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Preface

Design and Entrepreneurship

The Cumulus conference Design and Entrepreneurship held in Oslo Norway 6–8 May 2004 gathered 300 participants. An impressive number of excellent speakers contributed to the success of the event and Norway was showing us its best.

We met in Oslo to discuss the strategic importance of design. It is evident that many countries and regions have realized it, but it is also clear that design and its utilisation in the modern society has to be developed continuously to maintain design as a competitive factor. There are a number of state and regional policy programs but regrettably, they tend to be centred on the public sector.

However, conditions for entrepreneurship are changing at an ever-faster pace and this influences the role of design and opens new roles and opportunities. Thus, design finds itself in a key position, where an increasing number of parameters have to be coordinated and synchronised. Because of its over-arching nature, design can take a central role in innovation processes and entrepreneurship. It is a demanding role, and yet one that design should not ignore.

Design education has to adapt to these issues and redefine its relations to entrepreneurship and the society. This conference shed light on these issues in order to help design education and design communities take a more active role in innovation and entrepreneurship for the future.

Design adds value

A groundbreaking study by Design Council UK February 2004 shows a direct relationship between the use of design and corporate performance: 200% out performance versus the FTS 100 rate over a 10-year period. Development of international economy as part of the globalisation, saturation of the market economy, development information society and tightening of the competition have all pushed design into an increasing use as a tool for success. Design helps companies to create products and services that make the know-how visible. As we know, when need for design grows, also the need for design strategy, brand and company image designers grows, too.

Design is a means to further tolerance, creativity and economic growth. Technology and design overlap each other and carry forward together; neither of them can live without the circle of innovation, competitiveness and economic growth, talent, tolerance and creative class.

There are challenges, though.

Challenges

The Design Society faces massive demands. To offer solutions, we have to make design a knowledge based profession involved in multidisciplinary research with industry. We have to improve our skills for entrepreneurship and business within our daily activities, in education and daily professional life. This will not be efficient enough, though, if we do not develop efficient innovation transfer systems.

Our goal is simple and clear: we shall develop an innovation environment for design.

I am deeply grateful for the hosts Oslo School of Architecture and Oslo National College of the Arts, all in the Norwegian team and the Cumulus Secretariat for organising this conference. The results will carry on.

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Innovation and Entrepreneurship as Part of a Master Program in Architecture and Design

Introduction

Danish Design policy has a vision of being a vibrant and attractive field for investment, innovation, research and partnership. In that context, close dialogue between the private business community and the design sector is encouraged. Design courses have to be more oriented towards the private business sector and more internationally minded, and this makes new demands on both teachers and students in the design field.

Designers need to look towards the outside world and think in multi-disciplinary terms, and involve other professions at an early stage in the design process. The designer will in the future enter multi-disciplinary teams on equal terms and must be willing to re-assess her or his own working methods if necessary. The notion of the designer as the sole producer of the brilliant idea and the unique product is a thing of the past. We must be prepared to see the design concept as part of a greater whole. Through openness and by looking beyond our own field we also acquire better insights into existing market conditions. This means that the working process becomes more realistic to students as the projects relate to the practical working conditions that they will meet once graduated. This way, the transition from school to the business world becomes smoother. Teaching in innovation and entrepreneurship is a way of achieving a close dialogue with the business community. It will also equip students with the personal and professional skills needed to communicate with the world outside the school.

The Aarhus School of Architecture is the first in Denmark to launch innovation and entrepreneurship as an integrated part of the master program in architecture and design. Furthermore, the Aarhus School of Architecture, in co-operation with four other Danish universities, is part of the Centre for Entrepreneurship, which aims to develop and support an innovative entrepreneur culture and strengthen the individual institution's engagement in entrepreneurship.

ARK-IVÆRK

In 2002 "ARK-IVÆRK" was founded at the Aarhus School of Architecture as an EU project. The most important goal of ARK-IVÆRK is to educate innovative students and young architects who show drive and entrepreneurship. The unique lies in the specific: to develop models adapted to architects' value base and professional orientation within the framework of a Scandinavian welfare model. Importance is attached to personal competencies, "soft" values, cooperation, multi-disciplinary working, creativity, and social and environmental responsibility. At the same time, however, the project should be a precise introduction to the realities of a professional, competitive expert environment.

