cenni di cambiamento", the largest class A residential project architected in Europe with load-bearing structures in wood, (http://www.cennidicambiamento.it). It is supported by the Lombardy Region, the "Housing Sociale" Foundation, "Investire Immobiliare" real estate and a consortium of partners and sponsors. The Cascina, 1700m², opened in June 2016 and hosts 2 rehearsal rooms, 40 coworking stations, a restaurant, 3 rooms for participatory planning, a 500m² courtyard and a bookshop.

The "Housing Sociale" Foundation outsourced the management of the Cascina to Mare. It is a place developed with and for the local community, with highly interconnected spaces and services, for social inclusion and cultural innovation. After the building restoration, local organizations, inhabitants and students (from Milanese design and photography schools) were involved in its realization as a "place". The process was fundamental for Mare in order to make initial contact and get to know the neighbourhood, so as to lay the foundations of the complex process of building a community around these new public spaces.

Fig.1. The Cascina Torrette di Trenno, Milan. Ph. Marco Menghi.

"Costruire l'improvviso" ("building the unexpected") is the name of the campaign process conducted by Mare with ConstructLab. The project focused on building furniture for the new spaces of the cultural centre through participative self-construction. ConstructLab is a collaborative construction practice, working on temporary and permanent projects using a methodology that brings together conception and construction.

"The designer builds and continues to design on site. The construction site is no longer the place of uncertainty where the design contends with reality, but the context in which the project can be enriched by the unexpected opportunities that occur on site. The designers-builders bring the site to life through their permanent presence, generating new dynamics between people and allowing them to integrate other participants. This synergy results in a collective work, and gives the building site a sense of place" (http://constructlab.net).

Fig.2. The temporary lab of "Costruire l'improvviso" workshop in front of the farmstead (March 2016).

In spring 2016, the Politecnico School of Design joined this process, involving a group of interior design students in the participatory self-construction. 17 interior design students, divided in 8 groups, participated in 29 workshop-days (5/6 per student) from the end of February to May 21st 2016. They supported the ConstructLab team of designers and wood/metalworkers, together with local inhabitants and young people from social organizations, in the realization of 65 chairs and stools, 12 tables, 1 stage, 1 counter and 1 pergola for the Cascina.

Fig.3. The process: students, designers and inhabitants building the furniture (Feb-May 2016).

1.2 THE CITY OF MILAN: A SMART CITY

Milan is the second Italian city, after the capital Rome, for its economic, political and social importance in the Italian scene. Its densely populated surroundings form one of the main production areas, in the middle of a highly urbanized territory spreading from Turin to Venice.

In the last few years, thanks especially to a structured urban planning, to the investments allocated for Expo 2015 and to the municipality's ability to trigger the renewed energies of grassroots movements, the city has gained a brand-new image.

Contemporary urgent social challenges are manifestly evident in the several issues that cities are trying to tackle. This is an open issue worldwide since half the world's population now lives in urban areas. The Milan policies tried to interconnect these issues with the regeneration of many urban areas – big areas, transforming whole districts, and small ones, which impacted on specific communities – conducting and promoting social innovation. In other words, they are creating the governance, infrastructural and technological conditions to produce social innovation (Milan White Paper on Social Innovation 2016, within the European Programme URBACT III, 2014-2020). Urban transformations (such as the renovation of Porta Nuova, Porta Garibaldi or the Darsena areas) open calls, firstly for the reuse of public spaces (outdoor, for bottom-up community gardens, and indoor, such as the BaseMilano cultural incubator conducted by a consortium of associations) and secondly, for the innovative and inclusive use of existing services (such as the Open Schools call) and the boosting of transport-sharing systems: these conditions depict a panorama in which a system of actors is actively involved in city regeneration. Working groups were organized to set up the agenda for the city in order to address and enhance collaboration with local organizations, social entrepreneurships and informal groups of inhabitants.

The Cascina Torrette di Trenno is one of these transformations of the Milanese urban tissue towards community engagement. The role of universities as incubators of competences, knowledge and expertise, able to engage with their locality (Chatterton, 2000) and to play a pivotal role between public administrations, ventures and citizens (Fassi et alii, 2016), is the core of the educational strategy applied in the case presented.

Fig.4. Mare Culturale Urbano: the use of the new public space (July-Aug 2016). Ph. Luca Chiaudano.

2. GOALS

Through an experiential learning process, students became part of a real system that applies both service and spatial design approaches, contributing to the creation of a new community space. In the first phase of the academic year, the Design Studio – mentioned at the beginning of this paper – was structured to teach them how to design the intangible side (integrated systems and services) and the tangible side (layout, infrastructures, materials and technologies) of new public spaces and services for the university campus community and communities in the surrounding area. This would include students, professors, administrative staff, local shop owners and local inhabitants. Two main steps supported the process: a co-design activity with all the campus users, in order to test concept solutions by using appropriate tools that simulate roles and interactions to collect needs and opinions; and a prototyping event, where the designed solutions were modelled at 1:1 scale to be tested with people.

In the collaboration with Mare and ConstructLab, students tested the participative self-construction approach, enlarging on the participatory methodology in a different context. Being part of a complex system of actors and working on two different tasks – collaborating in the co-constructing process with a social enterprise on the one hand, while accomplishing their thesis research on the other – the students achieved three main goals:

- to understand the role of the designer in participatory processes, how designer skills can support communities and what the designer's role is in a complex system of actors;

- to understand how design research should be part of design education, in other words how the understanding and the application of strong knowledge-based concepts are fundamental to a set of skills with a high strategic value (Muratovski, 2010);

- to see how co-design and self-construction are means of applying design thinking to support and motivate final users in creating innovative solutions for the society in which they live and increasing awareness of a sustainable lifestyle.

By producing and supplying services, places and contents, Mare sets up a model of territorial development, thus providing economical sustainability, infrastructures, participation, co-design processes and access to technology. In this way, urban regeneration, social inclusion and cultural innovation can all be achieved.

3. EXPECTED RESULTS

The expected results are the experimentation of open source experiences in order to enhance sense-making processes in urban territories, thanks also to the creation of an open source manual to share and spread the design solutions developed. Furthermore, the research team amplifies the inclusive educational strategy.

With these results the researchers seek to contribute to a wider reflection about how collaboration between different actors can lead to long-term public spaces through open source experiences.

How does a design process that activates social practices through the enhancement of new public spaces – where the urban regeneration of neglected areas occurs through projects for social inclusion and cultural innovation – contribute to a shift towards a new culture of living in contemporary cities? How is the development of inclusive educational strategies (at Politecnico School of Design) enhancing an educational model for triggering the students' skills, their awareness about contemporary issues, their capability of contributing to these issues together with the design discipline?

4. METHODOLOGY

In the application of a service and spatial design approach, the interior design students learned that services influence human behaviours and life-styles more than products, that services are a form of social interaction and that, focusing on the contemporary city, public spaces are the platform where these relations take place. By applying a community-centred design (CCD) approach (Meroni, 2007),meaning a scaling-up of human-centred design to tackle complex challenges and deal with groups and communities at society scale –, students experienced participatory action research. This is a transformative process of analysis and inquiry that sees the active engagement of the researcher/designer in a real, specified context. He/she includes and collaborates with the people involved, working towards a planned organisational change to solve real problems. Talking about "context" means not only focusing on time and space components, but on all factors that influence the way people experience the public sphere.

This methodology crosses the participatory, self-constructing approach of ConstructLab, which is based on an initial phase of observation/reflection/creation, a second phase of research about self-construction and a third one in which a shared space identity is generated through site-specific parameters.

5. DISCUSSION

Throughout the 5/6 workshop days at Mare, students had the opportunity to experience directly a participatory process based on self-constructing. They played a double role: they were implementers, contributing to the physical realisation, and they played the role of readers, learning the participative process by doing and disseminating it. In this experiential learning process students were both researchers and participants, exploring their dialectic role as activator/facilitator (researcher) while acquiring awareness and building their capacities (participant).

This balance is part of the educational goal: to guide students in understanding the role of the designer in participatory processes. The experimentation allows them to analyse how the designer sets up a mutual and dialectic exchange with the actors involved, without imposing any roles but with each seeking to understand the others' tasks, the role of the citizen as agent of change and the balance between involvement and empathy. The designer becomes a "process facilitator who acts with design tools [and] within a more complex network of actors where his main interlocutor, his actual client, may be an institution, a local authority or, as in this case, creative communities" (Meroni, 2007). Design is thus called to act as a culture and not as a mere function, focusing on process-oriented rather than object-oriented design actions (Cassim & M'Rithaa, 2015).

The experience at Mare led to the following important insights. Firstly, one of the key elements of the educational strategy is to enhance the future designer's commitment to common issues and the awareness that design outputs should be "functional social processes with a meaningful contribution to the society" (Muratovski, 2010). Secondly, active participation in socially responsible activity could enhance critical analytical skills: this strategy could "promote the development of responsible and intelligent citizens" (Stanton, 1987).

Such goals are interconnected with the importance of including design research in design education. Being aware of the high strategic value of design practice is part of the development of an inclusive educational strategy at the Politecnico School of Design, in order to trigger the students' skills and capability of contributing to contemporary issues with the design discipline.

The capability of being strategic in designing for places, and in their sense-making to promote social change, doesn't mean subtracting the aesthetic aspect of design from its social one: the design act, which alters the urban experience and introduces artefacts in the urban field of perception, operates as an aesthetic practice and not only as a socio-political one (Markussen, 2013).

6. CONCLUSION

Our reflection focuses on how collaboration between different actors can lead to the creation of long-term public spaces through open source experiences, thanks to the support and the strategic framework of public administration, foundations, ventures, universities and citizens. In this way, a shift towards a new culture of living the contemporary city can be supported by a structured, participative and designed system that can influence social behaviours and regenerate common goods.

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SOCIAL RESPONSIBILITY OF HIGHER EDUCATION SECTOR IN SLOVENIA: THE CASE OF FACULTY OF DESIGN

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The paper reports on the responsibility of the organizations regarding the impacts of their decisions and activities on the society and the environment, which is seen through socially engaged and transparent management that can contribute to sustainable development. Recently, the concept of social responsibility has gained importance in educational sector as well, since the consolidation of the concept in companies increased the demand for skilled professionals with competences for responsible management. Therefore, the higher education institutions are forced to define their own responsibility towards their stakeholders. Just as it is important for companies to be sensitive to social problems of communities, it is important that higher education institutions are willing to participate actively in resolving them. Higher education institutions should play a key role in disseminating awareness that both economic and non-economic development should be socially responsible and, therefore, responsive to the needs of society and natural environment. The concentration of highly educated people with the relevant competences and high ethical and moral standards should contribute to continued development of the local community, country, region and society as a whole. In the article we will examine some of the initiatives that address these challenges in the operation and the curricula of Faculty of Design, as we may argue that social responsibility is in part derived from individual ethical values of its designers, but it is also a response to the needs of their clients and the society.

Higher Education / Management / Design / Social Responsibility

1. INTRODUCTION

The concept of social responsibility (hereinafter SR) has gained its importance and popularity with the global rise of »sustainable development« concept (Frey, 2007,pp. 80) and in recent years it has become a central theme of global social environment. SR is also one of the key factors for the success of modern organizations, since organizations nowadays need to operate in a long-term, systematic and systemic manner (Bertoncelj, Meško, Naraločnik & Nastav, 2011, pp. 108). Although the paradigm of SR is globally designed for the operation of organizations, the factors for the implementation are locally conditioned, which has led to divergent practices in the implementation of the latter. The options and the understanding of SR also depend on national, political, economic, cultural, social and other factors. Jambrek (2013, pp. 55) argues that the understanding and implementation of the concept of SR in individual performance, are liable in order to create a better and fairer society.

Therefore, corporate social responsibility (hereinafter CSR), covers the responsibility of an organization for the impacts of its decisions and activities on the society and the natural environment through transparent practices in these areas. CSR contributes to sustainable development and takes into account the expectations of all the participants, in accordance with applicable legislation and international norms of behaviour, it is integrated into the entire organization and practiced in all its relations (Dolinar, 2010). Corporate social responsibility has grown into the organizational culture and is emerging as one of the key areas of innovation. According to the Bain & Company (2013) survey, it is within the conscious organizations that they understand the commitment to SR as a win-win situation while not diminishing their profitability.

1.1 SOCIAL RESPONSIBILITY IN ORGANIZATIONS

Organizations reflect their own character by using socially responsible practices, since these serve as an innovative tool for improving relationships with customers. Creating synergy in the functioning of organizations can bring significant benefits, especially in terms of a positive public image, innovative products and processes, highly skilled and motivated employees and the possibility of entering into new markets. SR could be similar to a registered trademark for the organization, as it constitutes financial and non-financial assets (Lah, 2000). Through clever engagement in SR projects, organizations can take a competitive advantage over other organizations (Doebele, 2005). In order to increase their competitiveness through the implementation of socially responsible principles or actions, organizations can therefore be associated with a variety of anti-globalization, consumer, environmental and non-profit associations who include social and environmental programs and ethical norms into their operation (Ahmad, 2012, pp. 1). Socially responsible organizations that increasingly monitor their own performance become more aware of their impact and actions and, thereby, they also effectively prevent crisis events and risks (Shirastava, 1995). Such activities also strengthen the social capital of the organization, since it can be fully integrated into the local or wider community. The latter is particularly important in developing social and environmental projects within the organization (Jančič 2002, pp. 4-7).

For this reason, the paradigm of SR flourished from the economic sector to non-profit organizations, such as governmental sector, local and regional institutions and non-governmental organizations. Given the already established fact that the core mission of non-profit organizations is to pursue the publicly beneficial aims and goals, these companies may use their constructive initiatives to increase the sense of SR and, consequently, encourage the development of more efficient and responsible operation and strategic partnerships in the wider environment in which they operate. The important fact that should not be overlooked in dealing with non-profit organizations is the ability to create and influence public opinion, since the majority of non-profit organizations do not sell their products, but their ideas, programs, services and their mission. Non-profit organizations in dialogue with its stakeholders set their own goals, values and indicators, which measure their own performance.

2. ACADEMIC SOCIAL RESPONSIBILITY

Consolidation of SR in the profit and non-profit companies has brought an increase in the demand for skilled professionals with competences in sustainable and responsible governance and management (Ahmad, 2012, pp. 79). Education, especially at the tertiary level, can contribute to a better understanding of the challenges of the postmodern society and encourages the socially engaged activities. Vazquez (2013, pp. 148) argues that higher education institutions should play one of the key roles in spreading awareness about the importance of SR for economic and non-economic development and, therefore, they should be responsive to the needs of the society and the natural environment. For this reason, it is important to emphasize the role played by higher education institutions in promoting the development of values, culture, ethics and norms in the transfer of the latter in practice and their contribution to sustainable development. The concentration of highly educated people in higher education institutions, with highly developed values, culture, ethics and norms should contribute to sustainable development in economic, social and environmental interests of local communities, regions, countries and the global society in general (Fray, 2007, p. 83). It is the mission of higher education institutions to consider the main means of how to achieve social transformation. Dima, Vasilache, Ghinea and Agoston (2013, pp. 23-43) are the authors who have defined a number of reasons that emphasize the importance of the concept of SR of higher education institutions, namely:

- higher education institutions form employees in both public and private sector;

- higher education institutions play a major educational and research role within the communities in which companies operate;

- higher educational institutions help people find balance between their personal and social needs;

- higher educational institutions build strong strategic relationships with their stakeholders, in order to stay competitive;

- higher educational institutions contribute to regional lifelong learning and employability;

- due to changes in higher education market; the corporate involvement in higher education institutions has increased;

- the collective awareness of students and professors has risen, which creates the need for implementing CSR initiatives;

- higher education institutions are urged to integrate sustainability concepts in their curricula, due to environmental changes.

By making higher education institutions become more socially engaged, their role in the society is radically changing as they accept public responsibility to promote social justice and inclusiveness, which is in its founding acts noted by the

European University Association. These factors encourage higher education institutions to define their own powers and responsibilities in creating awareness about the competences of its participants (e.g. the management, employees, suppliers, students, experts, etc.), which are necessary (and important) for sustainable development (Brown & Cloke, 2012, pp. 475). For just as it is important that in the era of learning, innovation, information and sustainable society, companies become sensitive to social problems of communities, it is also important that the higher education institutions are prepared to participate actively in resolving them (Vazquez, 2013, pp. 147).

The concept of SR in higher education can, therefore, be defined as "strengthening of active citizenship, which is based on voluntary and ethical approach of students, staff and management of higher education institutions and who are committed to implement sustainable actions in local or global environment". Since higher education institutions are mostly non-profit organizations and are, regardless of their legal form of operation, not established with the aim to make a profit, their commitment to SR is more than relevant.

3. FACULTY OF DESIGN

Dima et al. (2013, pp. 23-43) argue that two main aspects should be considered when approaching the issue of SR in universities, the first one is encourage students to think more deeply about ethical issues. Universities or higher education institutions should focus more on the development of certain skills like critical thinking, ethics, intellectual property etc. Therefore, they should analyze their curricula and reconsider some aspects related to SR. The second aspect regarding social SR in higher education institutions refers to projects which have a direct social impact and are conducted (driven) by them. There is also the human resource issue, where pedagogical staff should be consistent with the values they lecture. Certainly, social and environmental issues are important components when it comes to operation of the Faculty of Design, in addition to compliance with standards, transparency and academic and business ethics. The sustainability issues are included in educational, artistic and scientific activities as well as in the relations with all stakeholders. The faculty is focused on sustainable development in terms of awareness of how important this aspect is for our future. In the SR context, there are several fields of operation:

- faculty − business environment cooperation;

- faculty − other institutions (community) based cooperation;

- international cooperation;

- cooperation with other faculties (universities);

- student- and alumni-oriented projects (socio-cultural and ecological projects).

We can argue that if design is to continue to play a role in corporate strategy development, it is essential that design students, designers and design managers become literate in the area of sustainability and CSR. The principles we follow are integrated in the pedagogical work with the students: 1. encouraging the use of natural, biodegradable and indigenous materials; 2. encouraging the three R´s (reducing, reusing, recycling); 3. minimizing waste in production (the principle of "zero waste design"); 4. minimizing the number of parts and the size of the product or packaging; 5. applying energy efficiency; 6. making sense for the community.

3.1 THE CURRICULUM OF THE FACULTY OF DESIGN

In order to be better prepared to make design-related choices, students need to understand that design requires building conceptual understanding and certain sets of skills. This process provides a cognitive framework of analysis, synthesis and evaluation that is used by many professionals to create solutions to design problems (Vande Zande, 2011, pp. 27). In design–focused curricula of the Faculty of Design, students go through this process, which starts with defining a problem and moves to researching, brainstorming, developing a prototype (if possible), presenting and finally revising a concept drawing or a model. At the Faculty of Design we have observed that SR lessons in design curricula can help students explore how sustainable design contributes to a healthy environment and the involvement in such design projects prepares students to take a more active role in shaping the society that surrounds them. From the very start, the Faculty of Design has been using a d´ school principle, which is a creative process that helps us design meaningful solutions in the classroom, at our faculty, and in our community. As designers make decisions daily with regard to the use of the resources and the lifecycles of the product and services, it is important to know their users and care about their lives. That is how they can create useful and SR innovations. Beside critical thinking, design thinking method is used to solve complex problems, and find desirable solutions for clients. Through design thinking process we can design the way we lead, manage, create and innovate. The design way of thinking can be applied to systems, procedures, protocols, and customer / user experiences. A design mindset is not problem-focused, it is solution-focused and action-oriented towards creating a preferred future. Design thinking draws upon logic, imagination, intuition, and systemic reasoning, to explore the possibilities of what could be, and to create the desired outcomes that benefit the end user (the customer). Through design thinking process students develop design competences that lead them to analytically view of both old and new ideas, methods and products. Properly applied, these competences can teach students how to promote the use of design to care for and sustain our environment, improve societal conditions, and respect diversity.

4. CONCLUSIONS

As we have seen, many companies are setting their own agendas for CSR. But recently, attention has also been paid to the role the higher education institutions can and should play in promoting the development of SR. Education in general, but particular higher education, enables people to better respond to the society changes, so the essential objective of today´s universities is making people become more socially responsible. Two main factors seem to support the orientation of higher education institutions towards a SR attitude: the changing environment in which universities operate and the challenges that higher education institutions have been facing lately (increasing marketization and competitiveness). At art and design oriented faculties we try to teach students that the problems they are trying to solve are rarely their own and, therefore, a design lesson based on sustainability is a way to focus on an urban issue, leading them through the process of design thinking, with researching background information as a basis for creating a modified or even new solutions. Whether the products the students create are put into the use or not, that does not affect the benefits gained by analyzing the social, economic, aesthetic and political issues that surround the design problem. On the other hand, we must not forget about organizational design and practice such as ethics, ethical conduct, and the primary values and beliefs of the organization and its employees and the necessity to become part of the organizational culture. Nevertheless, SR in the academic environment needs to become a purpose of the academic environment, as young people´s formation also means creating a high level of awareness about involving the members of the society in the process of solving social and environmental problems.

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ART AND DESIGN HOTEL

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Abstract - The paper presents a successful example of collaboration between educational organisations and tourism in the field of developing of tourist facilities and hotel interior design. The project engaged students and mentors from all departments at the Faculty of Design - Interior design, Textiles and Fashion, Visual Communications, and Design Management. In addition, the project also participated Faculty for Management and Faculty of Tourism and Studies of Primorska University in Slovenia. The project was carried out according to the principles of D'school - classes as educational units composed through interdisciplinary teams of students and supervisors. D'school method is based on design thinking and it emphasises the importance of different sciences and their cooperation with the aim to solve complex multidisciplinary problems. The project has been resulted concepts through seven hotels with various concepts. Hotel facilities include: shopping street, restaurants and bars, spa centres, hairdressing salon, conference hall and children's play area.

Interior design / Design thinking / Tourism / Interdisciplinary / Creativeness / Education

1. INTRODUCTION - D'SCHOOL AND DESIGN THINKING

The D'school is a place where experts from Universities and industry come together to work on projects that require their different points of view. This creates a vital interactive environment. The diversity and breadth of the D'school community makes it possible to establish both new initiatives and projects that integrate a unique mix of disciplines. This kind of radical collaboration creates a culture of innovation at the D'school.

Professional designers have to learn to understand problems that other people may find difficult to describe and create good solutions for them (Lawson, 2005). Design thinking is a term used today to define a way of thinking that produces transformative innovation. (Burney, 2006). The concept of design thinking can also be used in any enterprise where we should care about creativity. It is used by economists, contractors, architects, designers, in medicine, marketing as well and so on. Design as an innovative problem-solving methodology is fast becoming an imperative business strategy (Burney, 2006).

The essence of the design thinking is shown in Figure 1. When we intend to solve any human problem, we must pose three questions: is the proposed solution technically feasible (technical feasibility), is the solution usable or desirable for anyone (usability, desirability...), and is it economically viable (economic viability). Only when the solution satisfies all three views it has a chance to succeed. From all that follows that multidisciplinary approach, where all team members contribute from their respective viewpoints is necessary for successful problem-solving (Vahčič, 2008).

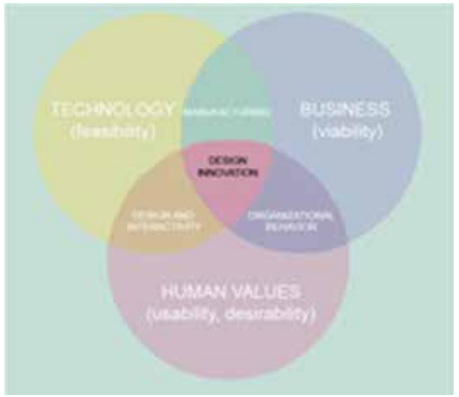

Figure 1: Design Thinking

1. 2. MULTIDISCIPLINARY WAY OF SOLVING PROBLEMS

Research and development projects carried out at the Faculty of design are a reflection of the recognised need for more effective cooperation between educational institutions and companies, whose participation is necessary to achieve greater propulsion industry, new brands and products. The ultimate objective is to develop innovative, environmentally friendly, high designed products and environments that will preserve our environment and assure its' coexistence with humans as well as assist companies to successful sales management, which in time of crisis is even more important.

In the academic year 20015/2016 we participated on project named "Art and Design Hotel". We have developed the concept based on the fact that a singular branch cannot be successful at complex problem solving and that we have to use an interdisciplinary approach. Following the d'school principles, we have formed interdisciplinary teams of supervisors and students. Representatives of three Bachelor programmes were involved: Interior design, Visual Communications, Textiles and Fashion. At the end was formed a group of 81 students. 76 from Slovenia and 5 international students. In total, 47 students were presented Interior design, 21 of Visual Communications and 13 of Textiles and Fashion. We created 7 working teams which were supervised by 6 mentors: prof. Nada Rožmanec Matičič, assoc. prof. Jasna Hrovatin, assist. prof. Nataša Vuga, assist. prof. Jana Mršnik, assist. prof. Katarina Klemen, assist. prof. Inge Kalan Lipar.

The project began with a two day introductory seminar, at which 8 trainers worked together and approached throughout different fields: design, interior design, tourism, innovation, visual communication, textiles and fashion, technology, architecture, interior design, and art.

We worked the projects step by step, advancing according to the stable levels of design thinking methodology. The design thinking process has six basic steps: understand, observe, define, ideate, prototype, test.

Main concern of the project was to design luxurious tourist facilities for the hotels in the different regions of Slovenia. At initial stage of the project, students conducted a field survey, which results are presented below the text.

The next step was that the students to define the potential of the end-users. Consequently, they had to define the limitations and priorities. Then it was necessary to researched how others solved similar problems and what were their advantages and disadvantages. Students talked with end-users and identified their needs and motivations. The goal was to generate as many ideas as possible to satisfy the identified needs. Students combined, expanded, refined ideas and elaborated prototypes. (Figure 2.)

Figure 2: Visualization (students from Interior design)

The project has been resulted concepts through seven hotels with various concepts: Hotel Flectum is business fashion hotel, Awen is Art and design hotel for single women and men, Canvas hotel is made for young creators – painters, designers, culinary enthusiasts, Hotel 4 presenting features all the Slovenian regions, Hotel named Babymoon is creating for pregnant women. The basic idea of Hotel Luft is present Slovenian traditional food and traditional craft, Hotel named Focus is designed for the purpose of relaxation, meditation and deepening itself. Hotel facilities include: shopping street, restaurants and bars, spa centres, hairdressing salon, conference hall and children's play area. Each project was unique and dedicated to a specific target group and have its own

concept, but nevertheless, all projects linked by a common theme: “How to search for synergies among tourists, local residents and students?”

Students from department of Interior design, designed interior design for hotel rooms and all other hotel facilities. Students from department of Visual communications were created corporate identity for each hotel, as well as menus and packaging for products that could be sold in the hotel shops. Students from department of Textiles and fashion were created different textile materials, which should appear in the hotel as well as the original slippers for guests hotel rooms.

Through the whole procedure, the project group followed the principals of Tom Kelly: “Pay attention to how your customers might like to interact with your products or services, and a remarkable change takes place. You can do more than simply satisfy their immediate needs. You might actually make your customers feel like heroes.” (Kelley, 2001).

The project was presented at the Faculty of design and at GIDE (Group for International Design Education) Workshop in 2016 in Leeds, where a group of the project FOUR won the Audience Award. The experience obtained will be an investment for new projects.

2. RESEARCH METHOD

Within the framework of the project “Art and design hotel”, we tended to link all engaged sides for collaboration. In this way, we have integrated communication between students, local residents and tourists where we used a method of survey. The survey was conducted among students of their peers aged between 20 and 30 years. There were fully completed 233 questionnaires. (figures 3, 4)

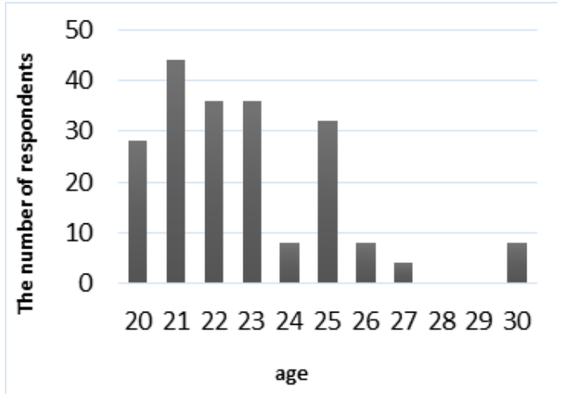

Figure 3: The age structure of the respondents

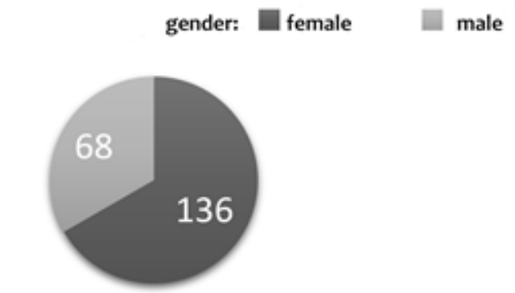

Figure 4: The Gender structure of respondents

As a research method, we used the interview, and as a research tool, a questionnaire. Measurement of phenomena was in the research done by using different methodological approaches. For some questions of this study we used a nominal scale, which involves a simple form of measurement, when a specific number is used only to identify the object of study or any of the characteristics. We also used calculating operations, where we counted individual phenomena, and among different scales of measurement, we used the ordinal scale, which was very useful and of great assistance in classifying objects of research according to certain characteristics (excellent, very good, good, satisfactory, unsatisfactory...).

Our questionnaire consisted of closed and opened type of questions. Closed type of questions were used because it is much easier to explain and to classify answers to closed type of questions. We have used open type of questions where we wanted to get inovative ideas, based on the experiences they have had users of tourist facilities.

3. RESULTS AND DISCUSSION

We were interested to find out which public spaces for socializing of young population have been preferred in Ljubljana city by the fact that they are visited them most frequently.

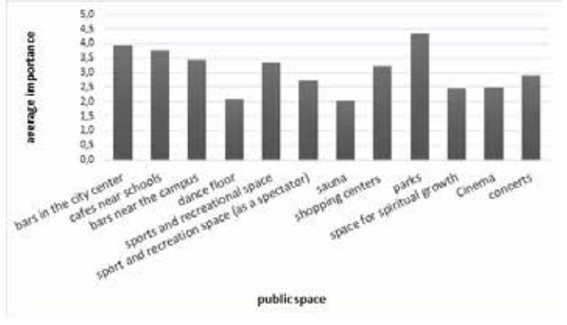

Figure 5: Most frequent visited public spaces by young population in Ljubljana

We have found out that young people in Ljubljana most frequent visit the parks and bars. Further on are popular sport and recreation spaces, and shopping centres. It is interesting that they are less interested areas for dancing and cinemas, which were twenty years ago the most common forms of socializing young people.

Second question concerned the importance of the criteria to select the hotel.

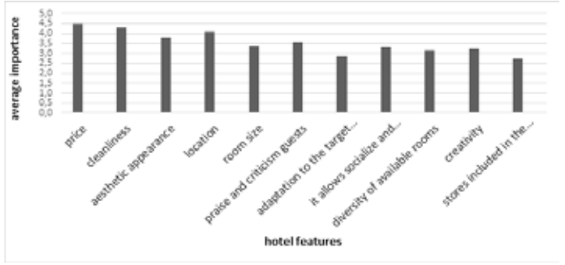

Figure 6 : Feedback from guests (praises & critics)

We found out that all ranked criteria of the survey were relevant and that among them there are no major discrepancies. As we interviewed the younger population we expected that the most important criterion is price, followed immediately by the cleanliness and location. Besides, very important factor represents also the opinion of other guests of the hotel. On the other hand, it was surprised that the factor of shop inclusion within the hotel complex and the level of adapted equipment to different target groups got minimum attention. This fact may probably resulted the fact of the age of respondents. If we accomplish a survey among the elderly and businessmen, we might get significantly different results.

We wanted to know how much time young people spend on individual forms of communication.

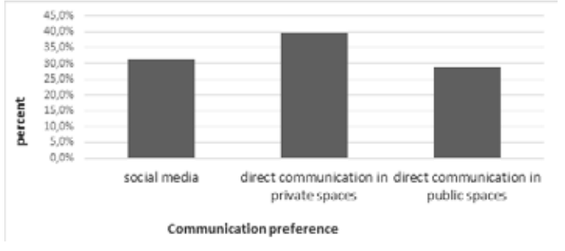

Figure 7: The frequency of communication approaches

We have found out that many young people communicate through social networks, but they still use in pretty large proportion the direct communication in private and public spaces.

4. CONCLUSION IMPLEMENTED IN THE PRACTICAL CASE

Research has shown that young people use virtual and public places to socialize with friends, which are often designed for socializing activities. Depends on personal preference, some youngsters prefer places that are designed for sport and recreation, while other remain mostly in pubs and shopping areas. We can’t determine, that there are certain public facilities, which are designed to socialize and are highly popular and frequently visited. Based on this, we decided for a solution to include in the hotel complex a variety of public spaces, but the choice should be adapted to the target group, which dedicate to the hotel. Finally, we created a scenario by which we have reached the connection between tourists, local residents and students. Students were engaged as connector to provide to tourists Their Different Cultures. We wanted to design tourist facilities that offer not only accommodation, but opportunity to learn about different cultures, knowledge transfer and networking by making new relationships. Thus, with engagement of the student population, we have initiated intergenerational exchange. In this way, each hotel could have a specific concept which would create a relationship a mong tourists, the students and the local citizens.

The basic idea of hotel Luft is to promote Slovenian characteristics and specifics. The Luft Hotel reminds us of a small city where many cultures collide and new friendships are made. The hotel has its own shopping street with shops and markets. The markets are selling traditional Slovenian food and promoting touristic farms. Agronomy students have their own market as well. The traditional craft is presented to the customer and is also given a chance to learn the technique at a course. In the hotel we also have a gallery were there art works from Slovenian sculptors, painters and art students. Hotel has its own library where reading events are organized. The reading events are lead by the the Academy of Theatre.

The concept of the hotel Four is ‘Slovenia in small ‘, presenting all the Slovenian regions to the visitor. It is situated in Bovec which is close to various natural attractions. The hotel includes features from four Slovenian regions: Primorska, Štajersko - Pomurska, Dolenjska and Gorenjska. These features are embedded in the interior, so that the domestic and foreign visitors can exeperience Slovenia in whole. The regions are presented through the architecture, visual patterns, colors, and the material palette. The restaurant offers the local cuisine in the context of each province.

With this research, we found out that among the most important factors that determine the decision to choose the hotel in which we stayed affect: the unique offer, variety of rooms and the aestetic appearance of the hotel equipment. Therefore, we have designed the hotels Canvas and Flectum which offer an unconventional and creative experience.

The concept for Canvas Hotel was to combine the comfort of a hotel and the creativity of young art academy students. That's why the Canvas Hotel is exactly made for young creators – painters, designers, culinary enthusiasts etc. The unofficial slogan "Leave a mark." directly serves as our inspiration - every room has a special blank canvas panel by the Slovenian producer Trimo, meant for the artist to transform into something unique. Once a year the hotel would exhibit these canvases. The best works can later be used as the part of the facade which can constantly change and reflect the artistic spirit of time. By doing this, young art academy students do not only leave their mark and thereby contribute to the personalization of interiors and exteriors, but can also have a chance to sell their original artwork and build their own brand. The Canvas Hotel offers their guests specially designed slippers named BLANK – a blank canvas and the Slovenian constructivist August Černigoj are the inspiration. Guests are encouraged to leave their mark and to make their own unique slippers.

Hotel Flectum is business fashion hotel, which haven't included fashion into hotel just with shopping lane, but inside the hotel will organize fashion shows and other events. In hotel students will have weekly meetings where they would exchange their ideas and thoughts. It will also have lectures from older architects and designers. All of these meetings and gatherings will be in the congress rooms and cafeteria of hotel.

Research has shown that young people today communicate largely through social networks (eg. Facebook). Direct communication is reducing. Young people have created less personal contacts, thus they are losing the virtues of direct mode of communication.

Hotel AWEN is designed for single women and men, who wish to meet new people without the involvement of technology and the internet. A special feature of the hotel is a wall with blank pieces of paper, which the guests can use do describe themselves, either by drawing or writing on them.The reception and the atrium are places where the guests can meet new people. This is also a great opportunity for students to get in touch with businessmen from abroad. The restaurant has a small stage where professional artists as well as students can perform for the guests. The gallery is a place where designers and students can show case their art and designs.

Babymoon is a hotel concept based on idea of creating a place where pregnant women are able to not only relax, but also receive professional care fitted for pregnant women, as well as education and a place to interact, share tips and experiences with other pregnant women. The aims was intertwining the local community with the guests of our hotel.

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HOLISTIC CONCEPTS IN SUSTAINABLE SPACE DESIGN

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Abstract –This paper researches three different holistic design concepts which can be used in sustainable design: feng shui, geomancy and the nature of order. They all share the same idea, that our world is a world of mater and a world of spirit. And that a design concept which incorporates both, has a much greater possibility of being a long term successful and sustainable space solution. If traditional Chinese feng shui was primarily a way of explaining the ways of the world and the connection between heaven and earth, contemporary geomancy and the concept of the nature of order were powerfully imprinted by the spatial devastation which was the result of industrialisation and modernisation. In feng shui the spirit is embodied in the life force qi that permeats everything there is, Alexander calls it the life potential that can be found and enhanced in both living and non-living matter and Pogačnik talks about living earth in geomancy. All three concepts go beyond the material world embracing spirit, consciousness, god, the creator, or however we choose to call it. They explore how these concepts can influence the design process and they open up a whole new research area in holistic sustainable design.

Feng shui / geomancy / nature of order / sustainability / spir

1. INTRODUCTION

This paper researches three holistic design concepts which can be used in sustainable design: feng shui, geomancy and the nature of order by C. Alexander. They all share the same idea, that our world is a world of mater and a world of spirit. And that a design concept which incorporates both, has a much greater possibility of being a long term successful and sustainable space solution. An important difference lies in the three concepts and conventional sustainable approach. If the world in the times of great Chinese classics (around 0 a.d.) was still a largely unspoiled and pristine place, sustainability primarily originated out of the need to lessen the impact of human growth on the planet. If traditional feng shui was primarily a way of explaining the ways of the world and the connection between heaven and earth, contemporary geomancy and the concept of the nature order were powerfully imprinted by the spatial devastation which was the result of industrialisation and modernisation. We can find references in the work of Pogačnik (Pogačnik, 2010) and Alexander (Alexander, 2002-2005) which show, that their concepts of geomancy and nature of order were directly inspired by spatial problems encountered on local or global level. It is also worth to note, that the three concepts presented in the article are not immediately connected. Pogačnik distances himself from the traditional feng shui and never mentions Alexander, and Alexander is all the time immersed in scientific explanations of his models and never tries to prove his concepts with the help of philosophy exclusively. Never the less it is obvious that the concepts of Daoist philosophy (one of the foundations of feng shui) are known to him. Feng shui on the other hand originates in the works of many authors spanned over sever-

al thousand years and therefore doesn't directly address the environmental problems we are faced with today. But it's approach, grounded in a quest for harmony between the environment the designed space and the human is at the core of every contemporary sustainable concept. What makes these three concept unique in comparison to the 'ordinary sustainability' is that they talk about spirit. In feng shui the spirit is embodied in the life force qi that permeates everything there is and in the idea that everything animated and not animated has a spirit. C. Alexander calls it the life potential that can be found and enhanced in living and non-living matter. Pogačnik talks about living earth which is not only an artistic but also a scientific model (Lovelock, 2007). But in spite of their common spiritual core concept the three developed quite different structures with recommendations that can be embedded into sustainable design.

2. THE THREE APPROACHES

2.1. FENG SHUI

Feng shui encompasses the spiritual ideas of Oneness and Earth as a living being, and more specific philosophical concepts such as Yin and Yang, the living force Qi, the Five Phases and the Eight Trigrams. It is well structured and immersed in traditional Chinese culture, but poorly researched by contemporary science as regards its effectiveness. It gives an in depth example of how spiritual concepts can be incorporated into design in a very tangible and definite way.

Feng shui was developed over several thousand years in China, up to the Cultural Revolution (in 1966) when it was, along with other traditional Chinese knowledge, banned from official doctrine. There are two main approaches in feng shui, the School of Form and the School of Compass, which developed simultaneously in two different parts of China from the same philosophical background. The School of Form is more concerned with the intuitive reading of the landscape and it its forms, The School of Compass is more analytical and mathematical (Wong, 1996).

Qi is life force that permeates everything. The Indians call it Prana, the Chinese call it Qi. Qi is understood to be life itself. Qi is the force that is manipulated and activated by Chinese acupuncture healing and it is the force used in Marshal Arts. But Qi is no longer only a metaphysical concept, it is also an object of scientific research. Experiments by dr. Yan Xin (2001) prove that Qi can be accumulated and directed through the body for healing purposes. Feng shui claims that through proper design, this Qi life force can be used, enhanced or manipulated to achieve a more supportive living environment.

The School of Compass developed in the flat northern part of China. Instead of reading the forms of the landscape, they relied on earth's magnetism. What was initially a Cosmogram developed into an elaborate feng shui Compass with three different systems of rings. The School of Compass developed many methods suggesting that there are benevolent and malevolent influences stemming from specific Compass directions in specific time frames. The readings of the landscape in the early beginnings where very much connected with the fertility concept, so it is not surprising that we can find diagrams of landscapes that are reminiscent of female reproductive organs. Kubny believes that feng shui at its beginnings can be perceived as an early matriarchal cult that under a wider umbrella of different methods managed to survive up to today. (Kubny, 2008:221) The East and West method (Moran, Yu, Biktashev, 2005) is based in the Yin and Yang philosophy and divides all buildings into two big groups: the East group and the West group, which together form eight basic building types, consistent with the eight trigrams. A west or an east preference can be assigned to a person as well, according to date of birth.

The School of Form analyses the flow of Qi in the landscape, the so called Dragon Veins, and tries to place the building in the right position as to get the most out of the surrounding environment, and to protect itself from the unfavourable influences. Wind and water, as the name of the art suggests (feng means wind, and shui means water), are of utmost importance in feng shui. Mountains in Chinese culture are on par with Dragons as the word for dragon is the same as the word for mountain. So to find the best place for a house, the master had to 'ride the dragon', search the mountain slopes for Qi or Dragon Veins. Similar to blood circulation in the human body, the Earth, as a living creature, has a Qi vein system that enlivens her body.

The most important concept in the School of Form is the concept of the five animals, one that the ancient Chinese used to show spatial arrangements in which we feel protected and in charge of the situation, the so called power positions. The turtle builds high protection at the back, the tiger and the dragon guard the flanks that should be slightly lower, and the phoenix bird needs flat open space to fly. This same spatial concept was also identified through contemporary science, using the vocabulary of environmental psychology instead of symbolic feng shui animals whose names originate from cosmology (Field, 2006).

Besides the analysis of the surroundings of building plots, the School of Form developed a wide set of recommendations for the design of the interior ranging from bedrooms, kitchens, toilets, to stores and offices (Lim, 1997, 2000, Brown, 2000, Wong, 2001). For example: our beds should be placed with the bed-head against a solid wall and our legs should not face the door, since this was associated with the position of the dead. There should be no heavy objects above the bed and the bed should not be positioned in the door – window or door – door straight line, since it is too dynamic and not supportive.

The Xuan Kong method (Wong, 1996, Moran, Yu, Biktashev, 2005), also referred to as Flying Star feng shui (Too, 1996), deals with the concept of time, or with the probabilities of things happening in a specific space-time frame. It uses the model of nine floating stars to calculate the probabilities of favourable or unfavourable events in a specific part of the building. The stars or numbers are used as symbols, but they are supposed to represent the influence of other stars and planetary bodies influencing events on the earth. The unsupportive influences of Xuan Kong can be harmonised with the right use of the five phases (the five elements): fire, earth, metal, water, and wood. Harmonious relationships between the five phases are more important than the properties of the phases themselves. In theory, the five transformations of the living force Qi and everything in existence can be attributed to one of the five phases: seasons, colours, senses, organs, numbers, forms etc. According to this concept in interior design one has to look for existing relationships between the phases and harmonise them when necessary. (Kryžanowski, 2012)

2.2. POGAČNIK'S GEOMANCY

Geomancy was historically a divination technique from the middle ages, used to predict the future by reading forms. Contemporary geomancy, developed by the artist Marko Pogačnik, focuses on the Earth as a conscious living being, with its own faith and purpose. Apart from Earth's physical appearance, the contemporary geomancer works with its vital energy systems, elemental consciousness, and spiritual, sacral dimensions. Pogačnik developed the art of lithopuncture as a method of harmonising the earth's distorted energy systems, and other techniques using sound, movement, colour and imaginative meditation.

Geomancy originates from Arabic tradition. It was used to foretell the future through the interpretation of forms on the earth's crust or patterns formed when a handful of sand or earth was randomly thrown on the surface. The name comes from the word geo – the earth and manteia – fortune telling. The technique was very popular in Africa and Europe in the Middle Ages and the Renaissance. Geomancy was revived in the 19th century mainly through books by R.T. Cross and E. Bulwer Lytton, but was later reduced from a complex art of interpretation of patterns into a simplified technique with predefined answers.

Marko Pogačnik, an awarded Slovenian sculptor, has been developing a contemporary version of geomancy since 1979. He started with lithopuncture, a version of Earth's acupuncture, where stone pillars with engraved cosmograms are placed on selected areas and used in a similar way as needles in acupuncture. Since 2005, he's worked through the art group VITAAA and with LifeNet groups in Slovenia and around the world. He designed the official coat of arms and flag of Slovenia, is the author of numerous geomancy workshops, lithopuncture projects and has authored several books on geomancy.

Contemporary geomancy is a way of learning about both the physical and invisible dimensions of the Earth. One of its main tasks is to make the general public aware of the multi-layered nature of the Earth. Geomancy is a holistic perception of the Earth as a living being with its vital, energy systems, its consciousness, and its sacred, spiritual dimension. Apart from its name, contemporary geomancy has nothing to do with historical geomancy divination techniques. It is an experiential art, where an immediate experience with Earth and its invisible systems, gained through meditative contemplation on the spot, plays a vital role. Contemporary geomancy is a combination of ecology and shamanic tradition, where a practical ecological approach is combined with the intuitive mystical practice of communicating with invisible layers of the existence.

Geomantic reading of space is done by geomantic perception, working individually or in a group. Geomantic perception is by definition subjective and requires total identification with the object of observation, often through the help of meditative contemplation. Information is gained in various ways: through the sensibility of the individual's auric field, through emotional perception, physical reactions, inner images, or intuitive insights. The last step is the interpretation of the gained information. The more one is in contact with one's own divine essence, the easier one can connect with the Earth's divine essence. Geomantic perception can be practised by anyone and requires no prior specialist knowledge.

Pogačnik identifies five levels of Earth's existence. The one that we humans find most common is the level of physical existence. This is the world of forms and the level where the phenomena gain their physical existence. This is the level of linear time and three-dimensional space, which is recognised by the five senses. This is the level of physical landscapes, mountains, water currents etc. The next level is called the etheric level. This is the level of the existence of vital energy or the bio-energy dimension. There are no physical forms, just vital currents which enliven these physical forms. This is the level that in Chinese culture is called Qi and in Indian culture Prana. At this level, the Earth's vital energy fields can be found, the Earth's chakras and currents of vital life force (Dragon Veins). The next level is the level of consciousness. This is the level where archetypal patterns and cosmic ideas are active. Here we can come into contact with the mental and emotional consciousness of the planet. This is the level where we can contact the spirits of the built environment and the elemental beings of nature. The next level is the level of the soul. At this level, archetypal patterns and ideas with clear identity and purpose, yet without form, are extracted from the ocean of eternity. This is the level of the soul of the planet, the Gaia voice and the angelic presence. The last level is the level of Eternity. It has an unlimited existence and is beyond imaginable. Pogačnik calls it the ocean of infinity. It is also named the primordial vibration, god's presence, the light of lights, as well as other designations. This level is manifested in landscape in the form of holy spaces or landscape sanctuaries. The five levels of the Earth's existence are not hierar-

chically ordered, they overlap and are intertwined (Pogačnik, 2010).

Every building development makes an impact on the visible and invisible systems of the Earth. Landscape's breathing systems, grounding centres, hearth centres, cosmic and vital energy channels, landscape chakras and other vital and sacred places can become unbalanced and suffocated through aggressive urbanisation. Before the intervention, the specific holon, the landscape entity comprising of all the vital systems necessary for its uninterrupted functioning, should be geomantically analysed and all its vital features preserved. (Pogačnik, 1998)

Elemental beings and the spirits of the environment have a kind of light body and act as mediators between the world of archetypes and the physical world. They know the archetypal pattern of a specific form and its genetic print and direct the vital energy forces and cosmic impulses to where they are needed. They build up the emotional auric field of a place. (Pogačnik, 1996)

2.3. ALEXANDER'S NATURE OF ORDER

The nature of order is a scientific as well as a design concept created by the architect Christopher Alexander which originates in the idea that what we call life is a general condition that exists to a certain extent in every part of space: brick, stone, grass, human being, forest, city, landscape. With proper design process, this life can be strengthened and the emerging building or designed object can thus become a living structure. This living structure can have the power to strengthen our inner human person, our Being, our Self, which in his holistic worldview permeates everything there is.

With thirty years of research and a four-volume book entitled "Nature of Order" spanning over two thousand pages, Alexander shows a new world view which goes far beyond design and architecture. He bridges the four hundred year old split between science and technology on one side, and arts and humanities on the other. He argues that everything in existence is permeated by life. A concept shared by ancient Buddhist texts and more contemporary scientific research of biology and physics. In Whitehead's view, the possibility of life is inherent in matter. It is not an accidental occurrence that happens in organisms as matter gets highly organised. It is the very nature of order for the matter to be alive. And of course in this view, every building – like any other part of the space – has life to a greater or lesser degree, and the same goes for everything in existence. This living structure is the very mathematics of space.The whole gets its strength from the coherent spatial centres it is made of and define its character. If there are roses around the front door of a cottage, that is what you will remember; if there is a pair of ducks in the garden and a fishpond, it is the ducks and the fishpond you will remember. The roses, the ducks, the fishpond are all centres and they mark an entirety as what it is.

The beauty of a building, its life, and its capacity to support life all come from it working as a whole. The building is not an isolated fragment in itself, but a part of the world that includes gardens, walls, trees, streets, and buildings. In the concept of wholeness, the local part exists chiefly in relation to the whole. Alexander's fundamental idea is that wholeness is not something illusive but rather a structure that can be mathematically defined. The whole is made of parts and the parts are created by the wholeness. These parts are called 'centres'. The centres themselves have life, and the centres can help one another in intensifying this life.

For Alexander the process itself is the most important component of design. A living building will only be created within a process of structure preserving transformations. It means that the next step in the process always respects the existing and will find a new way to preserve it. It is the process of unfolding wholeness that is conservative and creative at the same time. This is the process by which the world of plants and animals is created every day. A plant unfolds step by step from a seed to finally become a full grown tree. To apply this process to buildings means that we must shift from a descriptive type of process to a more generative type of process where the necessary steps (actions) are defined instead of detailed drawings with a prefixed description of the final form. Living structures in buildings can only be generated; they cannot be created by brute force from an office based design. Such building process often changes the initial design to the extent that the building permit needs to be filed anew, or a few dozen model objects are made on the site before there is one that feels right. Which can be time consuming and expensive and according to Alexander one of the reasons why living structures are almost non-existent in contemporary buildings and urbanism.There must be several levels of scale, and the jump in scale should not be too great. There should be some kind of a principal structure, a strong centre guiding the whole, one composed of smaller centres. The boundaries strengthen the living centres. Alternating repetition is one of the ways the centres can intensify each other. In positive space every single part of the space has a positive shape as a centre. There are no amorphous meaningless leftovers. A good shape is itself made up of multiple coherent centres and the simplest elementary figures. What is important in a pattern are not the apparent large symmetries that add little to the coherence of the pattern, but the intensity of the smaller, i.e. local symmetries, which act as a glue that holds the space together. All living structures contain some form of interlock, where centres are hooked into their surroundings. Life cannot occur without differentiation. So the difference between opposites, the contrast, gives birth to something new. Gradients will follow as a natural response to any changing circumstances in space. Buildings and artefacts without gradients are more mechanical and hold less life. Things that have real life always have a certain ease, a morphological roughness. This arises because real things have to adapt to irregularities in the exterior environment correctly. Echoes denote a deep underlying similarity, where all the motifs used have a single guiding feeling and seem to be members of the same family. In the most profound centres that have perfect wholeness there is a void at the hearth. This emptiness is needed to create a simple, silent, empty, large, calm space that draws the centre's energies to itself. In most cases this simplicity shows itself in geometrical simplicity and purity. 'Not separateness' or connectedness means that we experience the living whole as a being that is connected with the world and not separate from it. Such a structure is simple, harmonious and it melts into surroundings. The structural feature that is most responsible for the easy feeling of not-separateness is the lack of abruptness, of sharpness.