In order to gain knowledge as to how entrepreneurship and innovation can be incorporated into a university system, a number of study trips to universities and design consultancies in the US have been undertaken. The following institutions have been a great source of inspiration for understanding innovation and entrepreneurship:

Institute of Design, Illinois Institute of Technology, Chicago;
Doblin, Chicago, USA;
Babson College, Arthur M. Blank Centre for Entrepreneurship, Boston;

MIT Entrepreneurship Centre, Cambridge, Massachusetts, USA; and
CEED, Education and Development, Halifax, Canada.

A new and superior element in the project is seeing the development of the innovation culture as a long-cycle differentiated process with numerous stages that take place during the time of study and especially during the first years of the professional career. At the earliest stages, for example, teamwork and the ability to generate ideas are important, later the ability to adjust, as well as preparing and executing a business plan.

The objective is not in the first place to encourage students to start one's own business, but to acquire competencies – professional and personal – that render it possible if found desirable. We employ the concept of "entrepreneurship" for the phenomenon that characterizes the employee who is innovative and acts independently in his or her role as wage earner.

A specific new achievement area is strengthening the innovative commitment of female architecture students (and architects). The method is to arrange workshops and network building courses that aim to strengthen competencies and insight, with a view to overcome real and experienced barriers. To ensure a more lasting achievement, a group of female architect mentors with inspiring and pioneering careers is formed.

An essential subsidiary goal is to develop courses, events and activities in the first semester to "teach" students to see and formulate new options instead of limitations. A condition for breaking with conventional institutional thinking is to ensure that a vanguard among the teachers will participate in the search for new themes – including project realisation, economy, and possible bases for independent business, plus finally "social entrepreneurship", i.e. cooperation and development together with for instance groups of citizens, interest groups, etc.

Methodologically there is reason to emphasize a number of characteristics:

– *Network model:* through involvement of co-operation partners, it must be ensured that professionalism and experiences are included in the project.

– *Practice:* the aim of the business cooperation is to facilitate creative activities in a new way without academic veneer.

– *Professional standards* are paramount for creating innovative projects that have impact on the establishment of an independent business.

– *Case-based:* presentation of new creative knowledge-based businesses within the fields of design, architecture, IT, general counselling, and production is a didactic principle. The power of example.

– *User-based development dynamics:* through flexibility and openness it is ensured that it is the user's needs and interests that are reflected in the teaching and the course programmes.

– *Methodology development:* the project period is to be used for development of adequate methods for presentation and spreading of an integrated innovation culture in a creative environment.

– *Attraction and competition parameter*: in a globalised education system where demarcations up until now are being broken down, ARK-I VÆRK can become a competition parameter that contribtes to attracting dynamic, development-oriented students.

The learning environment

Graduates described the learning process as something involved in becoming familiar with an industry. Information and technical education were important but the emphasis was on "learning how to make things happen", "understanding lines of communication and roles", "having the confidence to know what to do", "dealing with pressure", "getting along with other people, "sharing work" – in fact aspects of what is called "tacit knowledge". These also happen to be the soft-skills, which are in demand by many employers. Furthermore, the students see these outcomes of the educational process as being the key to their own personal development.

Edward De Bono´s theories about "Lateral Thinking" and his "Six Thinking Hats" as well as William Morris' theories, are introduced to generate more creative ideas, enhance communication skills and improve team results.

The relevance of work experience

Students are encouraged to undertake periods of work experience during the course of studies. This has the practical benefit of placing their student work in context, but it is about much more than this: It is about learning how the world works, about "local politics" and how to get things done. it is often only when students are placed in a new and unfamiliar environment that they change their frame of reference. It is this "unsticking" or "unfreezing" which work placements help to facilitate and which make a structural contribution to students' learning development. It is also, practically about students learning and practicing skills, essential to work, but not exhaustively covered within the course.

Focus on developing potentially viable products for the marketplace

Guest lecture topics included aspects of entrepreneurship, raising venture capital, case studies of successful entrepreneurs, intellectual property, the patent process, and case studies by innovative local inventors displaying their inventions. Students were also exposed to the various phases of the design process and participated in creativity exercises.

How to work effectively in teams

Dynamic team working and constructive group problem solving exercises promote the speed at which individuals begin to function as a team. Introducing design students to the concepts of entrepreneurship and invention require exposure to a broad range of business topics in addition to the concepts of disciplined design, product development and testing. Teaching should focus upon interactive discussions that reinforce topics such as evaluation of products currently in the marketplace; intellectual property and patenting; assessing market need for a new product; development of a simple business plan and a course in creative thinking.

Courses in Industrial Design at Master Level

Product Analysis within the Industry. This is a two-week project where a product is analyzed, registered and measured. Technical drawings are made and the students produce a report on the product's producion processes and methods. Finally, they include a product criticism and suggestions for improvement. At the final presentation for the company's product development department, the students relate how they think the product should be manufactured and how it can be improved both functionally and aesthetically.