The design process should follow the 'mirror-of-the-self' criterion, which means that it incorporates the ability to represent the human self. Each step along the design process should be scrutinised through questions like: "Does this represent a true picture of myself?", or "Which of the two makes me more whole?", or "Which one has more life?" Answers show that true recognition of life supporting design is astonishingly unanimous and goes beyond cultural and racial barriers. Places that are strong living structures and thus have 'the self' brought into existence fully can bring out or strengthen our own 'deeper self' or soul or I. The making of the living world in Alexander's eyes cannot be separated from each person's search for the true self. (Alexander, 2002-2005)

3. CONCLUSION

Our world is a world of spirit and a world of matter. The separation between spirit and matter in the time of the great Renaissance discoveries was highly successful. It liberated researchers from the domain of scholastic religious authorities and enabled them to start exploring the powers that were at work in nature (physics), our bodies (medicine), the world beyond earth (astronomy), and much more. But in order to do that, a price was paid. If science wanted to establish itself as an independent, objective authority, it had to design appropriate protocol. And it did so by limiting its body of research to what is measurable. Aristotle's concept of the real world defined by the senses overrode Plato's concept of immeasurable ideas as the origin of the material world. What we perceive with our senses can be measured, non-material ideas cannot. So today we have an interesting situation where our science seems to travel on parallel tracks. We have parts of science predominantly established in the materialistic view (for example biology and medicine), and other parts (for example contemporary physics) that have come full circle from hard material Newton physics, through Einstein's theory of relativity, to quantum mechanics and beyond, where energy and matter flow into each other and where there is an immense space of nothing and just a part of what physics would define as matter. And the big question in research is how conscious and alive this nothing really is.

It is obvious that the measurement approach has its limitations. There are so many things that cannot be measured to satisfaction, such as emotions, thoughts, spirit. But they exist and they are real. We all feel and experience them. And this space beyond the material is what all the three concepts that were presented are interested in. They explore how the concept of spirit, consciousness, god, the creator, or however we choose to call it affects the design process. What happens if we say that all the empty space between the atoms in the building brick is spirit? And that, per the architect Christopher Alexander, this spirit can be intensified at the material level by proper design. It opens up a whole new research area for architects and designers. In a way we are at a similar crossroads as the Renaissance explorers. Although this time around we need to be liberated from the exclusively materialistic point of view in order to be able to embrace both, the material and the spiritual, and bring them to a new level of understanding.

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ASSESSMENT AND MANAGEMENT OF SUSTAINABLE INNOVATION IN DESIGN

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Abstract – This paper presents multidimensional "CASI-F — Framework for Assessment and Management of Sustainable Innovation", a specific tool for assessment of sustainable innovations. The idea of CASI-F tool is common framework for assessing the advantages, disadvantages, relevance, benefits and risks of sustainable innovation, particularly social, environmental and economic dimensions, while taking into account general public concerns. Its multi-perspectives approach enables different usability in terms of four target groups: national and international policy makers and governance, business actors, researchers & academia and civil society on different levels of implementation (strategy level, programming level and operational level). The implementation of CASI-F process of sustainable innovation in design is examined in this paper. The paper is based on empirical research conducted within the project "Public Participation in Developing a Common Framework for Assessment and Management of Sustainable Innovation" (CASI) funded under the FP7 and implemented by the University of Primorska.

Sustainable Innovation / Assessment / Management / Design

1. INTRODUCTION

Interest in innovation and sustainability has been substantially elevated in recent years. As companies and nations have increasingly faced scrutiny to consider sustainable development in light of social changes and environmental pressures, many have ratcheted up their innovation efforts in order to remain competitive and drive profitable growth (Waite, 2013). According to Nidumolu et al. (2009) sustainability is the mother lode of organizational and technological innovation that yield both bottom-line and top-line returns. There are several reasons why companies can benefit from acting in socially responsible and environmentally aware ways. Companies can achieve competitive advantage, build a strong corporate brand, and win the war for talent (Porter – Kramer, 2006; Bhattacharya et al., 2008; Hillestad et al., 2010).

On the other hand according to core subjects of international standard ISO 26000 (2010), the environment plays significantly role in social responsibility of an organisation and suggests the assessment as part of the decision-making process. The CASI project developed a coherent methodology for the assessment of sustainable innovation practices, based on a sound conceptual framework and a shared understanding of sustainability in innovation among stakeholders.

The CASI project is implemented within the context of the Europe 2020 Strategy, which aims to achieve smart, sustainable and inclusive growth. Within this strategy, sustainability was identified as a priority aspect of economic growth for the European Union. Sustainability has three major dimensions - social, economic and environmental. Europe, along with the rest of the world, faces serious challenges on all three dimensions. While many of the challenges are global in scope, remedies in some cases may be specific for the European continent, or even for particular Member States. Since CASI has been developed in order to address the grand challenge "Climate action, environment, resource efficiency and raw materials" the project focuses on technological and social innovation aiming to improve the environmental sustainability of our economies, while at the same time considering the economic and social aspects of sustainability.

This work is divided into two parts. First part of the paper consist the description of the Framework for Assessment and Management of Sustainable Innovation (CASI-F). In the second part, the implementation of CASI-F process of sustainable innovation in design is examined. The paper concludes with some reflections and conclusions derived from the experiences.

2. 2. ASSESSMENT OF SUSTAINABLE INNOVATIONS

At the moment widely accepted definition of sustainable innovation does not exist. In the terminology, exist many terms, which are closely connected to sustainable innovation like green or eco-innovation, also environmental innovation, with no clear distinction between them. Build on definition of innovation, as a definition of sustainable innovation is used: "Sustainable innovation is a firm's implementation of a new product, process, or practice, or modification of an existing product, process, or practice that significantly reduces the impact of the firm's activities on the natural environment" (Varadarajan, 2015).

Standardisation of innovation process is somehow counterintuitive and in contradiction. Despite some argue, that innovation system cannot be standardised, there is a need for systematic innovation in order to successful deal with more and more complex innovation process (Karlsson, 2013).

In addition the CASI-F is presented as a Framework for Assessment and Management of Sustainable Innovation, which could be applicable also in design sustainable innovations.

2.1. FRAMEWORK FOR ASSESSMENT AND MANAGEMENT OF SUSTAINABLE INNOVATION

University of Primorska is a Slovenian partner in the research project "Public Participation in Developing a Common Framework for Assessment and Management of Sustainable Innovation" (CASI), which is an EU-funded research project under the FP7 Program. The aim of this project is to develop a methodological framework for assessing and managing sustainable innovation within the scope of climate action, environment, resource efficiency and raw materials (one of the grand societal challenges defined by the EU).

2.1.1. THE CASI PROJECT

The CASI project represents the EU-wide cross-sectoral partnership on innovation-related challenges and considers not only the impacts of social and technological innovation, but also the types of actors involved and their inherent interests. It thus effectively integrates the perspectives of civil society, SMEs, industry, policy stakeholders and leading academics. This collaboration investigates the scope of sustainable innovation as a societal phenomenon and enables the elaboration of an assessment framework of sustainable innovation practices whose application can be successfully integrated into public policy developments.

CASI is based on the understanding of innovation as a key driver of societal progress in the age of technology and of imminent uncertainties about the future. Sustainable innovation, on the other hand, further enhances this understanding by introducing sustainability as a focal core of the innovation process. At the same time, this is not an attempt to introduce yet another distinctive type of innovation. CASI fosters debate on conceptual dimensions, policy boundaries, and good practices combining innovative pursuits with sustainability objectives.

CASI explores the impacts of innovative practices as well as of specific technological and social innovations in relation to the persisting challenges of climate change adaptation and resource depletion, and the societal effects thereof. Thus, it makes a more thorough inquiry into the balance between the social, economic and environmental impacts of innovations, and will help determine the scope and priorities for national and EU policymaking (CASI, 2016).

The key ambition of the CASI project is to develop a coherent methodology for the assessment of sustainable innovation practices based on a sound conceptual framework and a shared understanding of sustainability in innovation among stakeholders. It defined the context of sustainable innovation as well as introduced sustainability as an objective of innovation diffusion through social and market opportunities.

CASI includes a rich and intensive set of activities carried out across the EU. Based on a carefully designed methodology, CASI wants to identify and describe sustainable innovation cases through a collaborative analytical process. More than 160 innovative practices from around the EU provide a rich qualitative perspective and serve as the basis for focused analysis, comparison and contrasting.

CASI provides rich opportunities and various venues for stakeholders to engage in focused debates on sustainable innovation – on the role of innovation for sustainability, enhancing the understanding of sustainability within the innovation context as well as on policy developments that ensure opportunities for continuing innovation in the context of sustainability.

Actions are planned to keep track of national and EU-level policy debates on innovation and sustainability. This effort supplements the mapping processes of innovation cases. It will further provide grounds for comparison between opportunities for innovation adoption and trends in policymaking as well as the balance between the two.

CASI emphasizes dialogue and participation, and relies on highly participatory methods of engagement when it comes to integrating citizens' inputs. Based on such input and results from the CASI's internal analyses, the EU-wide policy recommendations will be elaborated with the ambition to improve the integration of sustainability and innovation support actions into addressing the underlying issues embedded into the "Climate action, resource efficiency and raw materials" grand challenge (CASI, 2016).

3. SUSTAINABLE INNOVATION IN DESIGN

Nowdays in the era of sustainable innovation, design plays an important role in changing world's aspect. According to Johansson and Woodilla (2010) there are a lot of opportunities for design and management to contribute and create a sustainable world. They consider the epistemology of two discourses bridging design and management, design management and design thinking. Designers can contribute to the concept of sustainability and ways in which practitioners create sustainable value (Johansson – Woodilla, 2010). According to Rasmussen (2011) design is often the link between technology, creativity, business and the people.

Sustainable innovation goes hand in hand with Circular economy concept, whit one of its focus, to minimize or even eliminate waste. Traditional linear economy concept exploits natural resources for producing process, where products finally end in wastes. Concept of circular economy sees the wastes as resources, and it use (industrial) design as tool for achieving economic growth. This concept has been recognised and applied by European commission as a concept, which support economic growth (EC, 2014).

Design as a driven innovation can generate sustainable economic success by designing products and services that meet people's needs (Müller, 2012). On the other hand design can also been seen to be a facilitator of solutions for societal problems (Richardson et al., 2005; EC, 2009; O'Rafferty et al., 2010; Burns et al., 2006; Design Commission, 2012; Bhamra, 2004; Fletcher – Dewberry, 2002). These societal problems include sustainability challenges such as climate change, while the new economic contexts of globalisation mean that designers require new competencies in terms of design management, innovation, eco-design, sustainable innovation and responsible design (O'Rafferty et al., 2014). How to design sustainable products to make them more successful is the key question of many designers who are sustainable oriented. One of possible solutions is the implementation of CASI-F tool which is presented below.

3.1. USING CASI-F IN DESIGN

Under the CASI project a complex and multidimensional "Framework for Assessment and Management of Sustainable Innovation" (CASI-F) has been developed. CASI-F assesses the opportunities, risks, drivers and barriers of sustainable innovation (SI), particularly the social, environmental and economic dimensions, to support sustainable innovation management decisions through actionable advice. The main target users of CASI-F are the sustainable innovation intermediaries, i.e. innovation agencies, technology transfer firms, industrial associations, some NGOs, civil society organisations (CSOs), regional programmes etc. The system is also open to individual firms, municipalities, NGOs, citizens etc. Systematic use of CASI-F helps them to better structure and intelligence on sustainable innovation practices to different stakeholders and creation of according action plans.

The CASI-F tool is focused on one of the H2020 Grand challenges' themes: climate change, environment, resource efficiency and raw materials. CASI-F works as a pan-European online platform, providing also resources and guidance on SI. CASI-F follows three basic components, dealing with innovations, policies and citizen's visions. The 'Actions' are targeted on four different types of users: Governance, Business, Civil society and Research and education. Each user play different and sometimes multiple roles: innovators, enabler, sponsor, and/or beneficiary. Users are invited to give feedback on these actions, regarding to actions feasibility and importance. This user feedback bridges the gap between 'assessment' and 'management' – i.e. users provide assessments on the management of innovations and policies.

3. CONCLUSIONS

Assessment of sustainable innovation helps companies and organisations who are dealing with design to fully exploit their innovation potential, by improvement of its performance. Sustainable innovation potential therefore cannot be exceptional. Sustainable innovation, addressing H2020 Grand challenge "Climate action, environment, resource efficiency and raw materials", is in direct connection with holistic approach of design management.

CASI-F presented in this article is a tool for comprehensive assessment of SI on strategic, tactical and operational level. It represent a tool for creation action plan in relation to widest group of stakeholders (government/administration, business, R&D, general public). CASI-F assesses SI with comprehensive resources (innovations/policies/visions) with use of double (action and management) track approach. CASI-F follows the recommendation of CEN/TC16555 Innovation management standard (CEN CENELEC, 2016). and indirectly addresses the ISO 26000 standard which recommends the assessment of sustainable actions. Widely used CASI-F has potential to become an important tool for designers.

SI evidence: **[CASE STUDY NAME]**	**Governance** [government's actions that support innovation or innovator's initiatives in which government is involved]	**Business** [actions developed by the innovator or by other competitors/ collaborators]	**Civil Society** [any action, conversation, interaction targeting societal actors]	**Research & Education** [initiatives aiming to establish relationships with research and education institutions]
LEVEL 1: STRATEGIC ACTIONS [IDEA Sustainable demand Sustainable challenges Systematic change this is the strategy level the overall aim and objectives to address]	What Dilemmas encountered by the market / sector can be policy addressed? Technology Economic Environmental Political Social Ethical	What barriers or factors for success have been identified? How can this be translated at vision or internally Mission/ strategic coherence	How is the civil society affected and how this could change or shape their vision?	How is the research/education/uni cooperating with businesses to improve/develop SI?
LEVEL 2: TACTICAL ACTIONS [INTERVENTION Concepts, methods, structures this is showing an action plan or list of actions]	How is this translated in terms of plan and feasible actions/tactics? Examples: Tools, financial incentive, tax break, grants, incentives, awards…	How can this be addressed and implemented at programming level? What need to be done to improve this? Capabilities, skills, education Mobilisation Financial capacity productiveness	How the civil society could be involved in this action and would improve the outcome? How to attract them and what is in it for them?	How is the Research/education/uni cooperation translated/ initiated? Examples: funding, access to expertise, access to knowledge, access to
LEVEL 3: OPERATIONAL ACTIONS [IMPLEMENTATION Process barriers, cycles, role of stakeholders this is showing the actual action to be carried out]	What action can be actually implemented to start improving this issue?	What action can be actually implemented to start improving this issue?	What action can be actually implemented to start improving this issue?	What action can be actually implemented to start improving this issue?

Table 1. CASI-F matrix

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HOW EDUCATIONAL PROCESSES AND SOCIAL ENTREPRENEURSHIP CAN SUPPORT AN URBAN REGENERATION IN MILAN

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Abstract – The goal of this contribution is to illustrate the design and educational process of collaboration between the BSc Interior Design Studio at the School of Design - Politecnico di Milano and the social enterprise maremilano that is orientated towards the urban regeneration of Cascina Torrette di Trenno area (Zone7 of Milan).

The Cascina Torrette di Trenno is one of several abandoned Milanese farmhouses – which constitute a distinctive legacy from the city's strong agricultural identity of the past – that in recent years have been granted to teams of organizations and social enterprises, by the Municipality of Milan, to be developed into new, long-term, public spaces with the support of local governments, foundations and companies. Students have been involved in a series of self-constructing workshops organized by maremilano and ConstructLab organizations, to experiment a site-specific and integrated design approach in the local urban context.

This, as many others, is a design process that activates social practices through the enhancement of new public spaces, where the urban regeneration of neglected areas triggers processes of social inclusion and cultural innovation and contributes to a more general shift towards a new culture of living in contemporary cities.

The process is expected, on the one hand, to result in the experimentation of open source experiences to enhance sense-making processes in urban territories , and, on the other, to continue developing inclusive educational strategies within the Politecnico School of Design,.

Social innovation / Urban regeneration / Active learning / Social inclusion / Co-design / Spatial design

1. FRAMEWORK

During the 3rd year of the BSc programme at the School of Design – Politecnico di Milano, students are involved in a 1-year process that starts with the Final Design Studio (5-months), followed by 5-months for the elaboration of their Bachelor thesis. These are fundamental steps in the School course and are closely linked. The Final Design Studio goal is "to provide the tools to critically interpret the project within the cultural, social and technological transformation context; students are asked to prepare an interior/environmental/spatial design, with particular attention to functional, typological, structural, and technical issues" (retrieved from the course prospectus of the School). This studio aims at developing wider critical and technical abilities in design students, and is the main and the most complete project developed during the bachelor programme. In the elaboration of their final thesis, students are asked to enlarge upon the studio project and/or the related theoretical research, under the supervision of the same teaching staff.

In the academic year 2015-2016, the BSc interior design class (conducted by professors Davide Fassi, Laura Galluzzo, Anna Meroni and Silvia Girardi) was involved in an educational process based on spatial and service design approaches, applying participatory design methodologies through co-design and prototyping activities. Students, in fact, had the possibility to develop design solutions in a real context, co-designing with real users and testing results through a final prototyping event.

In the elaboration of the thesis, students were asked to test and apply the same methodologies and research processes in a different context and with different stakeholders. The Politecnico School of Design set up a collaboration with Mare Culturale Urbano (Mare) and ConstructLab organizations, the aim of which was to involve design students in a series of workshops (February to May 2016) for the realization of furniture for a new urban community space through participative self-construction. The context is Cascina Torrette di Trenno in Milan, a renovated farmstead in the Milanese San Siro neighbourhood, which is the core of an ongoing territorial development triggered by Mare. The district is a multicultural area, located in the north-western suburbs of Milan, poor in cultural and aggregation spaces.

The research team dealing with this educational process is the Polimi DESIS Lab. It belongs to DESIS Network, an international association including more than forty international universities dealing with the development of design research and activities to help, improve and implement social innovation using design tools and methods (www.desis-network.org). This team includes design experts in service, interior, spatial and strategic design.

The collaboration set up between the Politecnico School of Design, Mare and ConstructLab will be the focus of this paper.

1.1 MARE CULTURALE URBANO (MARE) AND CONSTRUCTLAB AT CASCINA TORRETTE DI TRENNO: A SYSTEM OF-PLACES AND ACTORS FOR URBAN REGENERATION

The School of Design set up a collaboration with Mare Culturale Urbano (Mare), an innovative start up and artistic production centre active in the west area of Milan, and ConstructLab, a collaborative construction practice that has several projects in Europe to its credit.

The aim of Mare is to promote and support a new model of territorial development for the suburbs: starting from a strong connection with the local dimension, Mare develops processes of social inclusion, urban regeneration and cultural innovation. Mare's operating model is based on the coordination of temporary residencies that interact with the social context to generate contents with a strong impact on specific urban territories (http://maremilano.org). Similar European examples are the Matadero in Madrid, le 104 in Paris or the Vooruit in Gent.

The Mare organization was founded in 2012; in 2013, the Milan Department of State Property launched a call for development proposals for a neglected area in Via Novara 75 in Milan (Zona 7); the area was granted to Mare in 2014 and is now under construction. The building, 6000 m², will spread over three levels, hosting a theatre and concert halls, 3 movie theatres, 2 audio recording studios, 5 rehearsal rooms, workshops, exhibition areas, multipurpose spaces, a guesthouse, a bar/bistrot, a bookshop and a fully equipped public green area suitable for adults, children and dogs. This place will become the "Mare Culturale Urbano", which literally means "urban cultural sea". The name plays with the fact that Milan doesn't have any sea. So, by deliberately referring to something that is lacking, it is declaring its intention of bringing something to Milan that is not already there: a new cultural centre. While awaiting the end of the construction works in Via Novara 75, Mare found a temporary headquarters: the Cascina Torrette di Trenno, close to the future cultural centre. The Cascina is part of a wider social housing project, "Cenni di cambiamento", the largest class A residential project architected in Europe with load-bearing structures in wood, (http://www.cennidicambiamento.it). It is supported by the Lombardy Region, the "Housing Sociale" Foundation, "Investire Immobiliare" real estate and a consortium of partners and sponsors. The Cascina, 1700m², opened in June 2016 and hosts 2 rehearsal rooms, 40 coworking stations, a restaurant, 3 rooms for participatory planning, a 500m² courtyard and a bookshop.

The "Housing Sociale" Foundation outsourced the management of the Cascina to Mare. It is a place developed with and for the local community, with highly interconnected spaces and services, for social inclusion and cultural innovation. After the building restoration, local organizations, inhabitants and students (from Milanese design and photography schools) were involved in its realization as a "place". The process was fundamental for Mare in order to make initial contact and get to know the neighbourhood, so as to lay the foundations of the complex process of building a community around these new public spaces.

Fig.1. The Cascina Torrette di Trenno, Milan. Ph. Marco Menghi.

"Costruire l'improvviso" ("building the unexpected") is the name of the campaign process conducted by Mare with ConstructLab. The project focused on building furniture for the new spaces of the cultural centre through participative self-construction. ConstructLab is a collaborative construction practice, working on temporary and permanent projects using a methodology that brings together conception and construction.

"The designer builds and continues to design on site. The construction site is no longer the place of uncertainty where the design contends with reality, but the context in which the project can be enriched by the unexpected opportunities that occur on site. The designers-builders bring the site to life through their permanent presence, generating new dynamics between people and allowing them to integrate other participants. This synergy results in a collective work, and gives the building site a sense of place" (http://constructlab.net).

Fig.2. The temporary lab of "Costruire l'improvviso" workshop in front of the farmstead (March 2016).

In spring 2016, the Politecnico School of Design joined this process, involving a group of interior design students in the participatory self-construction. 17 interior design students, divided in 8 groups, participated in 29 workshop-days (5/6 per student) from the end of February to May 21st 2016. They supported the ConstructLab team of designers and wood/metalworkers, together with local inhabitants and young people from social organizations, in the realization of 65 chairs and stools, 12 tables, 1 stage, 1 counter and 1 pergola for the Cascina.

Fig.3. The process: students, designers and inhabitants building the furniture (Feb-May 2016).

1.2 THE CITY OF MILAN: A SMART CITY

Milan is the second Italian city, after the capital Rome, for its economic, political and social importance in the Italian scene. Its densely populated surroundings form one of the main production areas, in the middle of a highly urbanized territory spreading from Turin to Venice.

In the last few years, thanks especially to a structured urban planning, to the investments allocated for Expo 2015 and to the municipality's ability to trigger the renewed energies of grassroots movements, the city has gained a brand-new image.

Contemporary urgent social challenges are manifestly evident in the several issues that cities are trying to tackle. This is an open issue worldwide since half the world's population now lives in urban areas. The Milan policies tried to interconnect these issues with the regeneration of many urban areas – big areas, transforming whole districts, and small ones, which impacted on specific communities – conducting and promoting social innovation. In other words, they are creating the governance, infrastructural and technological conditions to produce social innovation (Milan White Paper on Social Innovation 2016, within the European Programme URBACT III, 2014-2020). Urban transformations (such as the renovation of Porta Nuova, Porta Garibaldi or the Darsena areas) open calls, firstly for the reuse of public spaces (outdoor, for bottom-up community gardens, and indoor, such as the BaseMilano cultural incubator conducted by a consortium of associations) and secondly, for the innovative and inclusive use of existing services (such as the Open Schools call) and the boosting of transport-sharing systems: these conditions depict a panorama in which a system of actors is actively involved in city regeneration. Working groups were organized to set up the agenda for the city in order to address and enhance collaboration with local organizations, social entrepreneurships and informal groups of inhabitants.

The Cascina Torrette di Trenno is one of these transformations of the Milanese urban tissue towards community engagement. The role of universities as incubators of competences, knowledge and expertise, able to engage with their locality (Chatterton, 2000) and to play a pivotal role between public administrations, ventures and citizens (Fassi et alii, 2016), is the core of the educational strategy applied in the case presented.

Fig.4. Mare Culturale Urbano: the use of the new public space (July-Aug 2016). Ph. Luca Chiaudano.

2. GOALS

Through an experiential learning process, students became part of a real system that applies both service and spatial design approaches, contributing to the creation of a new community space. In the first phase of the academic year, the Design Studio – mentioned at the beginning of this paper – was structured to teach them how to design the intangible side (integrated systems and services) and the tangible side (layout, infrastructures, materials and technologies) of new public spaces and services for the university campus community and communities in the surrounding area. This would include students, professors, administrative staff, local shop owners and local inhabitants. Two main steps supported the process: a co-design activity with all the campus users, in order to test concept solutions by using appropriate tools that simulate roles and interactions to collect needs and opinions; and a prototyping event, where the designed solutions were modelled at 1:1 scale to be tested with people.

In the collaboration with Mare and ConstructLab, students tested the participative self-construction approach, enlarging on the participatory methodology in a different context. Being part of a complex system of actors and working on two different tasks – collaborating in the co-constructing process with a social enterprise on the one hand, while accomplishing their thesis research on the other – the students achieved three main goals:

- to understand the role of the designer in participatory processes, how designer skills can support communities and what the designer's role is in a complex system of actors;

- to understand how design research should be part of design education, in other words how the understanding and the application of strong knowledge-based concepts are fundamental to a set of skills with a high strategic value (Muratovski, 2010);

- to see how co-design and self-construction are means of applying design thinking to support and motivate final users in creating innovative solutions for the society in which they live and increasing awareness of a sustainable lifestyle.

By producing and supplying services, places and contents, Mare sets up a model of territorial development, thus providing economical sustainability, infrastructures, participation, co-design processes and access to technology. In this way, urban regeneration, social inclusion and cultural innovation can all be achieved.

3. EXPECTED RESULTS

The expected results are the experimentation of open source experiences in order to enhance sense-making processes in urban territories, thanks also to the creation of an open source manual to share and spread the design solutions developed. Furthermore, the research team amplifies the inclusive educational strategy.

With these results the researchers seek to contribute to a wider reflection about how collaboration between different actors can lead to long-term public spaces through open source experiences.

How does a design process that activates social practices through the enhancement of new public spaces – where the urban regeneration of neglected areas occurs through projects for social inclusion and cultural innovation – contribute to a shift towards a new culture of living in contemporary cities? How is the development of inclusive educational strategies (at Politecnico School of Design) enhancing an educational model for triggering the students' skills, their awareness about contemporary issues, their capability of contributing to these issues together with the design discipline?

4. METHODOLOGY

In the application of a service and spatial design approach, the interior design students learned that services influence human behaviours and life-styles more than products, that services are a form of social interaction and that, focusing on the contemporary city, public spaces are the platform where these relations take place. By applying a community-centred design (CCD) approach (Meroni, 2007),meaning a scaling-up of human-centred design to tackle complex challenges and deal with groups and communities at society scale –, students experienced participatory action research. This is a transformative process of analysis and inquiry that sees the active engagement of the researcher/designer in a real, specified context. He/she includes and collaborates with the people involved, working towards a planned organisational change to solve real problems. Talking about "context" means not only focusing on time and space components, but on all factors that influence the way people experience the public sphere.

This methodology crosses the participatory, self-constructing approach of ConstructLab, which is based on an initial phase of observation/reflection/creation, a second phase of research about self-construction and a third one in which a shared space identity is generated through site-specific parameters.

5. DISCUSSION

Throughout the 5/6 workshop days at Mare, students had the opportunity to experience directly a participatory process based on self-constructing. They played a double role: they were implementers, contributing to the physical realisation, and they played the role of readers, learning the participative process by doing and disseminating it. In this experiential learning process students were both researchers and participants, exploring their dialectic role as activator/facilitator (researcher) while acquiring awareness and building their capacities (participant).

This balance is part of the educational goal: to guide students in understanding the role of the designer in participatory processes. The experimentation allows them to analyse how the designer sets up a mutual and dialectic exchange with the actors involved, without imposing any roles but with each seeking to understand the others' tasks, the role of the citizen as agent of change and the balance between involvement and empathy. The designer becomes a "process facilitator who acts with design tools [and] within a more complex network of actors where his main interlocutor, his actual client, may be an institution, a local authority or, as in this case, creative communities" (Meroni, 2007). Design is thus called to act as a culture and not as a mere function, focusing on process-oriented rather than object-oriented design actions (Cassim & M'Rithaa, 2015).

The experience at Mare led to the following important insights. Firstly, one of the key elements of the educational strategy is to enhance the future designer's commitment to common issues and the awareness that design outputs should be "functional social processes with a meaningful contribution to the society" (Muratovski, 2010). Secondly, active participation in socially responsible activity could enhance critical analytical skills: this strategy could "promote the development of responsible and intelligent citizens" (Stanton, 1987).

Such goals are interconnected with the importance of including design research in design education. Being aware of the high strategic value of design practice is part of the development of an inclusive educational strategy at the Politecnico School of Design, in order to trigger the students' skills and capability of contributing to contemporary issues with the design discipline.

The capability of being strategic in designing for places, and in their sense-making to promote social change, doesn't mean

subtracting the aesthetic aspect of design from its social one: the design act, which alters the urban experience and introduces artefacts in the urban field of perception, operates as an aesthetic practice and not only as a socio-political one (Markussen, 2013).

6. CONCLUSION

Our reflection focuses on how collaboration between different actors can lead to the creation of long-term public spaces through open source experiences, thanks to the support and the strategic framework of public administration, foundations, ventures, universities and citizens. In this way, a shift towards a new culture of living the contemporary city can be supported by a structured, participative and designed system that can influence social behaviours and regenerate common goods.

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EVOLUTION OF NEW PARADIGMS IN THE ARCHITECTURE DESIGN PROCESS

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Abstract - The aim of our paper is to identifying the similarities between the fast evolving of dominant theories of economy and design versus the apparently slower urban and architectural design ones.

In the first paragraph, the paper outlines the limit socio environmental conditions that demands for a systemic change, in parallel with the state of the art of economical and design theories with their similarities, together with pointing out the apparent. The second paragraph details the core evolutions of the economic theories in parallel with the design focus shift, highlighting how they both are trying to responds to new needs urged by the social, economic and natural environment. The third paragraph investigates a series of urban transformation case studies, in which approaches are experimented, novel each one for their time.

In conclusion, a series of touchpoints are isolated, showing how the practice of architecture and urban design has started changing and possibly will keep on evolving towards a more sustainable practice.

Architectural Design / New Economy / Sustainable Design / Feedback loop / Iterative cycle

1. SOCIAL, ECONOMICAL, ENVIRONMENTAL SYSTEM AT THEIR LIMITS

World has rapidly changed in the last 20 years. Nobody can anymore, deny the dramatic environmental situation that affects our lives, our cities, our planet. Since the start of the Industrial Revolution, our society began its run towards the mechanization of each and every process, , fossil fuel emissions in the atmosphere has exponentially risen, and have shown little signs of slowing down so far. The planet passed what many scientists consider a point of no return, overpassing a global CO concentration of 400 PPM threshold (while the safe level of carbon dioxide in the atmosphere is considered to be 350 parts per million). As a consequence, this year, the global temperature registered a new record, close to the limit of 1.5°C warming threshold agreed to by Paris COP 21 negotiates, and even surpassing it in February. Climate changes impacts on different scales, from almost completely natural, rural areas to the densest and man-made environments, urban conglomerates.

In particular, we witness a progressive abandonment of rural areas towards of urban ones, through a socially burdensome process of migration, putting additional pressure on the already overpopulated cities, expanding and densifying with little control. These migrations of "climatic refugees" and the wars for fundamental natural resources will naturally further affect those already unlucky territories where the effects of climatic change are and will be more evident, including drought, desertification, drastic reduction of biodiversity, pollution of land and water and intensification of destructive natural events.

It is not controversial to affirm that this situation is largely due to our economic system, largely based on resources exploitation, as to state that the former is no longer suitable for our desire for a sustainable future. As we shape our models and systems, they shape us, therefore a new strategical and up-to-date economical systems are needed to fit contemporary societies' needs, to cope with natural environmental limits and resources (SCRANTON, 2015). It would be in fact highly optimistic to expect finding a "cure" to solve this situation just leveraging on the same models and tools that led us to this "sick" condition.

2. ECONOMY AND DESIGN SHIFTS

Luckily, the way in which we look and study our economic system has evolved, influencing and being influenced by the way we design businesses, opening up new spaces for different type of new economies.

The origin of the gap between a broadly desired, sustainable future, and the reality of the economical tools and models we design to describe and at the same time shape the reality (especially business models) has a parallel in the trajectory taken by economic theories.

Economists have, in fact, for a long time searched for a simple, perfect law - or system of laws - to constitute a body, similar to what Maxwell's laws represent for physics. During this attempt, they simplified and abstracted reality through what it looked a reasonable set of assumptions, including the symmetry of information or the human rationality (AKERLOF, 1984). This trend inverted started from the first works of Akerlof himself, originating from close market observations instead of chief systems. They highlighted how general laws speculations were not only potentially irrelevant, but substantially proven wrong in many practical cases, thus the main focus of the discipline gradually shifted from a general-to-particular approach - macro-economic system to be certified by reality observation - to a heuristic analysis of a market from which to abstract a theory that maintains a specific field of application. The current standpoint is therefore acknowledging the impossibility of creating a unicum comprehensive economic model in favour of more practical point of view, composed by empirical survey on market segments (FISHMAN, 2016). This allows to reduce the amount of potentially wrong assumptions, making conclusions more accurate in respect to the representation of the human behaviour (KAHNEMAN 2011), making this science much closer to anthropology than it has ever been. While it would be unfair to refer at all the classical economic findings as not grounded or irrelevant, by outlining its limits it is possible to identify weaknesses and propose alternative scenarios.

Part of the irrationality that has never been captured by classical economics theories lies in the assumption that every human being act in order to maximise the value at its disposal. If value is defined as "the capacity to mobilize resources", while classical economics encapsulated very well and accounted for the financial component of it, it never observed or took into consideration the social one. Observation on the contrary clearly highlights how people act trying to maximise the sum of the two, defined economical value for the purpose of this paper (KHANNEMAN, 2011). This is not to be considered philanthropic, but rather an evolutionary adaptation of the fittest, in a context in which particular goods are better mobilised by financial resources only, other by social resources only, and other by a combination of the two (BENKLER, 2006).

Based on the classical economic theory, capitalism has always operated in order to maximize just the financial value, disregarding the economical one. On top of this, the advent of the "internet age" generated a "time surplus" (SHIRKY, 2010) that has been reinvested on social activities, with a diverse economic importance, from meaningless lol-cats phenomenon to content-intense, collaborative efforts such as open source software. This can be considered the kick-off moment of a series of new economies especially sharing economies. In respect to capitalistic economies (or in opposition to), they largely leverage on social value while necessitating much less investment of financial capital.

These contemporary retrospectives on economic theories evolution is fostered and at the same times reinforces the Design centric approach proven working by a series of disruptions, starting probably from the second mandate as CEO of Steve Jobs at Apple.

The proximity of business strategy to users' needs has become a determinant mantra in product and service design. The concept of design itself has dramatically evolved in the past fifteen years at an increasing rate, broadening his boundaries in speed (BOCCHIETTO, 2016). The design focus,

previously more related to the end product, whether physical or graphics, have gradually shifted to methodologies, processes, system and services design. Even though a univocal, shared definition of design does not exist, the wide majority of existing definitions features concepts such as the research approach, problem solving, process impacting on reality (ICSID, 2015; ANTONELLI, 2001; PAPANEK, 2005 among the others).

While product, service and system design have ramped up and evolved in its practical implications, urban design seems to be left behind. Despite the concept of design encompasses the very same wider open-minded, process driven approach from the spoon to the city (ROGERS, 1952) that fostered the design practice evolution, what is the impact of such a cultural shift over urban design? This question is not secondary, considering five billion people are expected to live in urban environment by 2030 (UNFPA, 2007).

3. TOWARDS A SUSTAINABLE DESIGN: THE EVOLUTION OF DESIGNING PROCESSES IN ARCHITECTURE

This context transformation inevitably involves architecture and its operators. Even if it is difficult to isolate a cohesive practice transformation, some architects have pioneered this shift towards new strategies, taking advantage, more or less consciously, of new economies model and sharing mechanisms.

In one of his last publications, BRENNER (2016) tries to give new definitions for the concept of city. What he proposes is to look at the city not as a dense agglomerate of buildings, but as a complex network of places linked by infrastructures. What might look as nothing particularly disruptive at a first glance becomes innovative if we consider that he does not refer to geographical lectures, territorial patterns or modernist urban plans, but focuses on networks. According to this, the architecture discipline could exploit new opportunities of action and practice that overcoming the traditional categories while requiring new strategic reflections.

From a more practical point of view, it accommodates also in architecture an operating mutation that was already detected in the field of perception, economy and design. The conflict between bottom-up and top-down approach can be considered concluded, embracing the concept of perceptive cycles (NEISSER, 1981), very close both to the Silicon Valley business vision (fail big, fail fast iterations) and to the iterative design. The determinant difference is that the possibility to articulate all the design process on a feedback loop chain is increasingly accelerating the pace, reversing completely the relationship between intentions and effects in architectural project.

The possibility of quantifying in a short - economically sustainable - period of time the effects of our action on the environment, offers us the opportunity of a methodological evolution in the urban design fields, in contrast with the traditionally long life-cycle of buildings and the huge scale addressed by architecture. These transformations, Copernican Revolutions to many extents, are often more visible thus exploited in the context of a trauma. In the following examples it will be describe, in a very synthetic way, how they emerged in relationship to traumas in a 65 years timespan, and what is their relationships with the design experience.

3.1 HANSAVIERTEL AS A LIGHTHOUSE IN THE NIGHT OF REASON

The Hansaviertel neighborhood is the result of a large urban project called IBA- Internationale Bauausstellung, 1953. The government of West Berlin wanted to conceptually contrast the great works of Soviet East Berlin with a major project that could represent the city of the future. A few years after the end of one of the darkest periods of European history, right in the capital of the Reich, there was a place where the greatest architects of the Western world had the possibility of working all in the same site, coordinated by a master-plan designed by Sharoun.

What is very interesting of Hansaviertel experience is that what was born as a sort of "residential EXPO", is still a place where people live. The visionary strength of the architects who worked on this project got the opportunity to speak at the maximum of its potential. As a result, they created for the first time in modern architecture in a "modern city" in a single, disruptive effort, not just an experiment but a place for living, not functional conglomerate but a network of experiences.

By visiting Hansaviertel nowadays it is possible to appreciate different concepts of modernity, from the modern movement idea to the organic one, from brutalism to expressionism. In the same project they were involved architect from CIAM, Team10, Baltic organic movement etc. The tangible results were not simple residential buildings, but a concept of urban living environment with a very strong impact on the architecture of the following 30-40 years.

3.2 PREVI PROJECT AS MANIFESTATION OF A PRAGMATIC IDEOLOGY

As Hansaviertel can be considered the first post-war collective experiment of ideal city, probably Previ project could represent the last idealistic experience in this direction.

Even more than in the previous case-study, different and diverse project architects were involved from all over the world, under the strong, but at the same time prone trustful of the architects capacity, guide of UN. The scope of that project was a low cost residential complex, after Lima's earthquake.

Relevant in Previ is not an ex-post definition of participatory architecture, but a new interest, from the architects' standpoint, on the problem of adapting buildings to the anthropological and social environment. Many of the delivered projects took into account the possibility that the inhabitants needs, in terms of space usage, could evolve over time. Possibly for the first time in modernity, architects understood that society, economy, human behaviours are cyclical and the pace time of their evolution is faster than building processes and material decay, thus than the real estate industry.

Even if an ideological, very positivistic component, typical for that period, played an important role, the theoretical contribution in respect to a very problematic horizon was indeed strong as demonstrated through projects, design, rendering processes, aimed at understanding the context in a very broad sense.

The role of the architect was inserted in a wider design perspective, becoming more multidisciplinary and sustainable, both socially and economically.

3.3. THE WORK OF RURAL STUDIO AS A VERY PRACTICAL UTOPIA

In the contemporary scene, many years after Hansaviertel and Previ project, the architectural debate is widespread and global. One of the most relevant actor in this field is, without any doubt, Rural Studio.

Rural Studio is a utopian reality project run by the Auburn University. It introduces a different design process that collides with the traditional economic structure. The aim based on a practical "utopia" to solve real problematics related to situation of community distress.

In the installation, Reporting from the front, exhibited at 15th Venice Architecture Biennale, the design approach focused on understanding the needs of the community translating directly in the project Instead of focusing on a theoretical message to transmit with their installation, they proactively looked for social organization on the Venice territory, asked for their needs, and exploited only the materials that they could reuse (bed structures, isolating panels) to constitute the installation itself.

RuralStudio's philosophy is definitely projected towards a circular view of the economy. "Throw nothing away once finished" (RURALSTUDIO, 2016) is their motto. While those applications are far from architecture-as-usual, they encouraged to meditate on the role of architecture. To design involves in fact a strong social responsibility. Erskine, one of first pioneer of the practice of participatory design together with John Turner, Lucien Kroll and Rod Hackney (RANK et al. 2004), claimed that role of the architecture/urban designer has to be funkis (RAY, 1978) means be useful, functionalist, be part of an interactive process between the society's need - the citizens - and the designer (Community Led Local Development). The designer's aim is to guarantee that the community, the future users of the product design, has been appropriately represented during the design process that is based on an interactive dialogue.

3.4. RURAL URBAN FRAMEWORK IS HOWEVER CHINA!

The case of Rural Urban Framework (RUF) illustrates the application and the effects framework pretty similar to the Rural Studio one, in a completely different context.

Similarities includes the rural environment and the open source approach to the project. The selection of non-urban areas of interventions is coherent from two main points of view. First it is easier to study and evaluate the effects of architectural projects when they operate on an environment with a low level of complexity. Secondly rural areas are gaining more and more importance for creating new definitions of urbanity (BRENNER, 2016), reflecting on an international debate on urban studies.

Their works in rural areas of China is crucial to support the thesis that a new integrated approach in design is successful also in places usually considered linked to old development models. Their projects are always aimed at creating models that can be autonomously implemented by the population and replicated in others sites, as the Jian county secondary schools, accommodating students from nearby rural areas. It is a prototype designed to adapt to different programs requirements and context. The initial strategy is to recreate the traditional old city wall border that circumscribes the courtyard, core of public life, on which all the additional public and social functions of the school are plugged in, activating the open air atrium created in-between.

Another very interesting project signed by RUF is the Lingzidi Bridge, in Shaanxi Province. The ambition for this project is to generate, through the creation of the bridge, a new social hub, for social and trade purposes, also able to reconnect the nearby walnut orchard with the close villages, in order to reinstate the local economy. From this short synopsis is interesting to introduce another strong theme of RUF architecture: their effort is always aimed at adapting their project to local conditions and in order to do that they integrate local communities in the process. Normally this integration is not related to the formal part of the project (that is autonomously developed with a very contemporary and cutting-edge style) but in the definition of the programs and in the choice of construction techniques.

3. CONCLUSION

It is possible to observe that the process of adaptation and shift is slower compared to other design fields. Despite this case studies shown that different and innovative way of conceiving architectural design are taking place, especially in respect certain social-sustainability issues, with a particular concentration in post-trauma situation.

As the general design approach has changed, so architectural design is starting making full use of the community engagement (parallel to growth hack), of rapid prototyping approximations and experimentations through a feedback-loop model. Technology and new media are fundamental tools to be integrated in an accurate user-centered planning and foster such a growth hack, while providing powerful data through which analysing the context: while the number of voices taking part to the design process increase, the architectural designer role becomes more and more close to the orchestra director. From a total planning perspective, we are witnessing a move of the profession towards a total context listening and feeling. The architectural and urbanistic projects which have been widely appreciated by inhabitants, the one in which people are still happy to live in after years, are, in fact, based on a synergic design approach between users and designers.

When the community input is correctly channelled through sharing economies and feedback loops, a new way of conceiving architecture emerges, making full use of surplus time and value available in subsequent projects iterations.

Design a sustainable future means having a strategic approach based on the awareness of the environmental limits, the real needs of the community and adopting a new methodology that makes this science much closer to anthropology that it has ever been.

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BEAUTIFUL & SUSTAINABLE. CHALLENGES FOR CREATIVE INDUSTRIES AND FASHION DESIGN

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Abstract – Creative Industries (CI) make up a contemporary phenomenon that heralds a new creative paradigm of social structure, economy and politics, where human creativity presents a new source of capital. CI are exposed in strategic development programs, as they would contribute significantly to economic competitiveness. At the forefront of the new paradigm is economic profit, which dominates the aspect of social justice and responsible behavior towards the environment. The negative consequences of such modus operandi towards creative workers and the environment urge reflection on the state and future of fashion and CI paradigms. The paper presents the main findings of wider investigation of the theme and introduces concepts that serve also as guidelines for how to think about the possibility of positive changes in the field of fashion design of CI. This investigation focuses on philosophical-theoretical understanding of creativity through history and on the actual state of CI and creative workers from a critical point of view. It presents a critical view on the concept of sustainable development and gives emphasis to the concept of green aesthetics, as given by Yuriko Saito; here, both views provide sustainability guidelines. By further engaging the ethical aspects of responsibility a sustainable model with three levels of responsibility is established, within which certain changes should occur to achieve the principles of sustainability in the design field of CI.

Creative industries / Sustainability / Fashion design / Green aesthetics

1. CREATIVE INDUSTRIES BACKGROUND AND THIS RESEARCH

Creative industries (CI) are a modern concept and presented in the literature as the third revolution, succeeding the information and industrial revolutions. Around the world the creative economy is treated as an important and growing part of the global economy, with the creative sectors as generators of employment and wealth, and cultural activities increasingly recognized in importance. It appears as if artistic creativity and capital have finally found a common language; the creative professionals typically used to a precarious lifestyle can finally hope for recognition of merit in the global economy and the accompanying compensation while the holders of capital will realize benefits from such cooperation. In a time of persistent global economic crises and declining financial support for the arts and culture sector by public and private institutions, the CI are promising as a solution that would guaranty existential resources to creative workers. But this is a superficial view of the significantly more complex relationships between CI, society and the economy. The CI are a broad concept that, among others, includes the field of fashion design, where attention passes from the creative worker, i.e. creator, on to the exploitation of production workers in developing countries and to pollution of the environment. Rarely mentioned within the frame of CI is Sustainable Development (SD), which is based on social welfare, care for the environment and economic performance. Nonetheless, a link between these paradigms is essential for the future of both the fashion of CI and CI fields in general. Responsibility for improving the situation in this area lies primarily on the broader system, yet the creator of the creative product and its customer also have major roles. In this view the everyday aesthetic or aesthetic of everyday objects is very important, such as clothing, both in the designing and purchasing processes. However, aesthetics is not limited only to the sensory level, but also inhabit the cognitive; establishing green aesthetics and respect for its principles are essential if we want to make the right decisions as designers and as consumers, and thus contribute our share to the mosaic of the necessary steps toward building a better, sustainable society.

CI are treated as a modern phenomenon, the arts throughout history have always maintained a certain relation to marketability, whether it was in complete subordination to marketability, in its complete absence or some intermediate shade. Through historical theoretical-philosophical examination of this relationship, we can gain a wider contextual image and understanding of today's basis of the relationship. Thus far there has been little critical research in the field of CI. Upon reviewing the literature, one notes the particularly topical aspect of SD, which focuses on social justice and environmentally responsible and economically viable development. Fashion is an example par excellence of CI, as it is a field in which the supremacy of economic profit over the other two components of SD is especially evident, both now as throughout its history. Due to the negative consequences of such a modus operandi for creative workers and the environment, it is necessary to reflect on the actual state and future of fashion vis-a-vis the CI paradigm. The paper investigates the SD model, its weakness and principles of everyday aesthetics, including environmental and green aesthetics, which in the aesthetic assessment of the creative product takes into account components such as environmental and social justice. Additionally, the paper presents the multilevel aspect and domains of responsibility. The main purposes of this paper are to present the possibilities of sustainable development in the fashion field within CI and to form a sustainable fashion model to provide orientation for the designer/brand and the consumer. The overall aims of this paper are to contribute to better knowledge of the CI field and to develop critical thinking in this area.

The paper has several guiding questions. Firstly, what is the role of creativity in the framework of CI? Secondly, is it possible within the given framework and conditions to think of CI as being long-term beneficial for a creative worker? Last but not least, is it possible in the fashion field to establish such an aesthetic relationship to the product and such a mode of production that would achieve sustainable effects for the environment and creative workers?

In compiling research and expertise on CI, I consulted authors such as Richard Florida, David Hesmondalgh, Charles Landry, the UK Government Department for Culture, Media & Sport, Geert Lovink, Ned Rossitier, Angela McRobbie, Andrew Ross and Ruth Towse. To highlight the relationship between creativity and CI, I researched authors such as Walter Benjamin, Theodor W. Adorno, Clement Greenberg, Fredric Jameson, Jean Francois Lyotard, Karl Marx, Antonio Negri, Paolo Virno, Aleš Erjavec, Ernest Ženko and Polona Tratnik. When researching the historical role of fashion and its place in CI and then assessing its actual state in the fashion field, I relied on, among others, the authors Stuart & Elizabeth Ewen, Collin Campbell, Gilles Lipovetsky and Andrew Morgan. In the area of sustainable development, I researched theorists such as Andrej Kirn, Donela H. Meadows and William M. Adams. In establishing a sustainable design model and focusing on green aesthetics and environmental art, I looked to Yuriko Saito, Ossi Naukkarinen, Marcia Eaton, Aristotle and others. The theoretical study was followed by case studies of some foreign and Slovenian fashion design brands (People Tree, Terra Urbana, Bee Zee Eco Land, Smetumet, Shirting, Breja preja, etc.), system regulation (The Nordic Council of Ministers' perspective) and awareness actions for the customer (Green carpet, #whomademyclothes, Fashion revolution week, etc.) that are relevant for the currently established sustainable model of the fashion field.

This paper only specifically incorporates some of the mentioned authors' research, since only the main conclusions of the broader research of the topics are presented here.

2. CROSSING CREATIVITY WITH INDUSTRY

The relationship between creativity and industry lies in the concept of CI in rather contradictory orientations; nevertheless, this is not a purely modern concept, in consideration of the similar historical relationship between creativity (or the arts) and marketability. When researching the relationship through a historical overview of various philosophical-theoretical insights, we can surmise that market-oriented creativity is in fact deprived of real freedom of creative expression, as well as being deprived of the testimony of truth and the possibility of true innovation.

Seeking the context of CI and clothing fashion reveals origins predominantly in the substratum of cultural industries, as specified by Adorno and Horkheimer. Certain characteristics of cultural industries, then, have always announced the "forthcoming" creative industries. In the field of fashion we are dealing with industrial mass production and distribution of commodified products, which, if we follow Adorno and Horkheimer (2002), are constantly meeting the need of consumers for novelties, but in fact they are merely endless repetition and disappointment. The emergence of the CI paradigm is conditioned by the circumstances of postmodernism, i.e. post-industrial time, which is characterized by general commodification of culture and the arts. As such, CI are impregnated with what Jameson (1992) named pastiche and are subordinated to capital. Creativity as a cohort of industry is said to lack free innovative charge, again, as it is subordinated to capital. At the same time, the CI are based on

a fusion of both high and mass culture. On the other hand, CI are seen as a continuation of the narrative, but after the end of the film credits of Lyotard's grand, universal narratives, that are replaced with small, local narratives (LYOTARD, 2002). It may be that CI offer our future cognitive mapping of the twenty-first century; this what Erjavec (2004) says the Twentieth Century lacked and what cast the grand narrative (as it is art). This grand new narrative is fueled by human creativity, which provides the driving force for economic development and ensures economic success and competitiveness for a society possessing deep creative potential. However, it is precisely the creativity, that part of CI, which is the weak link in the capitalist structure. Sebastian Olma unfolds insight from a post-autonomous thought point of view into the current state of genuine creativity and shows that the creativity within capitalist relations is always reduced to productive work. This framing of creativity is conceived as an institution antithetical to and destroying creativity, reducing it to a simulated creativity of capitalist poiesis (OLMA, 2007). Here, the CI, whose source of profit is creativity, are acting in an auto-adversarial role in opposing free creativity by hindering, limiting and directing it via interest-conditioned channels, thereby destroying the ontology appropriate/necessary for creativity (Lazzarato refers to such creativity with the term inter-cerebral cooperation) and innovation outside pre-established and profitably confined domains. This is also reflected in fashion, where we talk mainly about interest-guided creativity, but occasionally it interfered (and it still does from time to time) with the field of art and real creativity. A powerful example of this occurred in the modernist times of the 1920s, when the designers of haute couture, effectively artists, achieved the highest degree of autonomy and prestige. Diana Crane describes the fashion in this particular period as perhaps having been subject to partial artification. This is a process of transformation of non-art into art, which increases the prestige of a cultural form (CRANE, 2012). With the emergence of industrial mass fashion the haute couture began to fuse with mass fashion, which for the consumer (as indeed happens in the field of arts, as Adorno and Horkheimer pointed out) democratizes and increases its availability while reducing the quality of clothing and intervening in real creativity. Consequently, the majority of initial resources are diverted to imitate and translate high fashion to the masses. In some form haute couture still exists, but its designers have subordinated their free creative expression to the fashion market requirements of brands and especially profitability.