Industry Collaboration Projects. This is two-week course where the students´ main job is to explore and analyze a problem area or a specific product, suggest improvements or create completely new solutions. The students visit the factory to see its production facilities and to get an idea of its capacity. Finally the students present their projects to the company. The department charges 30,000 DKK for this work. Some of the money goes to the students as travel grants, and the rest is used by the department to purchase materials or to improve computer facilities.

Trainee Programs. The student can embark upon a trainee placement as a summer job for four month or during a semester instead of following the AAA program. This is followed up by teachers performing an end of placement assessment, making sure that the placement corresponds to a term at the School of Architecture in Aarhus.

TIP Project. A multi-disciplinary course founded by AAA (Design), ASB (Business) and IHAA (Engineer) that runs over a period of three to four months. A collaboration of this sort makes a team with representatives from all phases of the product development process. The students can either choose to define a problem brief and concept with a company or they can emphasize the process of developing a product, thereby learning to get the proper patent and copyright protection, and to market the ideas for production.

In Spe. In Sp*e* is a group of students working to advance new thinking and independent initiatives within the architectural profession. The purpose of In Spe's activities is to render visible and discuss the architectural profession in a wider context than that in which it is introduced in the instruction, so that

students at the Aarhus School of Architecture to a larger extent are able to pursue their own dream in a world full of the opportunities that an architectural education gives.

In Spe's working group arranges a number of events that focus on how it is possible to act independently as an architect. The concepts of competence development, process clarification, network culture, and presentation technique are illustrated by means of advisers within the area, architects with "real life" reports, and not least through the students' own debates and exchange of experience. The purpose is to introduce students to tools that they can use in an independent and personal perspective to shape their own architectural professional standards.

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Design Processes and Design Education in Entrepreneurship

Creating a culture of enterprise amongst student industrial designers

Abstract

Developing a culture of enterprise is no easy task. Firstly, there has to be a desire within the organisation to be entrepreneurial; secondly there is the problem of how to strike a balance between academic and entrepreneurial goals; and finally one has to combat the natural tendency toward risk aversion. Successful industrial design is by its very nature innovative but can it also be entrepreneurial? Therefore, generating a culture of enterprise is a vital requirement in the development of a truly entrepreneurial designer. Do we know how to stimulate, incubate and nurture entrepreneurship? What are the factors that give rise to an entrepreneurial mindset? How can this culture of enterprise be quantified?

This paper describes the experiences of an industrial design school that for six years directed the energies of its students and Faculty to the question of innovation and entrepreneurship. The outcomes of this extended exercise have been analysed and are now reported. Through the exercise, strategies were developed which led to the creation of a distinctive pedagogical model for the promotion and nurturing of innovation and entrepreneurship. Further refinements to the model have been made and these will be the subject of further study.

Introduction

There has been no definitive study or satisfactory definition of the personal characteristics that make an entrepreneur. There has however been substantial research into the nature of entrepreneurship. Many definitions have flowed from this research. As a summary of previous developments in the definition of entrepreneurship, Drucker[1] defined the entrepreneur as: one who always searches for change, responds to it, and exploits it as an opportunity. From the research into entrepreneurship it is possible to identify theoretical frameworks or paradigms. A substantial body of informed opinion proposes that the personal characteristics or personality of the entrepreneur determine entrepreneurship.[2] This research has lead to the identification of key entrepreneurial traits – *need for achievement, need for autonomy, an internal locus of control, creativity, risk taking and self-confidence.*

A culture of enterprise

The project described in this paper was driven by the vision to create a community of undergraduates whose design proposals would contribute to the body of knowledge and ascribe value to the generated intellectual property. Phase 1 created the conditions for innovation to flourish and succeeded in expanding the scope for innovation within the department. During Phase 2 the goals were twofold. Firstly, it was to stimulate, incubate and nurture student innovation. Secondly, it was to create a momentum for continued development of the innovation and its commercial exploitation.

The study raised the following questions:

1. Do we know how to stimulate, incubate and nurture entrepreneurship?

A review of the literature[3] was carried out at Durham University Business School in the UK. The study identified seven personal factors which impacted on the individuals propensity for enterprise:

1. *vision:* the ability to project an image into the future of where the individual would like their business to be
2. *need for achievement:* motivation to succeed and the ability to set realistic goals
3. *need for autonomy:* but also an ability to accept information and guidance from others
4. *calculated risk taking:* the ability to evaluate risk and plan a strategy to reduce it
5. *opportunistic tendency:* the ability to perceive opportunities for business

1 Drucker 1985.
2 Perry et al. 1986, Stanworth et al. 1987, Caird 1988 – cited in Cromie and O'Donoghue 1991.
3 Caird 1988.