It may appear that we are witnessing the cyclical nature of the relationship between creativity and marketability, but in reality it is a spiral structure. After six centuries on a slow path towards autonomous creativity in modernism, we are slipping slowly into an all-embracing consumerism and capitalism where we are once again faced with a direct marketing-oriented, utilitarian, propagandistic creativity, i.e. the creative industries, set in a quite different, global and aestheticized environment.

3. CREATIVE HEAVEN FOR CREATIVE WORKERS AND SOCIETY?

Contrary to much popular belief, the new system was not, in fact, designed in order for creative workers to finally get recognition and compensation for their work, but because of the urgency of establishing a new social and economic order. This new arrangement would allow profitable transactions on the basis of new, i.e. creative, sources in times when due to the changing economy they are needed to restore global competitiveness at the state as enterprise level. We can observe in the present context and conditions that CI neither enable nor promote the welfare of the creative worker and society, rather they serve exclusively for the further acquisition of capital. Meanwhile, the creative worker or society and the environment are put in a deprivileged, exploited position, which is especially visible in the field of fashion.

Andrew Ross shows how in the 1990s the economy of Great Britain shifted, no longer being driven by coal production and exploitation of other conventional natural resources; therefore, British managers strived to find a service industry that could add value in a very recognizable way. Identifying creativity to fill this purpose presented a renewable and mostly undiscovered source. Moreover, it is, theoretically, possessed by every citizen, so acquisition costs should be minimal and resources should never run low (ROSS, 2007). In order to be able to establish the new model of the creative economy, it would be necessary to restructure the formal and informal institutional environment and establish new social categories (creative class, creative city, clusters, etc.) and values.

Thus, under the guise of the prevailing image of beneficial mutual cooperation between creative workers and capital / industry resides a strategic mechanism for exploiting creative human potential, one which serves the interests of capital only and which can only have long-term benefit for the latter. Creative workers attracted by these apparently free creative jobs on the model of an independent artist-entrepreneur instead find imposed restrictive labor conditions which force them into even more precarious work than before (flexible working hours, lack of security, contract work, etc.). As Ross states (ibid.), the long-term vulnerability of the artist and his neglect is in the new regime magically transformed, i.e. spun, into a model of entrepreneurship, into the courage that tolerates risk. In the past eccentric and nonconformist characteristics of artists that provided quasi-independence are now exalted as the key to the integration of creative workers into a global chain of values of a new topography of the creative market.

Exploitation in the fashion field can be found on at least three levels: at the level of precarious conditions for the designer, the miserable working conditions of production workers in developing countries (although this occurs in and near developed countries, e.g. Italy, Romania and Turkey), and rampant environmental pollution due to textile and clothing production especially in developing countries.

4. ENGINEERING OF THE SUSTAINABLE DESIGNER, CLIENT AND SYSTEM – A MODEL OF SUSTAINABLE FASHION

Given the current situation in the field of fashion of creative industries, the principles of sustainable development are recognized as a solution for establishing the circumstances to ensure the well-being of workers and society and the preservation of the environment along with positive economic performance. However, implementation of such a system is far from easy. Introduction and internalization of SD values at all levels of society is on one hand an extremely long process if it is even possible, and on the other hand, if SD principles are consistently introduced, from the consumer perspective we can again expect more expensive and less accessible goods, at least in conventional terms, which in turn implies a reduction of the availability of goods and perhaps even some degree of democracy. In the introduction of sustainable fashion and design we must not overlook aesthetics as a very powerful tool long used by the system for the subordination of the masses. Alternatively, a different approach little documented is the possibility that an individual, a designer or a brand can through aesthetics or aesthetic judgment contribute to bringing forth the desired positive changes in the environment and society in general.

4.1. SUSTAINABLE DEVELOPMENT AND ITS HOLES IN INTERPRETATION

The paradigm of SD has been slowly implemented in all social spheres for the last fifty years and is now widely accepted, and we have a general consensus on it. The idea of SD is often illustrated with its definition of three pillars (dimensions): environmental, social and economic. All pillars should be in balance, i.e. it should be the environmental pillar which sets the context for the other two because it gives the conditions for the social and economic pillars' existence, but in reality it is often so that the economic aspect prevails over the other two dimensions. This is further pointed out by Andrej Kirn who stresses that the paradigm of SD is a compromise between pro-growth and limits to growth theories and as such can offer a meeting point where ecological fundamentalists or at least moderate ecologists can agree and reconcile with the economic-technological progressist camp, although the everyday mentality of the latter is still rooted in unsustainable development (Kirn 2004). William M. Adams shows that now, in the twenty-first century, we are witnessing a deepening paradox: on the one hand, we are pursuing this period of SD in which government, civil society and the economy associate in alliances and jointly develop new strategies to improve the welfare of humanity across the whole planet; on the other hand, it is striking that the global economy is simultaneously becoming less and less sustainable, rather than the other way around. While much has already been achieved, the questions are still whether global trends are turning to sustainable principles or away from them, and whether SD provides a coherent basis for change (ADAMS, 2006). Due to the vagueness of the concept of SD and the absence of a legal and regulatory framework, the idea consequently allows many interpretations, and therefore, practical experience does not correspond to the theoretical guidelines. This mismatch also occurs on the level of fashion.

One of the principles of SD is globality, so having SD in the presence of exploitation, pollution and poverty anywhere in the world is not possible. On the other hand, SD values must be internalized at all levels, personal, business, system, etc. The process of deep integration of new values is very difficult, also because our present system with a wealth of images and ideals (via fashion, movies, commercials, etc.) gives us a false and superficial sense of satisfaction while a number of key life issues remain unresolved (housing, security, hunger, etc.). Stuart and Elizabeth Ewen noted that fashion by always presenting new collections also satisfies needs for change which would otherwise be manifest via social movement (EWEN AND EWEN, 1982). Adorno and Horkheimer (2002) write about the fact that the cultural industry satisfies and seduces the user in a way that makes him passive, not responding, but at the same time it is somehow able to anticipate and integrate his responses to the extent that the user has no consequential freedom of thought. In the case of clothing fashion crossed with the phenomenon of mass industrial fashion the appearance became the "channel of desire" for the masses (a term used by Ewen and Ewen), where at the same time society's potential to realize deeper social change in the direction of solving truly necessary social and environmental problems gets abandoned or lost.

4.2. HOW CAN GREEN AESTHETICS CONTRIBUTE TO A BETTER HUMAN, DESIGNER AND CONSUMER?

The question is how to make a human better – more sustainable in his actions. Ossi Naukkarinen (2007) emphasizes that the artist and his audience (relation: designer-consumer in this case) are also responsible for finding the solution for ecological problems. Naukkarinen directs us to conceive such responsibility as one of Aristotle's virtues. Aristotle in Nicomachean Ethics (2002) says that "'good " is the purpose of all." The highest good and the end toward which all human activity is directed is happiness, which is achieved through the use of reason. Aristotle wrote that it is the duty of man to be educated, to be guided by the highest values and on this basis correctly decide between the different options; crucial in all of this is the realization of the virtues (ARISTOTLE, 2002). Naukkarinen (2007) adds to this that the choice of inaction is a decision, but one which would result in some form of deterioration. On the other hand, at the beginning we can not expect perfect solutions (or direct paths to them), but genuine action in this direction is sufficient. Naukkarinen (ibid.) concludes that while a man is ignorant he can not be virtuous because he can not make virtuous choices. Therefore, on this line of reasoning it is necessary to eradicate ignorance. Following Aristotle, responsibility is therefore based on the accumulation of knowledge and its evaluation, on deciding

what is good and what is bad, and acting in concordance with it. Although information may be incorrect or knowledge incorporate speculation, the concept of knowledge is possible and feasible, and most essential is that without knowledge we can not discuss the evaluation of what is right and what is not. Responsibility is certainly not a given; it is cultivated.

Responsibility is also reflected in the appropriate sustainable design of an object, in the appropriate aesthetic judgment of it and in the corresponding decision to produce or purchase it. Aesthetic assessment is not something inherent, it also is learned. Yuriko Saito notes that in everyday life we make countless aesthetic judgments which we superficially label as minor aesthetic preferences, but in fact they can systemically affect our decisions, and how we carry those judgments transforms into serious environmental, moral, social, political and existential implications. Comprehension of this process is in philosophy very poorly researched. The power of aesthetic attractiveness is used in political, social and commercial purposes (e.g. German Nazi promotion of certain music, literature, films, even certain vegetation) for certain ends, yet the mystery remains of how it influences and sometimes even determines the state of the world and quality of life – and not necessarily in a way that would be the designed result of a specific governmental, social or promotional program (SAITO, 2007).

If we return to design and art, it can be summarized that the creators, like all others, are always responsible for what is happening around them. They need to understand the consequences of their creation for both people and the environment, and they must be prepared to defend their actions in public. Y. Saito, as with Naukkarinen, stresses that the role of prominent designers is perhaps even greater than that of the consumer. Design has become the most powerful weapon with which man shapes his tools and environment (and thus, indirectly, also society). Therefore, high social and moral responsibility are required of designers. Integrating green aesthetics and the environment means both a challenge and an opportunity (PAPANEK, 1992 in SAITO, 2007) to create products that embody their environmental values. These products must be aesthetically appealing but not simply shaped by the prevailing taste, which is for the most part not environmentally conscious. Y. Saito (2007) attempts to resolve the crucial and complex question: How can ecological values be expressed, embodied or revealed through the sensuous surface of an object in an aesthetically positive way so that the object will be attractive not only for its ecological aspects, but for its aesthetic qualities – without falling into ecological determinism where the object's aesthetic value is exclusively defined by its ecological qualities? Saito argues that aesthetic appreciation of the sensory areas of the object should still be the main reference and basis for our aesthetic judgment. If the object was at first sight aesthetically appealing, it should not then be seen as ugly upon discovering its ecological discordance. Instead, it should expand our judgment to replace the feeling of attractiveness with a feeling of disappointment or unfulfillment due to the gap between its attractive look and harmful content (ibid).

Green aesthetics, therefore, require additional consumer responsibility – ecological education about the product and the ability to connect this knowledge with the sensual appearance of the product (SAITO, 2007). It requires environmental responsibility from the designer to create aesthetically attractive products in a sustainable way such that the consumer will note and value these features at the time of purchase. Y. Saito (ibid.) introduces green aesthetic requirements through 7 ecological values, which she names "promising candidates for a green consumer aesthetics": minimalism (source reduction); durability and longevity (not only in the literal sense, but also in terms of antidote to planned obsolescence-driven style and fashion); fittingness, appropriateness, or site-specificity (context-relevant, required for diversity; locally available materials, vegetation, consideration of a particular site, climate, culture and heritage; discordance can be aesthetically positive but is almost always negative for the environment); a contrast between past and present (recycling, reuse or processed materials, etc.); perceivability of nature's function (cooperation with nature, not against or irrespective of it, visibility of environmental processes); health (the health of the built environment, which in turn affects the well-being of humans and other creatures); a caring and sensitive attitude (the most all-encompassing aesthetic value that can be expressed in green design objects; normally conceived as a moral rather than as an aesthetic value, but moral attributes are often experienced through aesthetic manifestations). The listed green aesthetics values are framed mostly within the environmental component of SD while some also overlap with the social (e.g. the value "health" can can extend to the health, welfare and safety of workers). However, these values only partially involve the economic aspect of SD (minimalism, recycling, local materials); what is missing here is the importance of the object's profitability. At issue here is that green aesthetics' values are the antithesis of fast economy, fast fashion, and, as such, immediately upon implementation there is no sudden conventional economic growth, yet in the long run this is the only way to preserve the environment, human health and, consequently, the economy itself.

4.3. MODEL OF SUSTAINABLE FASHION

From the presented considerations and criteria we can form a model of sustainable fashion. This model includes three components: the environmental component – following the principles of green of aesthetics, the social component (well-being and safety of workers) and last but certainly not least, the economic component (economic performance). Framed as long-term improvement of environmental, social and economic conditions in the fashion field of CI, the values of sustainable fashion must be applied to the three levels of responsibility (as regarded by Aristotle): on the system level, on the designer or brand level, and on the consumer level. Initially, at the system level a legal-regulatory system would need to be established to regulate the accordance of practice with theory and to find effective solutions for implementation of SD values within the system. At the levels of designers / brands and consumers the green aesthetic values as defined by Y. Saito offer guidance, but attention must also be given to the social dimension (care for workers throughout the chain, which is manifest through various efforts for their health, fair pay and security).

The described modeling of sustainable fashion could seem too ambitious, but in actuality there are isolated, nevertheless existing, cases of sustainable models from fashion that offer positive changes in the field. At the system level of improving the conditions for workers it is encouragement of the activity within already established principles of fair trade which represents a healthier trading system between groups of producers from economically disadvantaged countries and consumers. A very promising case at the government level that directly addresses sustainable fashion and depicts how this area could be governed is the commitment of the Nordic Ministers of the Environment. In 2015, they presented guidelines for fashion textiles in the Nordic region to become the most sustainable in the world. The main objective of the initiative is to make the fashion and textile recycled in a circular economy by 2050, with which the life of the fiber would be prolonged. Among their plans is also the establishment of the Nordic Academy for sustainable fashion and design, which would educate designers in the region. By realizing these initiatives the Nordic ministers incorporate another objective: the emergence of new business opportunities within green fashion. While solving global environmental problems, the region could thus generate growth and new jobs (NORDIC COUNCIL, 2015). The popular firm Levi Strauss also exemplifies positive efforts towards SD by enabling short-term loans with favorable interest rates to their small suppliers running socially responsible businesses (with regard to environmental, health, safety and labor standards) (LEVI STRAUSS & CO., 2014).

At the designer or brand level one can observe a recent increase in sustainable brands; this includes the highly recognizable U.K. brand People Tree, in Slovenia most successful is BeeZee EcoLand, along with Terra Urbana, Smetumet, Breja preja, Shirting and others. Slovenian brands mainly have economic difficulties due to the small size of the Slovenian market and the necessity to export (BeeZee EcoLand is very successful in this respect), which again requires additional resources. Numerous other brands are only beginning their journeys.

At the consumer level we find a number of campaigns for raising consumer awareness about the background of the fashion industry.

The consumer's responsibility in the field of sustainable fashion lies mainly in effective aesthetic judgment of the product, and on this basis extends to the purchasing decision. As Y. Saito (2007) indicates, the consumer should have access to an informative catalog for every product available, as is the case with works of art (this is usually seen among sustainable brands). Today, media increasingly offers broad information on the background of unsustainable fashion, but an increasing number of campaigns focus on raising ecological and ethical awareness in the field of fashion which target the consumer (e.g. Fashion Revolution Day, #whomademyclothes, etc.). They are typically organized by non-governmental organizations (e.g. in Slovenia: Greenpeace, Humanitas, Zadruga Buna) as well as brands and designers, themselves, who promote sustainable practices.

5. CONCLUSIONS

We are at the point where the current situation shows urgent need for change. Kirn warned that it will probably require a major crisis in order for deep change to be possible in the direction of implementing SD at all levels. In 2008, four years after his writing, such an economic crisis did, in fact, transpire. The crisis, in which we are still caught today, is an opportunity for introducing improvements in the direction of SD, which are visible in the field of fashion for now in isolated but successful and recognizable cases. It can thus be concluded that across the broad field of creative industries, sustainable development and sustainable fashion are important fields of today's social reality that will significantly mark the upcoming times of our society. "How" depends on the activity of each member of the social mosaic.

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PRINCIPLES OF SUSTAINABLE STORAGE FURNITURE DESIGN

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Abstract - Usual definitions of good design already include criteria such as successful performance, ease of use, safety, simplicity of maintenance, appropriate materials, efficiency of manufacture, attractive appearance and value for money. Designing for sustainable markets does not ignore the traditional criteria for good design, but it demand that some are given different impacts and that new considerations are also taken into account. Environmental impacts occur at all stages of life-cycle different types of products. For example, the raw materials for furniture and final disposal include most of the environmental impacts, and for energy-consuming products such as household appliances the use of the product includes most of the environmental impact. However, no matter where in the product life-cycle the impact lies, most of the impact is locked into the product at the design stage when materials are selected and product performance is determined. This article focuses on the materials that tend to have generally the bigest share in storage furniture. In this respect, these guidelines do not provide guidance on a product basis but are rather intended to be used as generic guidelines for all storage furniture and because of that they based on the materials used in the production phase and the usability of finished storage furniture products.

Sustainability / Materials / Storage furniture

1. INTRODUCTION

The furniture production sector is experiencing relatively steady growth, whereas recent developments in Europe have resulted in fluctuations and in total, EU countries represent about one quarter of the global manufacturing of furniture. About 85% of total EU furniture consumption has in past years been satisfied by production within the Union. However, imports are rising, with a resulting market penetration of new material mixes, compound components and substance compositions, but wood is still the most important raw material for the furniture sector and a substantial part in the production of furniture items.

Wooden furniture has been estimated to account for over 50% of the total value of furniture production with around 30% of the materials that go into furniture production being wood.

Reuse of wood or in other terms cascading potential in the furniture wood segment begins with the decision in construction process of whether or not wood should be used to produce particular furniture, what amount of wood is used, which type of wood (solid or engineered) and what species are taken (soft or hardwood). From each of these decisions, new opportunities and limits for cascading use unfold (DANNI, ONEY, 2016).

The amount of material in furniture and the problem of creating product loops with composite products such as wood-based panels are the example where the more components

of that kind the furniture contains, the more or less possibilities open up for further cascading steps.

Product construction, design and product transparency will play an increasingly important role when it comes to widening and exploiting the cascading potential of wood in general, and in the furniture sector in particular due to the environmental effects. To become a secondary raw material, furniture wood components must usually be cleaned from other material and substances that have been added to it for protective and decorative purposes or during assembly. Ideally, also resin and glue from production auxiliary agents should be removed which cause technology wise substantial efforts and costs, including intensive research work, which are incurred right now to facilitate this.

2. CATHEGORISATION OF FURNITURE ACCORDING TO THE AREA OF USE

Classification of furniture storage according to the exploitation characteristics is divided in groups for apartments, offices, schools, hospitals, shops etc. It is important to note the difference between public and private space, which depends on frequency of use. The shape and dimensions of storage furniture are determined by particular purpose and the type of things that are stored in it. For example, the workspace requires the most organized storage of paper and books. The equipment in workspaces includes shelves for books, cabinets, drawers.

3. ANTHOPOMETRIC MEASURES OF STORAGE FURNITURE

The values of the functional measure of the body of adult males and females should emphasize the dimensions that are important when choosing the dimensions of furniture for storage. These are the side hand grip that does not exceed 85.4 cm for men and 96.5 cm for women, top reach of the thumb 88.7 cm for men, 80.5 cm for women, and vertical hand grip nearly 224.8 cm men and 213.4 cm for women. These measures are of great importance to make functional storage furniture Panero, Zelnik 1990.

Mass-produced standardized kitchen furniture for example on the market is not optimal in terms of ergonomics (HROVATIN at all., 2015). This means that the wall cabinets are not suitable for the elderly people (Figure 1).

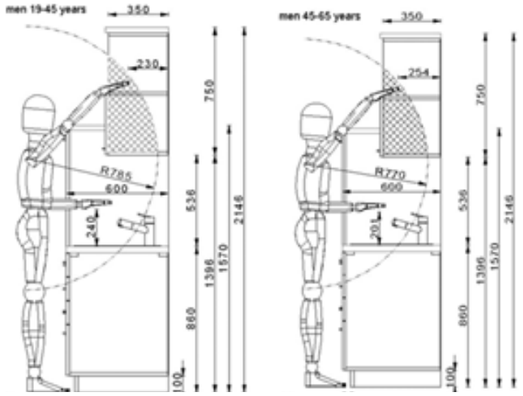

Figure 1. Placement of the male model, age 19 – 65 in the kitchen

4. STORAGE FURNITURE FINAL USERS

There is a great diversity when it comes to end- users of furniture. The border between division cathegories is very blurred. Human interactions and furniture are different and they include age, lifestyle, personal needs, interests, hobbies, and the amount of things that man owns.

All this makes a certain set of characteristics on the basis of which division be made. Two groups of users that stand out are the children and people with special needs Pissareva, Jivkov, 2009. The reason is the demand for different types of furniture that have dimensions which are different from the rest of furniture and those dimensions are determined by their way of life (Figure 2) (PANERO ZELNIK 1990).

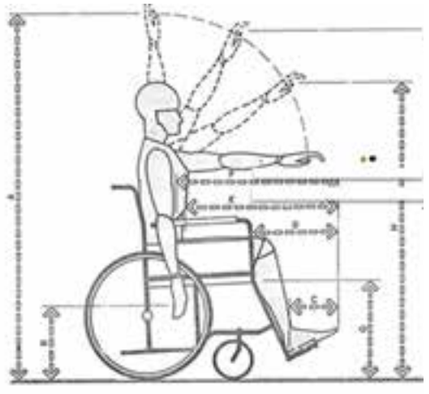

Figure 2. Dimensions for people with disabilities

5. MATERIAL SELECTION IN CONSTRUCTION PROCESS OF STORAGE FURNITURE

5.1. SOLID WOOD

Wood is the one furniture manufacturing material that is being used right from the ancient times. Even today it is the material which is of the highest demand and value. Wooden furniture has a life period which beats all other materials. It also have a good finishing and adequate strength. In various pilot projects, wood has so far been used scarcely, even if the characteristics of wood materials support the creation of a pleasant space. Empirical studies have shown that wood is perceived to be a pleasant, warm, breathing, and timeless material (RICE at all., 2006), (CRONHJORT at all. 2016).

Wood can be used to manufacture any type of furniture. It can be used even with glass and leather.

5.2. WOODEN BOARDS

Particle board as an example has had an enormous influence on furniture design (JAMBREKOVIĆ, 2004). In the early 1950s, particle board kitchens started to come into use in furniture construction, but in many cases, it remained more expensive than solid wood. A particle board kitchen was only available to the very wealthy. Once the technology was more developed, particle board became cheaper. Large companies base their strategies around providing furniture at a low price. They do this by using the least expensive materials possible, as do most other major furniture providers. In almost all cases, this means particle board or MDF or similar material. However, manufacturers, in order to maintain a reputation for quality at low cost, may use higher grades of particle board, e.g., higher density particle board, thicker particle board, or particle board using higher-quality resins. In general the much lower cost of sheet goods (particle board, medium density fiberboard, and other engineered wood products) has helped to displace solid wood from many cabinetry applications.

5.3. APPLICATION OF PLASTICS IN FURNITURE PRODUCTION

These are low in weight and price and suit the needs of low budget furniture. Since plastic is the major ingredient used, these are available in many colours. Plastic materials in corpus furniture appear in the form of foil were coats surfaces or edges (Figure 3).

Figure 3. Application of plastics for storage furniture in interior

6. PRINCIPLES OF CONSTRUCTION

The principles of design activities constitute of acceptance of the new task as the basis and foundation for structural development, project design development of the technical documentation (technical drawing) for one or more products. Selecting of the best product version worked out in detail, and can have more structural solutions. Accepting only a structural solution affects production and subsequent sale of products on the market.

Development of the prototype or model that cannot be changed as a design solution designers (TKALEC, PREKRAT, 2001) according to the principles of design to the properties of wood and non-wood materials must obey structural solution which match the design solution. There is the need for use of the materials that will not alter neither aesthetic nor functional properties of final product (SMARDZEWSKI 2013).

The unfavorable properties of selected materials should be kept to a minimum, attention must be payed to the selection of quality materials and it application to more valuable products, which than serves as a guide to economic production. For example the same thickness of the shelves and 2 different materials and construction (Figure 4).

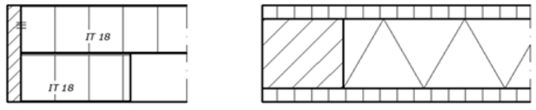

Figure 4. Different possibilities of shelves construction

Principle of technological production must be in conformity and compatibility of certain level of structural forms with the technology used in their manufacturing process.

Structural complexity is determined by the diversity of materials for construction, and the number and composition of the diferent assemblies in the structure. Design quality is determined according to the level of quality that norms or market demand, which provides evenly loading capacity of technological equipment, better utilization, ease of techno-

logical process, shortening of the production cycle, together as greater savings, and increased productivity.

7. ENVIROMETAL IMPACT AND REUSE

The importance of interior comfort grows with increasingly energy efficient building. From January 2021 onwards all new buildings within the European Union are to be built to nearly zero energy standards (nZEB). This also affects the design of interior spaces and furniture (CRONHJORT and all. 2016.).Early replacement of furniture due to a lack of reparability options, low durability, ergonomics or furniture not fit for purpose. According to the European Furniture Manufacturers Federation, the share of materials used in furniture production (by value) is on (Figure 5). As can be seen, a piece of furniture can be made out of a large variety of materials.

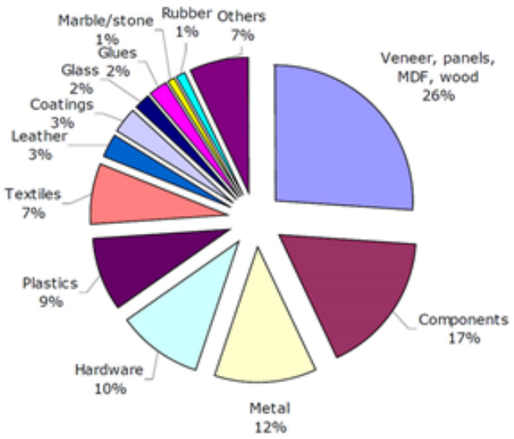

Figure 5. Share of materials used in furniture production (by value) Source:
Final Report to Framework Contract /ENTR/008/006

A furniture collection system should, for instance, include or facilitate a separation at source and further subsequent sorting. In addition, damage-free transport to the point of collection or take-back is not only a pre-condition for reuse but also helps improve recycling. Any destruction of furniture during collection or forced mixing of materials causing contamination has adverse effects on subsequent steps of material recovery. What often comes along as a convenient service offer to get old furniture items disposed of mostly results in irreversible damage and sets an end to furniture reuse and for the most part also to recycling. Expanding take-back arrangements and networks of public reception points such as staffed recycling yards is often beneficial. According to European Federation of Furniture Manufacturers (UEA) statistics, in the EU, furniture waste accounts annually for more than 4% of the total municipal solid waste (MSW), of which 80-90% is incinerated or dumped in landfills, whereas only 10% is recycled. A successful system of cascading use may lead to higher wood consumption. Thus, it is important to safeguard the sustainable use and management of wood from forests by reliable resource monitoring.

8. CONCLUSIONS

Good design has always been a synergy between the needs and wishes of the users, design, technology, and knowledge of materials and their properties. Designing for sustainable markets does not ignore the traditional criteria for good design, but it does demand that some are given different influence and that new considerations are also taken into account. The modern furniture design needs to change the traditional selection of material procedure which should consider not only the conditions of usage and property, but also the environmental restrain criterion. Once the life span of furniture has been extended to its maximum, in order to increase the possibility for recycling and avoid untreated dumping, furniture parts should be:

• easy to disassemble (this will facilitate the reuse or recycling of furniture parts)

• marked to identify the type of materials furniture is made of

• made of recyclable and/or renewable raw materials

In general, improving furniture collection systems has a high potential to increase recovery of used furniture and thus make suitable wood material more accessible for cascading.

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NEW BREED JEWELLERY AND SUSTAINABILITY

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In recent years it has become clear that many events that took place in the field of design – including jewellery design – were conscious (or subconscious) responses of authors to the climate change that we experience every day. A big shift has taken place in the field of personal adornment, a long neglected form of artistic expression. It is due to the opening or abolition of national borders and to the increased accessibility of materials, but also to the change in the way the artists themselves (as well as the wearers) perceive personal adornment. In the near future, all parts of society will have to adjust their value systems to the climate change. Some individuals, including jewellery designers, have already done so. The ecological and social circumstances of today force artists to use forms and materials others than those in the past to implement their concepts. As part of process involving all aspects of society, jewellery should deepen our understanding of the interdependence of humanity and the environment, and of the adjustments that lie ahead.

Jewellery / sustainability / climate change

Have you ever dreamed of a world without borders? It is less likely that you thought about the preceding of such a state. History shows us that human nature is prone to extreme inertness. In accordance to that, changes occur only after the particular form of existence has been completely exhausted. The last example that confirms this claim are events related to the US city of Detroit, as it is shown in the documentary film by Julien Temple, Requiem for Detroit, which can be viewed on YouTube.

In recent years it has become clear that many events that took place in the field of design - including jewellery design – were conscious (or subconscious) responses of authors to the climate change that we experience every day.

The disappearance of limitations that were in prior periods related to the use and type of material, but also associated to awareness of the creator (as well as the wearers) about the definition of personal adornment, happened precisely in this field of long time neglected and unrecognized artistic expression.

In recent decades contemporary jewellery presented itself through accentuating opinion and expression of personal attitude on various topics. This change in the field of design began to take place in the early 1950s; before that the jewellery was mostly made by using the conventional materials, i.e., precious metals, precious and semi-precious stones and other natural materials. Compared to the historical periods before the Second World War, the most important change can be noticed in the actual form of jewellery, which was based on the principles of twentieth century visual arts.

The ecological and social circumstances of today forced artists to change forms and materials by which they will accomplish their ideas. In a great deal, this is influenced by overproduction of everyday utilitarian objects, from the field of product design and industrial design. I consider this to be a natural phase of the creative process because the materials are selected during the creative process and according to the thought, which is in fact, the result of the experience of our surroundings and things that we use.

The choice of material and attitude towards the design method which is nowadays necessary, along with the way of thinking, emerged as a resistance to the aggressive (and unnecessary) consumerism and the inflation of production of profit supporting items that provide conditions of the very idea of consumerism. Based on similar conceptions, in the second half of the 1960s, emerged a position that revolutionary changed former perception of jewellery by breaking with the common practice of using traditional, mainly precious materials.

In addition to formal research, the jewellery designers of that time confronted consumer society with their attitudes in order to make jewellery art become art discipline equivalent to the others. Therefore, jewellery from that period has a social component, sometimes even political, depending on the author. In their works, the designers of today incorporate all relevant comments to contemporary life, including social and even ecological.

Their intentions are layered, and sometimes only in those deeper ones, perhaps on first glance not so visible, ask questions and suggest a larger number of topics related to globalization, to the so-called Third World, a possible technological apocalypse, etc., and discuss them.

It is difficult to think of any aspect of our existence that has not been touched and intrigued by interest of some of the artists working in the field of so called 'new breed jewellery'. According to the principles of artistic avant-garde of the twentieth century, relation toward material is completely liberal. With the exception of the desire to carry out the design, the artist is not obliged to use any material in particular. A wide choice of material is entangled with a large number of different artistic approaches.

It is impossible to arrange many of the pieces into any particular classes as they combine the traditional use of precious metals with sustainable, recycled, natural and found materials. In this respect, complete freedom in the choosing of materials has finally been achieved.

At this point, I would like to stress that in education it is still necessary to use the classic goldsmith technique, together with all of the contemporary experiences. The reasons are multiple, but one of the most important is the freedom to use the classic techniques of processing and production in all other materials (not only those traditional); these techniques especially will ensure the quality of production. By using all available materials that enable the realization of imagined work, jewellery design comes out of its classic area and accepts the overlapping with other media, such as painting, graphic art, photography, sculpture, design, street art, performance art, assemblage, and so on.

In this kind of approach the attractiveness of contemporary jewellery is included and I believe that it will continue to develop in a wide range that offers interference of the media by using all available materials. In the near future, because of the climate change, almost all of the community will be forced to create a new value system. Individuals who already participate in the creation of this new system are noticeable also in the field of jewellery design. Causal relationship of art, nature and society in the medium of jewellery is realized in a direct way.

One of the preconditions for that is development of artistic jewellery to ecologically-based concept. I believe that the society, given the relationship with nature, is in a period of adjustment to the many visible changes that have a direct and almost daily effect on our body and on our immediate environment. Ecologically oriented concept refers to the jewellery which acts as a kind of interaction of the inner and outer world, situated on the membrane of the human body where constant changes of various sensations are happening. Just as our personality inhabits the body, the body itself inhabits designed - created - space.

The limit of this inner and outer space is the human body itself, and the jewellery should emphasize the importance of intertwining interior and exterior space, the rhythm of their interactions (such as the role of light and dark, fullness and emptiness, for example), with regard to all imaginable factors that define spaces within our emotional life is held.

The construction of the inner world has the same importance as the construction of a pleasant residence in the outside world, and the role of the jewellery in highlighting these processes. Insisting on the importance and purpose of refining personal spaces - external and / or internal – is an essential component of high-quality jewellery, regardless the material it is made from.

Jewellery should be part of a supportive process that would understand the personalities, the environment, and it should help in the adjustment that we are facing. Probably this adjustment will be difficult, however, as there has never been a period in history of human race without personal adornment, the continuity of this tradition will continue during the actual adjustment, which is already visible. Accordingly, it is possible to imagine that precisely in this new situation, dependent on climate change, an entirely new field of jewellery design will be created which will be produced in accordance to zeitgeist and the expected needs. I would stress that today there is a large number of authors, as well as those active in the field of architecture or design, for example, that make jewellery according to the principles of sustainability, recycling, biomimicry, and so on.

RADICAL SURVIVAL TACTICS WITH CRITICAL DESIGN

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ABSTRACT - In the Survival Kit for the Anthropocene Maja Smrekar takes what one could call critical approach to design. The kit is conceptualized as practical equipment for biological survival in apocalyptic circumstances. It also addresses the issue of easing local cultures and economies in the context of neoliberal economy. The mobile kit connects contemporary art with folklore. The designer employs a do it yourself method or as a form of "bricolage". The author will discuss the project as a product of critical design addressing the circumstances and consequences of the human influences on the ecosystems which have begun some 12.000 years ago and which are to be ascribed to the geological epoch called Anthropocene. Maja Smrekar's project has some activist dimensions, while it not only addresses the issue of extinction of species, but it also makes connections between the Anthropocene with the neoliberal capitalism's mechanism of the brutal survival of the strongest.

Critical design / critical theory / ethical design / tactical media.

Maja Smrekar's Survival Kit for the Anthropocene (2015) (Figures 1 and 2) is conceptualized as practical equipment for biological survival in apocalyptic circumstances. It also addresses the issue of easing local cultures and economies in the context of neoliberal economy. The mobile kit connects contemporary art with folklore. It is a hybrid between the beehive and Slovenian rural case in an egg form, which symbolizes life. The exterior is painted in the spirit of folk's ornamentation, yet with the increasingly broadened invasive species in Slovenia, the knotweed (Fallopia Adanson), Heracleum mantegazzianum, Dreissena polymorpha and Harmonia axyridis. In the kit the autochthon flax rope and pig's bladder are interconnected with the invasive acacia and bamboo. This is a water container with the impregnated pig's bladder, into which the water flows through a bamboo pipe with water filters. The boxes "eggs of life" contain basic instruments for the case of apocalypse, the indicator of radioactivity, iodine tablets and protection mask. The kit also includes two shank forks with a removable net for various uses, while the fork can also be used as a handy crossbow.

Figures 1 and 2. Maja Smrekar, Survival Kit for the Anthropocene - ANNOUNCEMENT.
Photo: Borut Peterlin. Production: Aksioma Institute, 2015.

Maja Smrekar addressed the issue of human survival already before, in the project Maya's Yogurt (2011). The product conceptually refers to a likely scenario, in which humanity is facing a global food deficit. The survival plan that Smrekar introduces includes a production of genetically modified micro-organism MaSm Saccharomyces cervisiae by adding her own, the human enzyme to yeast.

Figure 3. Maja Smrekar, Hu.M.C.C. Design: Boris Balant/ HUMANIST. Production: Kapelica Gallery, 2012.

The issue of survival is again addressed by Smrekar in the K-9_topology: Lilith - the canine human. The artist suggests fertilization of her egg cell with dog's sperm in order to produce a new organism. The material is to be preserved frozen in a dormant state and ready to be cultivated whenever this will be allowed in accordance with the ethical regulations. The idea is to enforce the human species with a stronger predator, which will inhabit our ecological niche and enable to strengthen human natural algorithms as regards the survival of species.

Similarly, Robertina Šebjanič and Špela Petrič (Towards the Human Spore: Reminiscing Algae, 2012) suggest another solution in the context of the environmental changes. Because single- celled organisms or multicellular organisms without significant differentiation of cells, like bacteria and archaea, have greater survival ability and adapt more easily to major environmental changes, they propose to create a trans-species of human and algae, humalgae, which would provide humans with better conditions of survival on Earth in circumstances that may be difficult to predict. The organism would exist in a dormant state

in a cyst form and could be easily reactivated in a complex life cycle. However, despite the proposed genetic hybridization, man would still retain the human form, phenotype.

1. THE QUESTION OF TOMORROW

As Jacques Ranciere emphasizes, the idea of the avant-garde in accordance with Schiller's model, is rooted in the aesthetic anticipation of the future. (RANCIERE, 2007 p. 29) Not the artistic innovations, but the invention of sensible forms and material structures for a life to come, this is what gives the concept of the avant-garde meaning in the aesthetic regime of the arts. And this is what the »aesthetic« avant-garde brought to the »political« avant-garde, or what it wanted to bring to it - and what it believed to have brought to it - by transforming politics into a total life programme. (Ibid. pp. 29-30)

While discussing the issue of survival let me now pay attention to the cave paintings. There different interpretations of the origin of the cave paintings, depending on the era in which they were created and the geographical location. According to Henri Breuil (Henri Édouard Prosper Breuil), archeologist and anthropologist (1877-1961), picturing animals in Lascaux served the hunting magic, meant to increase the number of animals. Mircea Eliade (1951) widened the interpretation of shamanism (before ascribed only to Siberian and Central Asian communities) and recognized a representation of shamanistic trance in the "bird-headed man" at the feet of the eviscerated bison in the shaft of Lascaux. (ELIADE, 1989 pp 51, 503) Jean Clottes and David Lewis-Williams proposed that many of the caves of the Cro-Magnon culture were not neutral places but intermediate passages to the underworld of the spirits (as aptly captured much later by Greek mythology). (CLOTTES, LEWIS-WILLIAMS, 1996) Paleolithic shamans went into isolation and sensory deprivation in order to mediate, to induce visions, to work their magic and then to fix these visions on the walls and ceilings - the human and animal figures were actually emerging from the rocks. The paintings were also meant to be touched, and when these events are considered in the context of a dim ambient light, ritual chants, and the percussion and whirling instruments also found in some of the caves, the painting can be seen as sites for powerful multisensory rituals directed to religious or social ends. (MALLGRAVE, 2013)

2. TACTICAL MEDIA

In contemporaneity tactical media orient towards the future with developing tools and strategies that enable alternative living modes, autonomous living zones, in particular with the objective to avoid the forces of power, which often work through the most broadened media technologies, such as the internet. The central theoretician of tactical media Geert Lovink recently explained: "The term 'tactical media' arose in the aftermath of the fall of the Berlin Wall as a renaissance of media activism, blending old school political work and artists' engagement with new technologies." (LOVINK, 2009 pp. 119-120) In their manifesto of tactical media Geert Lovink together with David Garcia defined them as follows:

"Tactical Media are what happens when the cheap 'do it yourself' media, made possible by the revolution in consumer electronics and expanded forms of distribution (from public access cable to the internet) are exploited by groups and individuals who feel aggrieved by or excluded from the wider culture. Tactical media do not just report events, as they are never impartial they always participate and it is this that more than anything separates them from mainstream media. /.../ Tactical media are media of crisis, criticism and opposition. This is both the source their power". (GARCIA, LOVINK)

Media activists are focused on centres of media control or economic and political power. In such a manner activists practice parasitism, usurpation and subversion of dominant systems and related ideologies. Critical resistance practices question and manipulate symbolic, political or other kinds of social power.

A good example of tactical media (as acknowledged also by Lovink) is the extensive Macrolab (1997-) project by Marco Peljhan. It has begun with an aim to establish an autonomous, selfsufficient system and research structure in isolation. It concentrates on telecommunications, climate changes and migration patterns. Peljhan believes in resistance however he speaks about strategies of minimal resistance to emphasize that resistance, although on a large scale, is only a small point of resistance in comparison to gigantic systems of economic, military and political power. (PELJHAN, 1999)

Tactical media could be related to the revolutionary beliefs originating from Romanticism and the comprehension of culture by the revolutionary leaders from the beginning of the 20th century who beheld culture as an important means for societal changes. In such a manner tactical media are to be understood as successors of historical avant-gardes.

3. BRICOLAGE, DIY, MAGIC AGAINST ENGINEERING

Tactical media compound the do it yourself approach, which enables one's own innovative activity that presents independence of the power structures. In the field of media art, the recent years are marked with a really strong increase of do it yourself approach, supported with the workshop output. The biotechnological workshops are widely spread and often related to hacktivism. The 2015 Ars Electronica festival devoted special attention to the on open technology labs with the concept "Create Your World", an Open City Lab platform in the so-called Post City, which was the former post hall. This platform addressed a question, could an entire city become a place like this someday.

Ziegfried Zielinski recognizes the powerful potential of the magical approach for the contemporary intermedia arts: "For the generation that began to work imaginatively in and

with media worlds at the turn of the twenty-first century, it is of vital importance to know that a magical approach toward technology continues to be possible and to be reassured that investment in it is meaningful." (ZIELINSKI, 2008 p. 255)

In 1911 Scottish anthropologist James George Frazer studied the passage from magical thinking to "experimental physics" as the beginning of the modern scientific approach and he ascertained an important difference between science and magic, namely it lies in the result, but not in the principle and the problem. (FRAZER, 2009) Judged on the criteria of the extent and degree of certainty of its knowledge, magical way of thinking is classified as primitive: the field of observation is too limited, the methods of observing fluctuate and too unreliable for the outcome to be any statement of tenable empirical laws. Here lies the potential of the magical approach for the intermedia art. Zielinski emphasizes that for art an obsessive and passionate focus is essential for the technical media worlds and these practices can also allow fluctuations and uncertainty in experimental proof. The kind of experimental thought and practice that art applies can afford to fail and is not afraid of including the possibility of failure in its calculations.

An important reference in this regard is also the concept "bricolage", enlightened by Claude Levi-Strauss in Savage Mind (1962). "Bricolage", the French term has no precise equivalent in English (craft), is an "activity which on the technical plane gives us quite a good understanding of what a science we prefer to call 'prior' rather than 'primitive', could have been on the plane of speculation" (LEVi-STRAUSS, 1994 p. 16), yet which still exists among ourselves. It is an activity of a "bricoleur", which innovatively and with improvisation solves problems that occur in everyday life. Levi-Strauss describes the difference between the two types of scientific knowledge:

"The 'bricoleur' is adept at performing a large number of tasks; but, unlike the engineer, he does not subordinate each of them to the availability of raw materials and tools conceived and procured for the purpose of the project. His universe of instruments is closed and the rules of his game are always to make do with 'whatever is at hand', that is to say with a set of tools and materials which is always finite and is also heterogeneous because what it contains bears no relation to the current project, or indeed to any particular project, but is the contingent result of all the occasions there have been to renew or enrich the stock or to maintain it with the remains of the previous constructions or destructions." (Ibid. p. 17)

Mythical though, concludes Levi-Strauss, appears to be an intellectual form of "bricolage", (Ibid. p. 21) while art "lies halfway between scientific knowledge and mythical or magical thought." (Ibid. p. 22) In this sense many contemporary do it yourself art and technology approaches are to be comprehended,

Yet for this discussion it is also important to highlight a difference between magic and religion, as defined already by Frazer and later examined by Ernst Cassirer (1930, Form and Technology): magic differs from religion in the relationship of man towards nature: in magic the world is no longer received as the mere gift of a superior divine power, but man seeks to take possession of it and impose a particular form upon it. The magical man, the "homo divinans", is convinced of the all-powerfulness of the self (Allmacht des Ich, Cassirer), he believes in the power of wishes.

4. RADICAL SURVIVAL TACTICS WITH CRITICAL DESIGN

The magical thinking seems to be the common point in cave painting and the tactical media approach in the so-called biotechnological arts. According to Henri Breuil cave paintings were effigies for hunting magic, while Mircea Eliade, Jean Clottes and David Lewis-Williams recognized them in connection to the shamanistic magical rituals. Magic served the Paleolithic man in his confrontations with the wild nature to act upon it for the aim to survive.

Maja Smrekar, Špela Petrič and Robertina Šebjanič address the Anthropocene, the human in the context of the geological epoch Anthropocene, which is significantly marked by the human influences on the ecosystems and which has begun some 12.000 years ago (in the era of Neolithic). Within this epoch human is faced with consequences of his fatal imposition upon "nature", which have led to the dramatic sixth extinction of species on Earth and which eventually lead to the possible extinction of human species. The artists propose biotechnological or just technological solutions for human survival. Maja Smrekar also addresses the vanishing of the local cultures and economies in the vice of neoliberal capitalism. The project furthermore criticizes the contemporary ecological ideology, which "solves" the climate changes within the global neoliberal frames or capitalist paradigms, which enable the corporations to only grow. The common denominator of the survival of species on Earth and the survival in the context of neoliberal capitalism is the mechanism of the brutal survival of the strongest.

The Survival Kit for the Anthropocene is a relatively simple do it yourself kit for an ordinary man, the weak, which wins certain power related to the belief of a possible survival. It is a form of "bricolage", which is related to the magical thought according to Levi-Strauss. Yet the concept of "bricolage" does not offer the activist charge of the bricoleur's outcomes. In The Survival Kit for the Anthropocene the inclusion of critical thought is evident and the appeal to act by ourselves presents a certain activist dimension.

Considering the cave paintings, they as well do not demonstrate a passive position of a man, they either had an actual influence on hunt or they were mediations with the world of the spirits directed to social ends. They not only anticipated the future, but were engaged in the task of changing it, determining the future mode of life of the community. The magical man, the "homo divinans" takes possession over the world and is convinced of the allpowerfulness of the self (Frazer and Cassirer). He is the predecessor of the Anthropocene. What is in this reference the position of the tactical media man? For the Anthropocene the "nature" is coming after him and is presenting a threat, he is losing the position of power and is coming into a similar position as the Paleolithic man. Paleolithic man and, similarly the

contemporary man, are looking for the survival tactics to wrench from the danger of death, be it a threat of hunger or wild danger for the Paleolithic man, the extinction of species, ecological Apocalypse, or just the neoliberal capitalism.

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NEW PARADIGM COMPONENTS AND THE DEVELOPMENT OF DESIGN METHODOLOGY

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Abstract - As a consequence of the principles of the old Cartesian paradigm that caused the division of disciplines and specialisations, design was (and to a great extent still is) placed in the limited segment of knowledge, activity, competence and responsibility. In the so defined role the designer as some kind of an artist with inspiration creates attractive (useful) products, especially as the creator according to visual arts criteria. Technological and sociocultural development expands the design problem area, thus bringing many new types of tasks and roles of the designer. The consciousness is developing that except for the development of things per se, processes related to these things are becoming the subject of design, that is to say the thing and the process as a whole. Design of services, design of events, design of systems and processes is developing. This enforces the imperative to develop the (re) definition of design that encompasses all emerging new areas of designer activity and with this the new components of design itself. The design problem area is becoming more complex. This requires the content expansion of knowledge and the development of methodology, which will be able to master such complexity. Contemporary methodology should enable interdisciplinary and transdisciplinary cooperation among all relevant participants in design and management of such structured complex network of co-participants during the entire development process. The basics of such methodology arise from the fundamental principles of systems theory and methodology.

design / paradigm / methodology

1. INTRODUCTION

To better understand the present situation in design activities, it is necessary, on one hand (at least within the basic framework) to highlight its genesis, which goes a long way back to the very beginning of mankind, and see which activities throughout history formed what we today know as design, what were these activities called, how they were categorised, what status they had, what was their mutual relationship and how they evolve to the present day. On the other hand, it is necessary to highlight today's context in which a set of design activities unfolds and develops, to clarify which are the activities that form it today, which components of context affect its development and what principles are to be followed in the future in order to fulfil its historic task.

2. BRIEF HISTORICAL REVIEW (UP UNTIL THE INDUSTRIAL REVOLUTION)

2.1. FROM ANTIQUITY TO MODERN HISTORY

Processing the elements of the environment with the aim of adapting them to one's needs is a rudimental activity of the human race, which was in this way also established; thus it developed an anthropogenic (artificial) environment.

The emergence of cities in the Neolithic has definitely brought about the division of labour and thus the first attempt of sharing knowledge and social roles of its stakeholders. A whole range of various trades with their specific skills was set up, many of which persist to this day. (MUMFORD, 1961)

Human physical labour, however, among all the skills, occupied a dominant role, there were even mega-machines consisting of people. (MUMFORD, 1967-1970)

Historically, the area of human activity that is currently classified under the notion of design, was shifting from antiquity to the present day between activities of craft, art and science (or their combinations). However, the meaning of these concepts in the course of history has been changing.

In antiquity, the ancient Greeks did not conceive the concept of art as it is conceived today. Their concept of techne meant what today would be called comprehension, skill. Techne encompassed, besides those skills that would be classified today in art, also the activities which are today called crafts, as well as some of the activities that we today call science. Techne included: architecture, sculpture, pottery, tailoring, strategy, geometry, rhetoric. Similarly, the Romans, in the term ars, what then was an almost literal translation of the concept of techne, included the whole system of classification of activities. As for the art/skills, they differed artes liberales that required spiritual effort and artes vulgares, which as well required physical effort, a feature that applies to crafts in general, and is typical and can be found in what is today called crafts. (TATARKIEWICZ, 1975-1976)

Besides the traditional crafts, which until today represent the bases of various design disciplines, the closest one to today's concept (and to the complex character and issues) of design was in the antiquity the activity of architecture, which has brought together several crafts and related skills and required planning and design. The evolution in the conception of architecture is closely related to those activities of architects (e.g. furniture), as has began to be regarded (and often conceptually intertwined) in the modern era also as design. The architect (Greek: architekton - original meaning "the main carpenter"), was the main craftsman, who led the construction. Interestingly, the Roman architect VITRUVIUS (25 BC) , who classified architecture among science ("scientia"), a discipline that "consists of practice and theory", considered the architect to be literate, skilled in drawing, have good knowledge of geometry, optics, arithmetic, history, philosophy (which he considered science in the modern sense of the word, e.g. physics) and music, as well as medicine, law, astrology, heavenly laws, virtually encompassing the entire knowledge of antiquity, but of course to the extent that is necessary for the profession of an architect. He considered all of these disciplines intertwined, and forming a whole (today we would call them system). It represents (at least to a rudimentary extent) a declarative claim for not only a multi- but an interdisciplinarity, or even, as we would today say, system engineering (GASPARSKI, 1981).