6. *internal locus of control:* an acceptance of personal responsibility for the business's performance
7. *creativity and innovation*

These seven factors are based on behaviour rather than innate personality indicating entrepreneurship can be encouraged and developed in individuals.

The question of how to stimulate innovation has been the constant thread running through the six years of the Swansea study. To the academic institution, innovation and enterprise are vital if it is to remain at the forefront of its discipline. Competition for students and increasing pressure to deliver research or commercial funding mean that the institution must constantly review and re-invent itself to remain relevant and true to its mission. To the undergraduate designer, innovation and enterprise are vital if he/she is to produce a successful portfolio, and compete in what is an increasingly global job market. The role of the academics in accepting and encouraging innovation is vital. The programme structure and assessment criteria need to be conducive to the encouragement and reward of enterprise. Stimulating a culture of innovative and entrepreneurial endeavour depends upon all parties being fully committed. The challenge of an academic programme where assessments have to be made and deadlines met is how to create the time to allow for the incubation of innovative ideas. It is vital to encourage the integration of projects across modules and even across year groups. Innovation does not end with the student project itself but must extend to embrace the mode of delivery, assessment and feedback. It would be wrong to conclude that once established this culture of innovation and enterprise might be maintained as a status quo. Indeed, the very nature of this culture is that it is constantly changing. The role of the academics is to ensure that teaching, learning and assessment strategies constantly evolve so as not to frustrate the innovative spirit. Undergraduates need to be able to experiment and challenge the boundaries.

2. What are the factors that give rise to an entrepreneurial mindset?

In order that we may fully grasp the issues pertaining to the stimulation of entrepreneurship we must also consider the personal traits that give rise to an entrepreneurial mindset. The research can be summarised to identify the following characteristics of the entrepreneur. In general entrepreneurs possess: *a need for achievement, a need for autonomy, an internal locus of control, creativity, risk taking and self-confidence*. In addition to these individual traits, it is vital to understand the external factors that drive or inhibit the entrepreneur. These factors include *banks, community beliefs and customs, competitors, courts, customers, economy, educational institutions, governments, news media, religious institutions, special interest groups, suppliers and distributors, technology, unions* and finally, *the weather*[4]. Although these factors are external and are largely out of the control of the individual entrepreneur, they can be influenced and controlled within the context of a governmental aid or development programme. Such a programme exists in Wales. The WDA has established, in partnership with the universities, a network of "Technium" centres. These centres serve as incubators for new innovative enterprises that aim to generate wealth through the exploitation of intellectual property. Within the Centres, companies are given access to IPR and financial advice and services. The result is a climate where enterprise is encouraged and nurtured.

3. How can an entrepreneurial culture be quantified?

The question then arises of "how can one recognise an entrepreneurial idea?" This involves benchmarking against indices of entrepreneurial success. Within this study, three principle indices have been adopted.

Patent applications. "With increased levels of innovation comes an increased opportunity for protecting and entrepreneurial exploitation of the generated intellectual property."[5] The first indicator chosen to benchmark the innovation and enterprise of the student body was that of patent applications submitted. This is not such an effective model for determining innovation, as the criteria for submitting a patent application are deliberately broad.

4 Olm and Eddy 1985.
5 Walsh & Clement 2001.

Essentially all final year students are encouraged to submit a patent application. Under the Institute's IPR Scheme, Swansea Institute in collaboration with Swansea based Patent Attorneys Urquart Dykes and Lord submits a block patent application. This has resulted in the percentage of final year students submitting patent applications rising to 95%. The following protocol has been developed to encourage patenting specifically within the School of Industrial Design:

– students are encouraged to consider the novelty of their ideas;
– students are encouraged to "professionalise" their view of IPR;
– students are given project guidelines that promote the identification of potential IPR as an element of project selection prior to entering the final year;
– the Faculty does not select or screen the projects for patenting;
– the patent application is a prescribed deliverable but is not assessed;
– the patent process serves a number of vital functions within the school:
a) it encourages students to strive for the most innovative solution;
b) it encourages the students to challenge received approaches to problem solving;
c) it teaches the students to value their ideas.