The Middle Ages in many ways took over the antique systems of classification of activities. Artes liberales were represented by grammar, rhetoric, logic, arithmetic, geometry, astronomy, music, thus in the way science is understood today (also music is conceived in a way that would today be called musicology). Ancient artes vulgares were named artes mechanicae, which were conceived primarily as crafts, and part of which was also architecture (not in all classifications), while sculpture, painting and the like were not to be found anywhere. (TATARKIEWICZ, 1975-1976)

The practice of architecture (including the corresponding component of sculpture and painting) was principally a craft, led by the intellectual (conceptual) leadership of the church personnel, mostly Dominicans. They represented the investors and, as experts in artes liberales, also the authors of the concept and supervisors of artisanal activity, which initially consisted of monks, and only later of "laymen". The role of the client, creator and leader of the production was thus not separate, not even in the late Middle Ages, when this activity was also taken over by the cities leaderships, and the operational body has eventually allied in craft guilds. (RICKEN, 1990, also KOSTOF, 1977)

Within the inner division of labour in medieval constructors' and craftsmen's guilds existed also a member, who worked on (as it was called in the Romance areas) disegno, a basic plan, and transferred it to the field in the real scale. He was equally anonymous, like the rest of the craftsmen.

During Renaissance, a member of the guild, which was in the Middle Ages responsible for disegno, in the spirit of humanism and secularisation, and the gradual exit of architectural activity from under the influence of the church, slowly came out of anonymity, while individuals formed a separated profession - and became, following the antique model, architects (who, under the influence of Vitruvius, master theory and practice of architecture as a science). They increasingly worked on planning and less on leading constructions, which was left to (for mediation between the architect and craftsman, and for coordination between different craftsmen, as well as for the transfer of the plan into the real scale on the field) skilled craftsmen. They started to classify them self into the activity of art, which gained a new meaning. The skill of drawing, now conceived as art, was not only essential for the activity of architecture, but also painting and sculpture, which definitely gained independence as separate art. It represented a common basis for arti del disegno, which only later (definitely in the 18th century) gained a common title of "fine arts" (Les Beaux Arts), which came into widespread use in the 19th century, or "visual art", which is today still largely in use. However, besides the necessary technical skills for the single artistic disciplines, all crafts have been gradually eliminated from the whole discipline of visual art.

2.2.MODERN HISTORY UNTIL THE INDUSTRIAL REVOLUTIONS

2.2.1.THE CARTESIAN DIVISION OF DISCIPLINES AND KNOWLEDGE

The integration and differentiation of various activities, be it science, art or crafts, oscillated at different times from Renaissance to modernity.
One of the most important historical milestones, which had a significant impact on the future structuring of knowledge, especially in science, but also in all other activities, including arts (which gained independency), is (in the early stage of modern history, in the Baroque period) the famous Discourse on the Method published by René Descartes (1637).The method was to Descartes a set of principles and rules as well as practical procedures, which we use to solve a problem. In the discussion, which he proposed in order to transfer his personal experience, he published four rules on how to acquire cognizance (therefore, to solve a problem). In its second rule he asserts, "To divide each of the difficulties under examination into as many parts as possible, and as might be necessary for its adequate solution". So, divide a problem in as many small parts as possible. In his third rule, however, he states "To conduct my thoughts in such order that, by commencing with objects the simplest and easiest to know, I might ascend by little and little, and, as it were, step by step, to the knowledge of the more complex; assigning in thought a certain order even to those objects which in their own nature do not stand in a relation of antecedence and sequence." The second rule has been later named (by some) the rule of analysis, and the third one the rule of synthesis. The analysis is, as we understand it today, much more than just distribution, division. While the third rule is still far from what is today considered synthesis. What is at stake here is (TOŠ, 2014) that while disassembling, Descartes disregarded the relationship that unifies the plurality of elements into a whole, and without which it is impossible to re-establish the disassembled whole, or to achieve a synthesis. However, some (more average minds) assumed mainly the principle of distribution, because (for them) it was the easiest one to implement. If we connect Descartes' divisionistic method and his rationalism and mechanicism with the views of the greatest minds of the period of early modern history (e.g. Galileo Galilei, Sir Francis Bacon, and later especially Isaac Newton with his determinism) we obtain an image of (the than established) dominant conception of the world, which for instance CAPRA (1983) named the "Cartesian-Newtonian paradigm" that dominated for several centuries and is still predominant in the basic conceptions of the world and knowledge. Descartes' second rule has highly influenced for some centuries the division of knowledge into narrower segments and than these into narrower again. It has developed into a fragmented structure of knowledge and activities, scientific and technical disciplines and specialisations, which have developed their own special methods and languages (terminology), to the extent that in the passage of time they could no longer communicate and cooperate with each other.

In this sense, the division of science from art, of various arts among themselves, of art from craft, of scientific knowledge from practical technical and artisanal knowledge etc. took place, and thus the differentiation of institutions (state-administrative, academic, professional, social). The Cartesian hierarchical system of segments of reality and society was established. Such a paradigm was an essential basis for the development of machines and machine-based production systems as well as mechanistic civilization in general, which was realised in the succession of the industrial revolutions, especially the first and the second one.

2.2.2.TENDENCIES TOWARDS SYNTHESIS

Simultaneously, criticisms and various forms of resistances to the consequence of such development evolved. The problematic nature of his divisionistic methodology was reproached to Descartes in his own way by his younger contemporary colleague SPINOZA (1663), when he argued on a simple case of dissection of the living creature that is impossible to reassemble (revive). However, the discussion on the problem of the synthesis continued for some centuries. The evolvement of the consciousness of the general interconnectedness of phenomena and the tendency to recognise relations that link them into a whole of a higher order was becoming more and more present and evolved in all areas, both in science and in art. For art, after a period of discernment and independence of individual artistic sectors into self-sufficient areas with specific rules and languages, a tendency towards integration of all arts into an organic whole, synthesised in the term Gesamkunstwerk developed as a reaction to this over the course of the 19th century. (TOŠ, 2014)

3. INDUSTRIAL REVOLUTIONS AND THEIR EFFECTS (ON DESIGN)

The waves of the industrial revolutions (the first and the second) with their technological inventions and innovations caused radical social changes as well as changes in their world view, which also brought about changes in the relations between science, art and craft. The first industrial revolution with its imperative of multiplying equal parts or finished products pushed aside qualities, which marked craft products, mainly crafts related to art. On one hand, the industrial production assumed and further developed the traditional craft know-how, on the other hand with its new way of thinking it pushed it into the background, to the extent of causing harsh oppositions. In the period of this disorientation and confusion ideas of integrating art into production arose, while the relationship between craft and industry was not sufficiently clear. The Arts and Crafts movement in England (during the second half of the 19th century) tried to revive qualities of the authentic unique craft, but did not succeed to develop the idea how to reach and exceed through industrial production the achievements of craft. The ideas of integration of arts, crafts and industry represented a step forward, and on their basis the association of artists, architects and manufacturers Deutscher Werkbund - German Association of craft and industrial producers was formed (1907). Although this association was marked by the awareness of advantages of the use of machinery, a conflict of ideas between the tendency toward a standardised mass industrial production (Muthesius) and the orientation toward individual artistic creation (Van de Velde) still persisted.

Based on the ideas of Werkbund and after the joining of the Hochschule für Bildende Kunst (College of Fine Arts) and the Kunstgewerbeschule (School of Arts and Crafts) Staatliches Bauhaus was established in Weimar in 1919. At the establishment Gropius announced in his manifesto the reform of artwork. He foresaw the reform in the foundations and assumptions of craft (the command of material) as the fundamentals of all arts. He conceived the synthesis of art within the framework of the classical disciplines of art, while architecture as a synthesis of all arts: "the ultimate goal of all design activities is the building!"). A uniform artwork (new construction art) should be generated by the reunification in the working community of all the arts (sculpture, painting, crafts and handicrafts). Bauhaus workshops were led by artists - "masters of form" (not professors!), which were helped by "craft masters" with their craft knowledge. After the completion of their study programme the student received a "master letter" (Meisterbrief) from the Chamber of Crafts (Handwerkskammer), and only the most successful students also from the school. Despite the proclamations of cooperation with industry, it was especially the craft (the preindustrial mode of production) the dominant orientation in the initial phase of the Bauhaus. Only after moving to Dessau (1925) a successful collaboration with industry began. In terms of terminology, their activity was called design (Formgebung) , while the activity intended for industry was called "industrial design" (Industrielle Formgebung). Science as a component of design was mentioned only marginally up to World War II. Notwithstanding the terminology, the approach developed in Bauhaus was undoubtedly a decisive starting point for the concept of design until the post-industrial era.

4. DEVELOPMENTS AFTER THE SECOND WORLD WAR

4.1.THE EMERGENCE OF SYSTEMS THEORY

Owning to the growing complexity of the problems brought about by the development of civilization, mainly during the 20th century, more and more persistent and articulate reactions to the Cartesian dualism of knowledge, disciplines and professions arose, i.e. in the form of the philosophy of holism, gestalt theory, hybrid disciplines (physical chemistry, social psychology etc.), the development of ecological awareness, and generally speaking, as a need for interdisciplinary collaboration. After the Second World War a comprehensive approach to complex problems had finally evolved into a comprehensive form of systems theory. The latter was conceived jointly by scientists from a wide variety of disciplines who had started to realise they are putting up with similar problems in their respective disciplines, which they solve individually, and that for all disciplines common principles apply, connect them and allow insights and solutions which were up until than unavailable if dealt with separately. The development of ecological consciousness was also closely connected with this. Such a holistic eco-systemic approach has developed to paradigmatic dimensions. Despite the rise and the crisis it became an unavoidable methodology to solve complex and complicated problems. (TOŠ, 2014)

4.2.ADVANCES IN THE FIELD OF DESIGN

In the field of design, for example Hochschule für Gestaltung (HfG) in Ulm sought to continue the Bauhaus concept, in that it began to include science , while declaring design as a form of art was consciously avoided. In developed countries, a varied structure of the different concepts and approaches appeared, i.e. the differentiation of industrial design from the unique applied art, design from styling, disputes on what belongs or not to the field of design, which new components should be integrated in the activity of design etc., or (due to the new circumstances) the awareness of integration of new components into the design as a whole (e.g. processual components) as well as a number of new design areas, ranging from traditional crafts to the development of systems of large transnational corporations. In the field of design during this period in general, the concept of integration of science, art, industry and craft developed. Nevertheless, single components of the profession of design remained mostly in the reserves of their specialties (and the related educational fields). Despite the declarations about the social role of design, a consciousness, appropriate to the new circumstances, regarding design as not only the development of useful (or ornamental) objects, but also as a physical-symbolic (semantic) phenomenon and generator of new social values and hence the holder of the new responsibility level, was still not sufficiently developed. The design of systems was still mainly regarded only as design of material systems (useful wholes) rather than semantic, and (also) value systems. At a general level, the perception of the designer as a kind of artist, who in his studio, on the basis of his inspiration, designs attractive (useful) products, particularly as the creator according to the criteria of visual arts, prevailed.

4.3. THE THIRD AND FOURTH INDUSTRIAL REVOLUTION

The third industrial revolution, waving during the 1980s, was primarily the digital revolution, the transition from analogue-mechanical and electronic technologies to digital technologies (information technology). It has brought radical changes in all areas of production and lifestyle in general. Electronic communications and information technologies have created new possibilities for the organisation of work

processes and social organizations in general, i.e. concurring engineering (TOŠ, 2000) etc. Already the emergence of programmed machine tools (since the 1960s) gave rise to the bridging of the opposition between a unique and a mass-produced items. With the boom in information technology the necessity of mass production of identical parts in large production systems was decreasing, while small production units, which were specialised and flexible, and were targeting specific needs of the individual user (customer) became more and more present. This also applies to specific technological innovations like for instance 3D printing (JANČIČ, 2016). The third industrial revolution has brought about the so-called second globalisation (the first globalisation developed due to the colonial expansion). A unified homogeneous world market was created, characterised by the financial revolution and the domination of neo-liberal capitalism. All this produced positive and negative effects on all areas of life, i.e. problems related to the levelling out of cultural values, identity problems, ecological problems and the like. The discipline of design was affected the most by the imperative of a radical adaptation and self-redefinition.

We are now entering the so-called fourth industrial revolution, which is due to the development of artificial intelligence mainly a "robot revolution", accompanied by the development of a range of other scientific disciplines and technological achievements, such as nanotechnology, biotechnology etc. Innovation cycles are accelerating, and more and more types of activities are performed by robots. This brings major challenges to businesses, workers, governments and throughout modern society. It anticipates otherwise cheaper products and services and a new wave of economic growth, but it brings about the risk of a new revolution of mass unemployment, the growing gap between corporations and the population, which creates an imperative of adaptation and greater education of the population, but also a general transformation of social relations. The activity of design, however, will not be able to stay in today's frameworks.

4.4.THE POST-INDUSTRIAL SOCIETY

The concept of post-industrial society increasingly appears in the context of the described developments, which is marked by a series of changes, including the following:

Through the processes of globalisation and automation the importance and value of physical production decreases. The economy is undergoing a transformation from production of goods to service activity. The share in the sector related to the services of science and education and highly specialized elites of experts is becoming decisive. Activities performed by scientists, creative industry and IT experts, creators of the new "intellectual technologies", are increasing. In the sphere of knowledge theoretical knowledge as a source of innovation and political decision-making in the society is gaining a central place. Since the production of ideas has become the main way of achieving growth of capital, knowledge is becoming an increasingly valuable form of capital (see human capital). In doing so, behavioural sciences are developing and being applied (e.g. behavioural economics, game theory, information theory etc.).

Boundaries between craft and industry are getting blurry, something that could be called "new craft" is appearing, i.e. small specialised incentives which are a part of the global production network. However, we should keep in mind the coexistence of historical layers (old crafts, traditional industry of mass-produced items, programmed machine tools industry, robotics), not only on a regional schedule, but in each single geographical area. Meanwhile the activity of design extends across the whole array of production forms.

5.CURRENT CHANGES IN PERCEPTION AND THE NEW PARADIGM OF DESIGN

5.1.CHANGES IN THE CONDITION (CONTEXT) OF DESIGN

The condition (context) in which the modern activity of all design categories takes place is characterised by a series of historical processes of change, such as:

- globalisation processes form a single planetary market, that except for certain benefits causes problems in levelling out cultural values and local identities;

- post-industrial society introduces new technologies that are becoming inevitable, often imparted to all who want to participate in the global market;

- with the goal of its continuing growth, the capital continuously creates and imposes new demands, regardless of the real needs of the population;

- categories of population with a high level of knowledge increasingly dominate over the categories with a lower level of knowledge and manual labour;

- social differences and hence the differences in purchasable power and in the structure of the real needs of the individual categories of the population worldwide are exacerbating;

In the mentioned context for design activity these changes occur:

- the position and role in society and on the market;

- the scope and type of tasks and their complexities;

- the scope and type of knowledge necessary to control modern tasks;

- the nature and extent of responsibility;

- the self-understanding and self-definition of its own activities.

5.2 COMPONENTS OF THE NEW PARADIGM OF DESIGN

The imperative of the modern reformulation of the paradigm of design activities has been of current concern. According to the above brief analyses a sketch of the basic set of the components of a new paradigm of design could be drawn, consisting of the following:

- Design brings together all the classical and modern categories of human cognitive, creative and production activities - from traditional crafts and applied arts to industrial, post-industrial activity and science, from a unique to a mass-produced item. Design represents research and cognizance, as well as creating and participating in the production of the whole range of goods of public, market and individual character. It is an interdisciplinary and transdisciplinary activity.

- The range of tasks of design gets significantly expanded; it does no longer consist only of the development of useful objects, aesthetic styling (decorating) of environment, but it also consists of designing processes, procedures, whole objects and procedures, comprehensive socio-technological small and large systems and to all this associated services and social activity.

- The activity of design is no longer just the execution of the received orders, is to actively intervene in all aspects of life in modern society. The role of the designer is to broaden the role of the designer/artist into a thinker, researcher and initiator of changes in the conception of lifestyle, as well as into an entrepreneur, and a social activist.

- With the new role, designer's scope and depth of responsibility for the consequences of his own actions are widening. While facing the dilemma between individual and public interest as well as the interest of capital and politics representing and inducing the fundamental level of ethical appropriateness becomes an essential component of design.

- The new range of tasks requires new concepts of educational systems for designers (for a modern designer approach) at high school, masters and doctoral levels all the way to a permanent lifelong education. Besides the traditional components of designer's education, components of a large range of socio-humanistic disciplines, as well as modern technology and methodology have become essential.

6. SYSTEM DESIGN METHODOLOGY

The growing complexity of the role and functions of modern design requires the development of a methodology that facilitates and supports the management of a whole new range of problems.

The modern design methodology (directed towards the future) arises from the holistic-eco-systemic-processual conception of the world, from the awareness of a simultaneous existence of all historical layers of reality, from the acceptance (and orientation toward) of the complexity of the so comprehended world, from the problem-orientation of design, the necessity for interdisciplinarity and transdisciplinarity and from the necessity for ethical criteria of operation. Such complex requirements can be supported by the methodology that arises from the modern systems theory and the systemic approach. (TOŠ, 2014)

System methodology does not mean that the designer, as the leader of the complex process of design, should in every moment consider the entire complex matter. This would exceed the capacity of even the most educated and experienced creator. When setting the task (even in the most elaborated task put forward by the client it is the designer who must always define and finalise the whole task and conceptualise it) and planning the process the designer has to primarily define the system (elements and structure) of components of the problem and the structure of the process. Individual aspects/components of the task do not have the same priority (weighting factor) in each stage of the process, but become only occasionally dominant (in accordance with the logic of the process); however, they are still latently present and accessible to all the participants of the process (in accordance with pre-established/agreed rules, rights and duties). In this way the designer still preserves an overview of the complex (inter- and transdisciplinary) whole of the problem and structure of the process. (TOŠ, 2000).

System methodology consists, therefore, of the orientation toward the (necessary) all encompassing complexity of the entirety of the problem, and by considering the consciousness of the entirety and the interdependence in this entirety, it consists of necessary occasional focusing on the isolated partial problem, of the mandatory verification of the partial solution to the problem, in interdependence among other components, and of inserting the verified partial solution in the final problem solution entirety.

The final meaning and significance of system methodology is to unload the permanent orientation to the entirety of the complex problem and to liberate the unlimited creativity (dialectics of the systemicity and freedom).

System methodology is thus becoming an integral part of the existence of the modern designer approach.

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COMPETENCE HUMAN RESOURCES OF THE TEXTILE INDUSTRY IN THE PROCESS OF DESIGNING CLOTHING: FROM THE CREATIVE TO THE EFFECTIVE

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Abstract - In the process of designing a clothing starting point is the market, respectively, needs, requirements, preferences and purchasing power of consumers. For there to be interaction between the activities of marketing and design in the creation of technical-functional and ergonomic product quality, design and marketing of the company must act integrated. As in any development process, a key role of human resources, as well as the area of human resources development in the process of designing clothing gets priority. For the performance of the organization is an important enterprise services marketing manager, his knowledge of business processes, markets in which it is carried out jobs. He must be responsible and conscientious in all decisions; to have courage when entering into business risks, must have a strong will and intrusive, professional and capable associates. In recent years, with the ability and personality characteristics as well as key sources of individual differences, introduces the concept of competence. Maintenance and improvement of competence textile designer in the textile industry, as an important aspect of career development, in addition to the three basic dimensions of competence that apply to all disciplines (knowledge, skills, behaviour), must include the fourth-creativity, because only a combination of all four creates conditions which designers achieve the results that are expected of them in terms of the rapid changes in the environment.

Human resources, competencies, textile industry, designer, manager

1. INTRODUCTION

The textile industry is characterized by frequent changes in fashion tendencies, a great offer on the global and national market, but not so great demand. In such circumstances, in textile sector survive those who are able to respond to consumer demands. Manufacturers of textiles and clothing therefore must have a qualified and competent employees in order to provide adequate and quick responses in demands from the market. As in any development process, a key role is based on human resources, and the field of human resources development receives top priority when it comes to the production of textiles and clothing.

Maintenance and improvement of the competence of human resources in the textile industry, as an important aspect of career development, apart from these three basic dimensions of competence that are important to the field (knowledge, skills, behavior), also must include a fourth component of competence - and that is creativity. Creativity is, by its nature, a constant search for change. Creativity presents the development of new and original ideas that is of value to the individual, company or society as a whole. It is also a function of knowledge, imagination and evaluation. It involves two attributes: a new and significant. Creativity is an activity that provides a new, original products, and these new products which are created in creative process should better and more effectively meet the rational, individual and social needs of

the previously existing products. It is believed that there is an indirect link between creative thinking and organizational efficiency and effectiveness. The combination of these components of competence can provide results that are expected in terms of increasing market demands.

Bearing in mind that man is the most important factor in the organization, it should be kept in mind at every moment. The priority is on the human resources, it is known that the human resource is the most important and most sensitive resource in any organization. In the process of production of textiles and clothing, specificity is that it should consolidate cooperation of artists and persons of technical profile. Therefore, human resources represent a comparative advantage of each organizations of the textile industry, aspiring to a serious performance in the domestic or international market. Human resources should be organized in a way that they create a competitive advantage for an organization. Good design of clothing is the result of entire teams of designers, engineers, economists and managers. The result of good cooperation with designer of clothing, designer of textiles, modeler, tailor of test samples, textile engineers, experts in the organization responsible for marketing communication and visual presentation of the product, which means harmony of form and function (AKSENTIJEVIĆ JELIĆ, 2014).

2. THE CONCEPT OF COMPETENCE OF HUMAN RESOURCES

Human resources consists of persons in organizations with their knowledge, skills and experience. They represent the work potential of every organization, and given that it is a resource that create all other types of (tangible and intangible) resources, human resources are considered as the most important resource (FIGAR, 2007). If we start from the fact that people create company strategy, corporate objectives, they directly affect the organizational culture, creating products, places the product, quality control and manage financial resources. The quality of employees can be seen as a key factor of success a business entity (SAJFERT- VUKONJANSKI, 2008). Under the human resources' often means the total human resources in the organization: the available knowledge and experience, useful skills and abilities, possible ideas and creations, level of motivation and interest in the achievement of organizational goals and etc"(KULIĆ, 2005). The importance of human resources is growing, and effective management of these resources is a strategic interest of the organization that can provide a competitive advantage over rivals.

Competency could be defined as the ability to successfully realize a particular task or job. It could be said that competencies are prerequisites for the overall work performance. TORRINGTON et al. (2004) gave a definition of the term competency and competencies. The term "competence" means the ability to perform a certain task and involves primarily the behavior, not the accomplishment of the tasks. Competence is a term which nowadays is becoming more and more present, in various disciplines and areas, including in managerial practice which is a key word in context when organizations are undergoing the process of change and transition. Competence is defined as a synthesis of knowledge (what we acquire through education), skills (what we acquire in the work, the workplace and in everyday experiences in social life), and capabilities (the ability to take this knowledge and skills application) (ARGYRIS, 1993) In other words, competencies are a set of characteristics that allow us to be successful in interacting with others in the community. Competences play an important role in an individual in his professional and personal development. Possession of a large number of competencies is a necessity of every individual for his survival in today's labor market. Competency includes the following:

- Cognitive competence (tacit knowledge) - which includes the use of concepts, and implicit knowledge, acquired by experience;

- Functional competence (skills, know how) - necessary for the performance of certain activities;

- personal competence - refers to the behavior of an individual in a particular situation;

- Ethical competence - includes personal and social values.

Competencies are a set of skills, knowledge, attitudes and readiness for further learning. Key competencies represent a set of knowledge, skills and attitudes necessary for personal development, employment and participation. They enable people to fulfill their objectives in finding suitable employment but also to be able to hold him and take part in social life.Competencies mentioned as key for each individual are (European Commission 2010): 1) Communication in the mother tongue; 2) Communication in foreign languages; 3) Mathematical literacy; 4) Technical competence; 5) Learning to learn; 6) Interpersonal and civic competences; 7) Entrepreneurship; 8) Creative skills/cultural expression.

Managerial competence can be defined as the collective ability of managers to lead the construction of organizational competence through coordinated development of their own managerial resources, managerial skills and management skills in a way that helps the organization achieving short-term and long-term goals. Given the specificity of a manager's job, and the degree of responsibility that he carries, people who are in managerial positions it is necessary to possess certain managerial competence. Competencies should be in possession of a manager are shown in the figure 1.

ADMINISTRATIVE COMPETENCIES	CONTROL COMPETENCIES	COMMUNICATIVE COMPETENCIES	COGNITIVE COMPETENCIES
Time management and setting priorities	Training, mentoring and delegation	Clarity in communication	Identification and problem solving
Planning of work and tasks	Assessment of employees and performance	Obtaining objective information	Risk assessment and decision-making
Establishing goals and standards	Counselling and Discipline	The ability to listen and organize	Logical thinking

Figure 1: Managerial competencies (www.projectsmart.co.uk)

From the previous figure we see that one of the necessary competencies, of managers is the communicative competence. Under this competence we consider the ability to express thoughts, feelings, and words in written and oral form. Includes the ability to listen and objective understanding of information, the ability to maintain conversations on topics relevant to everyday life, as well as the ability to read specialized texts and journals. It also includes the sensitivity on the cultural differences and interest in international communication. The importance of communicative competence gave Henderson in the study, which included 500 managers, where the results showed the communicative competences contributed significantly to productivity and employee satisfaction. (HENDERSON, 2008).

Competencies have a very important role in the process of creating a successful career of the individual (UROŠEVIĆ, 2012). They allow the individual progression in the chosen profession and career as well as recognition in society and contribution to the community. Development and increasing the number of their individual competencies will also make the basis for their development and funding to successful careers (DE VOS et al., 2011).

3. COMPETENCIES OF HUMAN RESOURCES IN THE TEXTILE INDUSTRY

Performance of the organizations can only be achieved by improving the productivity of key resources of the business. Information society requires professionals who have a combination of different knowledge and skills, especially in management and information technologies, which are able to quickly make decisions that show interest and ability to apply new methods and techniques and to improve themselves harder in work process. Competitive advantage of the textile industry must be based on innovation, quality, improving technology and increased expertise of workers. The greatest potential that could lead to faster economic development of the textile industry are educated people, i.e. professional staff.

In addition to knowing the "traditional" skills and knowledge of various textile technologies contemporary expert personnel should also possess knowledge within the organization of business operations, strategic and operational planning in order to qualify for solving both technical and management problems. Practically, the new market concept of business will require a special management of professional staff that have primarily:

- multidisciplinary nature in terms of connecting knowledge in the field of textile technology with the necessary skills in marketing, management, ecology, psychology and sociology,

- the ability to use modern techniques and skills as well as engineering tools into their application and practice,

- inventiveness in work,

- innovativeness in the management,

- flexibility in behavior,

- offensive in appearance, etc., (ĐORĐEVIĆ-ĆOĆKALO, 2007).

Modern society requires professionals who have a combination of different knowledge and skills, especially in management and information technologies, which are able to make quick decisions, which show an interest in the application of new methods and techniques of business and who aim to improve their own business processes. The engineers of textile technology in its basic education are best placed to take part in defining the concept that manages technology which is crucial for the growth and development of the textile sector. A new field of activity of engineers of textile technology enters the management structure and beginning to overcome the technical and technological knowledge and skills and requires multidisciplinary approach of the task. International accreditation committee for programs at colleges and universities in the field of Technical Sciences (The Accreditation Board for Engineering and Technology - ABET) which brings together over 30 professional and scientific institutions in 1999 published the criteria for the evaluation of knowledge and skills that are acquired during studies (Accreditation Engineering Criteria 2000). According to this criterion programs for obtaining titles engineers must meet a set of general knowledge, skills and abilities:

- Acquiring knowledge in mathematics, science and engineering,

- Creation and execution of experiments aimed at the analysis and interpretation of material,

- Creating a system, element or process intended for the fulfillment of the needs,

- Identification, formulation and solving the engineering problems,

- Functionality in multidisciplinary teams,

- Understanding of professional and ethical responsibility,,

- The ability of effective communication,

- Understand the impact of engineering solutions to the global social aspect,

- Identification and construction needs for lifelong learning,

- Understanding of contemporary issues,

- Ability to use techniques, skills and modern engineering tools in performance engineering practices.

However, the needs of engineers encompass knowledge from the humanities: philosophy, psychology, art, anthropology, foreign languages and so on. According to UROŠEVIĆ and ĐORĐEVIĆ (2009), textile engineers should possess the following characteristics in the new economic conditions: 1) Knowledge, 2) Ability for learning, 3) Initiative, 4) Commitment, 5) Flexibility and 6) Experience.

Professional profile of designers of clothing is very complex and interdisciplinary. In the course of education clothing designer must acquire knowledge of: 1) a method of creating a product-of clothing; 2) marketing; 3) quality; 4) techniques; 5) technology; 6) the materials and their properties; 7) fine and applied Arts; 8) economy; 9) ergonomics; 10) psychology; 11) sociology; 12) organizations, etc. (VASILJEVIĆ, 2005). In addition to these modes of education and knowledge structures within the professional profile, to designers are very important their mental and intellectual characteristics. First of all, the designer must be versatile personality, with the ability to quickly receive information and transfers them into creative activities. Activities of designers are based on his expertise, a broad spectrum of practical knowledge and skills, experience and aptitude to quickly perceive, and react appropriately concludes. That's why they need a high abstract and practical intelligence, sparkling spirit, imagination, fantasy and a sense of the practical realization of the idea. So, a clothing designer must have the gift of knowledge and experience for the synthesis of a multitude of information, as well as to create a product that consumers want. Mental and intellectual characteristics of designers must be sorted out by in expert team for the quality of thinking, the creative force, expressed power to motivate associates and practical results in the design process.

Profession of designers is based on the working abilities, in order to create more perfect products to meet consumers at all better way. Working ability of designers of clothing is based on: 1) education; 2) knowledge; 3) experience; 4) skills; 5) continuous improvement; 6) talent; 7) the expertise. These are all creative abilities of designers and factors of progress of the profession. Education of clothing designers does not with university or college, but it continues throughout the lifespan. Along with education, which is primarily reflected in knowledge, in practice, gaining experience and skills that designers improve the quality, and products more perfect. It is certainly an important element in the ability of the designer and his natural talent, but he has no significance without the previous element. Finally, expertise, represents the most important element of the working abilities of designers. Expertise represent an integrating element of the working abilities of designers, and its growth is a major factor in improving the profession. In addition to all listed, designers of clothing over products creates impact on the culture, habits and tastes of consumers. Managers must understand the professional profile of the profession of designers of clothes, in order to effectively implement the stage of human resources management in organizations of the textile sector.

For the success of the organization of the textile sector is important resourcefulness of managers, his knowledge of business processes, markets in which is taking place operations. He must be responsible and conscientious in all decisions; to have courage when entering into business risks, must have a strong will and intrusive, professional and capable associates (Sajfert et al, 2007). So managerial job is very complex. To be able to work effectively, managers need to communicate, receive and impart information, to have knowledge, and intuition, feeling, to precisely define the policies, rules, procedures, processes, plans, programs, projects, to think analytically and conceptually to behave diplomatically, which means they are skilled, resourceful and flexible, all solely for making management decisions and for taking action.

The role of managers working in the design department of the textile sector is crucial for achieving business success. Today's managers combine different functions. They are expected to know the industry with that are dealing with, to know the market and position of the product they deal to, along with organizing and governing human resources in order to achieve business goals. In the view of most authors who have studied the research management, in order to achieve the objectives and tasks at all levels of management requires appropriate knowledge, abilities and skills with appropriate experience. Expert knowledge includes knowledge and abilities for the application of methods and techniques in specific areas, such as, for example, finance, or technical skills such as engineering, computer science, manufacturing...The domain of interpersonal relationships involves abilities and skills to work with people, involves incentives for work creating a favorable atmosphere for the work, the development of teamwork and directing efforts to achieve goals. Conceptual abilities involve understanding the continent's business, defining the relationship of parts among themselves and with the whole, conceptual abilities related to the understanding of the city of the organization of the market and its relationship with other organizations. This claim Robert Katz argued and gave relationship skills and levels of management, according to which all skills are not equally important at all levels of management. He showed that the technical skills are critical to the lowest levels of management, people skills are equally important for all levels of management, and the most important conceptual skills to the highest levels of management (ROBBINS et al., 2005).

In order to become a manager in the textile sector organizations is necessary to possess certain personal qualities, abilities, knowledge and experience. Personal characteristics are based on our genetic code, education... skills arising from personal qualities and experience is gained by practical work and solving specific problems. Their education should be comprehensive and develops important characteristics, such as oral and written communication, creativity, innovation, imagination, high motivation, leadership. In order to successfully manage the company of the twenty-first century, manager must also possess the confidence, ability to rapid problem solving skills, establishing interpersonal relationships and awareness of personal advantages and disadvantages. Also, important attributes and skills of the modern of managers are energy, mobility, self-confidence, originality, creativity, communication skills and the ability to define goals. Successful manager employed in organizations of the textile industry as a leader should preferably be formed with a high level of culture in different spheres of life. Must possess the expertise and information. There must be a high standard of ethical behavior, to be ambitious, energetic and original, must adapt to the personalities and situations, but also to adapt to different cultures if they want to succeed as a leader.

4. CONCLUSION

The high degree of competitiveness in the textile sector, stresses the need for the constitution of a strategy based on resources, primarily on the human resources. In recent years, with the ability and personality characteristics as well as key sources of individual differences is introduced the concept of competencies. In particular, managers, designers and textile engineers who participate in creating a garment must possess the necessary knowledge, skills and competencies that will help them to respond quickly to the changes occurred in the organization and to make timely decisions to perform the tasks. Therefore, it is important that human resources in the textile industry have the confidence, ability to rapid problem solving, knowledge and skills in establishing interpersonal relationships and awareness of personal advantages and disadvantages, then must have gift and possess the creativity, experience for the synthesis of a multitude of information that made clothing product what consumers are looking for. The development of human resources with a combination of these components of competency can give results that are expected in terms of increasing market demands garments.

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THE UNSUSTAINABILITY OF SOLVING THE WRONG PROBLEMS

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Abstract - The Unsustainability of Solving the Wrong Problems discusses the appropriateness of applied design thinking in the early phases of projects aiming at developing new or improving existing products, services and systems - and the price of not doing so. In the public sector, due to its multi-layered decision-making environments, conflicting interests and compartmental structures often combined with austerity - problems are rarely explored to its core. Hence, measures are often taken to relieve symptoms or addressing problems of more symbolic than real significance, rather than addressing the core problem. In the private sector, the result is often the same, however more often due to lack of time and to processes favoring agile problem solving instead of actually solving the right problem. By applying design thinking and allowing for, actively encouraging and facilitating iterative, reflective processes - provided they are strategically anchored - succeeded by working with scenarios and narratives throughout the scoping, framing and re-framing of the challenge at hand, the probability of identifying the most feasible problem(s) to solve increases. In particular in environments characterized by complexity and multiple stakeholders - provided these are engaged constructively and professionally - the available resources will be used to develop more coherent, more sustainable and more resilient solutions.

Design thinking / complexity] multi-stakeholder engagement strategies / risk management resilience & robustness

1. INTRODUCTION

Over the last decade, design thinking and design methodologies have captured an increasing number of front pages of business magazines and newspapers, attracted the interest of large, multinational consultancy houses and become mandatory offerings of business schools throughout the world. Design has become a broadly acknowledged approach to developing user centered, market relevant and profitable products and services and as an appropriate means to foster innovation. The role of design as a means to inspire more sustainable products and services has also proven its relevance. However, the direct correlation between the use of design thinking and methodologies, and which ones are the most appropriate - in the very early phases, where needs and alternative approaches to their fulfillment are assessed - has only been superficially explored. This paper scratches the surface of the rationale behind the need for more structured research into this matter.

The first section of this paper discusses some of the preconditions that need to exist before applying design thinking and design methodologies makes sense, on how leadership is needed - in any organisation - to allow internal stakeholders and staff on all levels, clients, customers or citizens - and numerous other stakeholder to contribute to the process, as well as how time and space plays a vital role in facilitating reflection and collaborative processes.

The second section argues the role of design thinking and design methodology as a key approach to the early stages of the innovation process.

The third section takes its departure in the unsustainability of the excessive failure rates experienced in relation to new product development as well as in private and public services.

Furthermore, it discusses how design thinking and design methodology can alleviate these problems.

The fourth section calls for research into the role of design thinking and design.

methodologies, and to document its effect in terms of reducing the environmental footprints of organizations by increasing their success rates from investments in the development of new products or services, thus benefiting from more coherent, more sustainable and more resilient solutions.

2. PRECONDITIONS FOR BENEFITTING FROM DESIGN THINKING AND METHODOLOGY

2.1. THE EMERGENCE OF DESIGN THINKING

During the last decade, design thinking has gradually become as an almost transversal approach to strategic developments. As originally introduced in the book Design Thinking (ROWE, 1986), design thinking provides a systematic account of the process of designing in architecture and urban planning - whether it prescribes forms or simply provides procedures for solving problems. Thus, design thinking becomes a manifestation of an underlying structure of inquiry common to all designing. Two decades later, design thinking has taken on a quite different and much more opaque meaning, as promoted by numerous designers and design thinkers".

One of the most successful design service providers globally - IDEO - was among the first to elaborate design thinking into a coherent, methodological approach to problems solving. The most significant shift in regarding design thinking over the aforementioned period is that design thinking now is no longer exclusive to designers and architects, but a way of thinking, which can benefit people and challenges across industries and sectors, provided a certain mind-set is present, and the individual accept the premise of "thinking like a designer". In a renowned article in Harvard Business Review (June 2008), IDEO's Tim Brown systematically presents the premises of working with design thinking, listing them as empathy, integrative thinking, optimism, experimentalism and collaboration. From organizations, both in private and public sectors, which have adopted the idea of design thinking, some other and more fundamental preconditions have also proven their significance. The most determinative factor is - as it can promote as much as it can prohibit the five aforementioned premises - is that the idea and belief in design thinking is embraced at the organization's C-level management. Benefitting from design thinking, thus first and foremost is a question of leadership.

2.1. LEADERSHIP

Leadership takes on many forms and often leans up against a certain acquired portfolio of experiences and preferred models and tools, as well as prevailing "management trends". Some of the more popular trends during the last decade or so - hence also competing for attention with design thinking - have been lean and agility, and more recently robustness and disruptiveness. The two first ones focus on efficiency and speed, while robustness focuses primarily on managing and reducing risks and disruptiveness focuses on breaking out of existing paradigms to create new business opportunities. Reverting to Tim Brown's five premises; empathy, integrative thinking, optimism, experimentalism and collaboration, they all - except from optimism, which is essentially a perspective on life - have in common that they take time. Unless the sufficient time is granted, design thinking cannot happen rendering it quite challenging to work with design thinking in an environment focusing on lean or agility - focusing on speed and efficiency. Design thinking and focusing on risk reduction and risk management, however, are not necessarily each other's adversaries, provided the findings coming out of the research undertaken as part of the design process are fed into the risk assessments. The more diverse the stakeholder groups engaged - from clients and various user groups, through suppliers, distributors and others representing

various links in the value chain to staff on all levels - and the more relevant the form of engagement and the tools provided, the lower the risk of failure will be.

Whether design thinking and disruptiveness are compatible or not, to some extent depends on which elements are adopted from the design methodology. In "Design-driven Innovation" (VERGANTI, 2009), Roberto Verganti argues that core design methodological elements like multiple stakeholder engagement and user-centered, co-creative processes are only suitable for incremental developments, change and improvements, while disruptive innovation requires a process driven by visions and by creating new meanings. Design thinking, tuus, is compatible with disruptiveness only to some extent.

However, an overwhelming part of the challenges faced by companies and organizations call for incremental change and continuous improvement rather than disruptiveness. Thus, design thinking and the adoption of design tools and methodologies are both valid and appropriate in most organizations, provided support and facilitation granted by their leadership.

2.2. TIME

Time is a critical factor and scarce resource in many organizations, thus something to be managed meticulously. Apply-

ing design thinking takes time, and unless this fundamental prerequisite is present, the benefits from embarking on the design train will most probably be limited. There are good reasons for why a design process cannot be rushed; the engagement of multiple stakeholders, numerous iterations as the scope of the problem as well as the approach needed to mitigate it emerges, continuous prototyping and measures to validate whether they point towards the best possible outcome - all managed with the same care and scrutiny as any other project undertaken by the organization. As a matter of fact, companies that manage design effectively attain significantly better results from using design than those, which do not, as described in "Design IVIanagement Capability: Its mediating Role between Organizational Learning Capability and Innovation Performance in SIVIEs" (FERNANDEZ-IVIESA et al., 2012) However, it needs to be managed based on the fundamental assumption that the iterative and cyclic nature of the design process does take time.

Another inherent element in the design process is reflection. Reflection is the processing of abstractions, based on previous experience, knowledge, values and aspirations. Systemic thinking requires the ability to abstract from and challenge the already existing imagery of the situation at hand. Abstractions require time and space to reflect, and just as important an openness to add intuition and tacit knowledge - our own as well as others' - to the formalised knowledge in which our professional identity often rests. Tacit knowledge is silent and unarticulated - thus, we need to give its articulation time for it to become coherent and valuable input to the process.

2.3. SPACE

The book "Betterness: Economics for Humans" deal with the need for both time and space for reflection. "We seem to be clueless about making room for deep questioning and thinking: reflecting. Our doing/reflecting ratio is wildly out of whack. IVIost action items might just be distraction items - from the harder work of sowing and reaping breakthroughs that matter." (HAQU E, 2011)

Suitable physical conditions for pursuing intellectual processing of the questions and situations we face on a daily basis is not something that should be left to the individual and his or her personal priorities. Just as the individual should not be expected to decide on how much and when to take time for reflection at work, as individuals can rarely decide for themselves to make it a natural, respected and recognised professional activity - physical space, which is appropriate to the structured activity of reflecting on, discussing and processing often complex information needs to be created. It has to be addressed -just like any other tool or appropriate ICT solution - as a structural and political element of the framework offered to teams and individuals. Hence, the responsibility of providing time, but also appropriate physical facilities for reflection rests with those, who are also responsible for corporate culture, strategic direction and for which goals to pursue.

There is no fixed formula for what a creative space looks like or what it contains, but in general, it needs to feel and look different from the offices or work spaces where other structured activities take place. There are numerous examples of very successful companies offering such spaces. Such dedicated areas are often characterized by an informal and laid-back ambience, different colors and materials, and different types of furniture than elsewhere in the work environment. However, certain elements of functionality also need to be present, such as surfaces suitable to illustrate and make notes as the process proceeds.

3. THE DESIGN PROCESS

Design used as a structured methodology to develop new or improve existing solutions requires the choice of a process and methodology, which is easily understood by all parties involved in the process. A visual representation of the process will be a great help to that extent. An extensive number of design processes exist, and there is no scientific evidence to claim that one or some are better than the rest. However, to capture the gist of design thinking, the process needs to contain at least four or five phases, accommodating research and empathizing, ideation, prototyping and development. The choice of process is not crucial as such, but what constitutes a process based on design thinking - as opposed to many other processes known from engineering and other technical sciences - is the relatively heavy front-end. Comparing development processes labeled as design processes to other development processes, the most conspicuous difference is the number of phases or activities undertaken before the problem is actually solved. Some design processes allow for up to four phases focusing on understanding, scoping and framing the challenge, while development processes known from engineering and other technical domains often dedicate one phase at the outset - often labeled "requirements" or "planning". This difference is not merely technical and semantic. It reflects the fundamental difference between processes based on design thinking and processes deriving from engineering traditions. These differences are supported by research into what design teams actually undertake of actions during a design project (STEIVIPFLE - BAKE-SCHAUBE, 2002) and similar research into what electronic engineers actually undertake of actions during a development process (IVIcNEILL et al., 1998). The nonlinear design process is based on simultaneously following a forward (breaking down) and backward (validating) reasoning strategy, also indicating that the process itself both entails and builds upon a learning progression during the design thinking process. (GOLDSCHIVIIDT - WEIL, 1998). As such, the design process - to the extent that it reflects design thinking - is an analytical process containing elements of inherent research.

Processes inspired by design thinking and design as a methodology are currently applied to challenges and problem-solving across industries and sectors - ranging from new product development (NDP) via business modelling to public services and policy making, as portrayed in "Solving Problems with Design Thinking: Ten Stories of What Works" (LIEDTKA et al., 2013). The arguments often heard from organisations and leaders adopting design thinking also often revolve around the advantages experienced in the early phases of the process; better understanding of the current situation, more in-depth analysis of possible scenarios and related consequences and better opportunity to explore alternatives measured both by functionality and attractiveness. The analysis was visualised in "Designing for Growth: A Design Thinking Tool Kit for IVIanagers" (LIEDTKA - OGILVIE, 2011) - taking its departure in the four questions; What is?, What if? What wows?, What works?

Regardless of which design methodology or working process, one chooses to apply to the challenge at hand, the above representation of design thinking is crucial to its success; asking as many - and to the extent possible - the right questions. By allocating the necessary resources to, and by facilitating the process of reflection and exploration throughout the process, the outcome of the process will be more targeted, better analyzed, more attractive and more appropriate to solve the problem or meet the demands to which the solution is a response.

4. THE UNSUSTAINABILITY OF SOLVING THE WRONG PROBLEM

Across sectors, new products and services are developed, problems are solved and change processes are undertaken all the time. However, new products have a failure rate of 25 percent to 45 percent (COOPER, 1987) and for every seven new product ideas, about four enter development, one and a half are launched, and only one succeeds (BOOZ ALLEN HAIVIILTON, 1982). Despite the fact that these findings are somewhat aged, and taking into account that other sources often cite significantly higher failure rates - as high as 80 percent in the personal care industry (DILLON, Harvard Business Review, April 2011), both private and public organizations struggle with the same challenge, and with the recurring challenge of how to understand what current and future customers and users want and how they will respond to a new product. According to an article in New York Times from April this year, during the period 2010-15, approximately 225.000 new packed consumer products were launched in the US, while the comparable number for the period 1980-1985 was 35.000 - an increase of more than 600%. One gathers that after one year, half of them remained in the market, while only 10 percent remained after two years. One cannot claim that all the remaining 90 percent equaling more than 200.000 products - were wasted, but I would argue that a substantial part of the products launched failed to succeed as a result of poor research into the needs and aspirations of the marketplace; of addressing non-existing demands - of solving the wrong problem. Hence, any cost-benefit or value analysis would reveal that investments must have been made with little or negative ROI, while the human resources could have been used more wisely and resources spent in terms of materials and energy consumption could in many cases have been saved.

Adding to the physical products developed and launched comes all the products, which never got to the point of market introduction, but where substantial amounts of unnecessary resources were allocated to the development process itself, the costs of and resources wasted on service innovation and improvements leading nowhere in the public and private sectors alike, as well as failed projects focusing on business model innovation, new processes and organizational change. Not all of these resources could have been saved, as innovation implies failure and dead-ends. However, despite the fact that "Companies that make poor choices with respect to their NPD portfolio run the risk of losing their competitive advantage." (KAVADIAS-CHAO, 2008), a substantial portion of all failed projects was allowed to continue for too long, entailing unnecessary costs, human as well as natural resources disregarding a phenomenal amount of research conducted into NPD in particular, numerous available models and an increasing focus on risk management in development projects.

While mathematical models can help foresee and alleviate certain contingencies, applying design as a methodology from the very early phases of a development process and throughout to delivery and deployment is another approach to reducing project risks and dealing with uncertainties as they occur (VALADE-AIVI LAN D, 2014).

4.1. SUSTAINABILITY ISSUES IN NEW PRODUCT DEVELOPMENT

Decisions during the NPD process have impact on 80-90% of a product's life cycle sustainability performance. (MAY et al., 2011). However, while there is an abundance of literature revolving around how sustainability measures are built into new products in the development phase, often taking its departure in Life Cycle Assessments, very little literature exists, which links the success and failure rates of new products with issues related to waste of resources and sustainability. "Notwithstanding the logic behind integrating sustainability in the early stages of an innovation process, in practice it is flawed. Front-end innovation is a hot research topic, but there is still little research done on its relationship to design for sustainability." (DEWULF, 2013). In her paper, "Sustainable Product Innovation: The Importance of the Front-End Stage in the Innovation Process", she refers to some of the few scholars, who have explored the correlation between the earliest phases of a development project, often referred to as Front End or Fuzzy Front end (HERSTATT - VERWORN, 2001).

One definition of Front End is "the process in which an organization formulates a product concept and decides whether or not to invest resources in that concept." (IVIOENAERT et al., 1995), while (KHURANA - ROSENTHAL, 1998) argues that

FE begins when an opportunity is first considered worthy of further ideation, exploration and assessment and ends when a firm decides to invest in the idea, commits significant resources to its development, and launch the project. At least as far as deciding to invest in the idea and committing resources to its development, this resonates with most other authors on the subject.

Thus, an acknowledgement exists, that the decisions made during the early phases of a development project not only determines the nature of the development and the various factors influencing on its sustainability, but also the unsustainability of embarking upon a development project. “Successful sustainable design requires both strategic (front-end) and operational (new product development) activities”, (ČHLUND, RITZIN, 2004). By applying design thinking and design methodologies, the Front End will be given significantly more attention than in many other development processes, such as a traditional Stage Gate process, introduced by Robert Cooper in 1996 - thus also allocating more time to understanding the current situation, market needs and the extent, to which the problem identified is the right problem, or whether it might possibly be part of a more complex configuration of interrelated problems, a symptom or a misconception.

4.2. THE ROLE OF DESIGN IN RELATION TO SUSTAINABILITY

Design as a methodology is a significant factor in regards to safeguarding that sustainability issues are duly considered throughout the development process. However, its role in the very early phases is unique, as it inherently responds to the call for constant balance between the three factors reflected in the triple bottom line; social responsibility, financial feasibility and the well-being of the natural environment; between “people, profit and planet”, as stated by the Brundtland commission already in 1987. “Design is all about attractiveness, sensuality, aesthetics and functionality, about real people and real problems, about individuals and their encounters with systems, about encouraging responsible behaviour and choices, about challenging our prejudice, about fellowship and ownership, commonality of reference and cultural diversity, about expressing identities - for the individual, for groups of individuals, for corporate entities and for societies at large; design is all about “people, profit and planet” (DANISH DESIGNERS - The Role of Design in the 2lst Century - A Vision for the Future of Danish Design, 2010)

By applying the principles of design thinking and by engaging multiple stakeholders in the process already from the fuzziest front-end and throughout to where many other development processes start; “requirements” and “planning”, which both assumes the development of a product, service or operation as given, organizations subscribe to the idea that even though one might have identified a problem and possibly also have an idea about its mitigation, neither are necessarily worth pursuing. Thus, design thinking can contribute to significant reduction in waste of resources otherwise allocated to solving the wrong problem. Taking the triple bottom line into consideration, in most cases, this will have implications of economic and environmental, as well as social significance:

- Profit / economic significance: Reducing the costs of product and services development and improvement, business model innovation and organizational change, thus leaving organizations more profitable and resilient.

- Planet / environmental: Reducing resources going into backend development, launch and marketing, as well as production and distribution of goods, which proves to fail in the marketplace.

- People / social: Improving relevance and meaningfulness of a reduced number of products and services, thus also facilitating the right choice for the user (IYENGAR LEPPER, 2000) and (SCHWARTZ, 2004)

5. NEED FOR RESEARCH INTO THE ROLE OF DESIGN AS A MEANS TO REDUCE FAILURE RATES

The advantageous role of design with regard to growth and business revenue, brand value and market penetration, customer onalty and profitability has been systematically researched over the last decade in particular. For every one pound invested in design, businesses can expect over 20 pounds in increased revenue, over four pounds increase in operating profit and over five pounds in increased exports. (DESIGN COUNCIL, 2012)

These findings may include some of the financial gains from reducing the number of failed product or service development projects. However, there is a need for more targeted research into the savings - not only financially, but also in terms of human capital and energy consumption, related to the development of new products and services that the application of design can contribute to. The role of design as a measure to reduce the footprint of new products and services launched has been well documented, while the unsustainability of - and the role of design to avoid - solving the wrong problem is obvious, however yet not addressed scientifically. One can only hope that such research will soon be undertaken to support the already existing portfolio of scientifically supported arguments to apply design thinking and design methodology from the very inception of new developments, be it of product or services, in the private or public sector.

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PUBLISHER:
Faculty of Design, an independent higher education institute,
Assocoiated member of the University of Primorska

ORGANIZERS:
Faculty of Design, an independent higher education institute,
Assocoiated member of the University of Primorska
The Research Centre of the Creative Furniture Industry ¬– RC31
Competence Centre for Human Resources Development in Wood Industry 2.0 – KOCles 2.0

EDITION:
150 copies

PRINT:
Solos d.o.o. — Trzin, 2017