The effectiveness of the scheme can be measured in a number of ways. Success is not solely limited to the commercial exploitation of the IPR. The scheme can be seen to have encouraged the student body to be more aware of IPR issues; to be pro-active in seeking novel solutions to design opportunities; to be more entrepreneurial in outlook and to approach their work with far more rigour. The following graph (figure 1) maps the rise in patent applications during the progress of the study.

Patents in and of themselves are no guide to determining successful entrepreneurism. As the following quote so aptly puts it. "You have to kiss a lot of frogs to find the prince. But remember, one prince can pay for a lot of frogs."[6] Patents need to be exploited, they need to be taken and tested in the marketplace.

WDA Technology Prize winners. Secondly the programme team targeted the WDA Technology Prize awards as a means of externally benchmarking the innovation and entrepreneurial potential of the final projects. The awards are made annually to Welsh Universities and Institutes of Higher Education to recognise the innovation of final year undergraduates. Six awards are given in a range of categories:

– Innovation in Design
– Innovation in Materials
– Innovation in Healthcare
– Innovation in Computing Science
– Innovation in Communication
– Future Wales Award

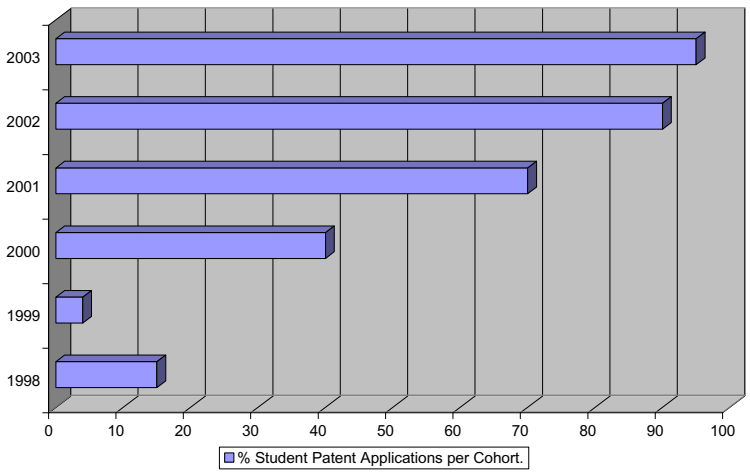

Figure 1. Patent applications 1998–2003.

6 Fry 1999.

Figure 2. Alex Sullivan, Ryan Flynn and James Cooper – WDA Award Winners 2003. Photo: Ian Walsh and Marc Clement.

A panel of experts drawn from industry and the Welsh Development Agency makes the awards based upon the level of innovation and potential for commercial development. Taking the definition of the entrepreneur as "one who always searches for change, responds to it, and exploits it as an opportunity"[7]. The WDA awards provide us with a useful external measure of enterprise and innovation. As with the patent scheme, all students are encouraged to enter and there is no screening or selection. The outcome of the School of Industrial Design's participation in the WDA awards can be seen in the graph (figure 3).

The graph plots the number of award winners from the School of Industrial Design compared to winners from other University departments across Wales. The success in winning WDA awards for innovation indicates the graduates' increasing tendency to take responsibility for their own innovations. This finding reinforced the findings of McClelland[8] who identified qualities associated with a high need for achievement – preference for challenge, acceptance of personal responsibility for outcomes, and innovativeness – as characteristic of successful initiators of new businesses.

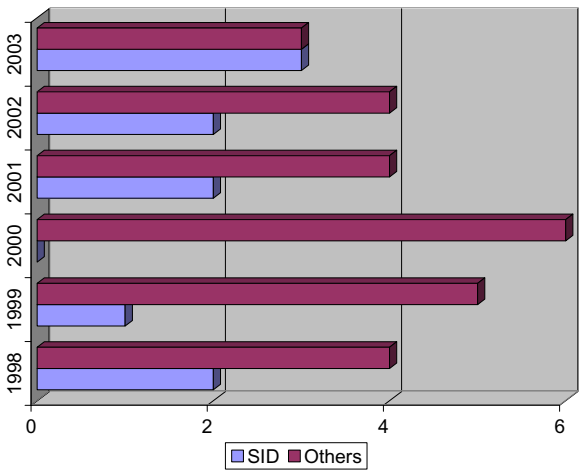

Figure 3. WDA Award winners from Swansea School of Industrial Design compared with all other university departments across Wales.

7 Drucker 1985.
8 McClelland 1961.

Graduate enterprises. The success or failure will ultimately depend on the degree to which graduates of the School create successful commercial enterprises. The study sought to determine what constitute entrepreneurial activity. By searching the available research it was noted that Olm and Eddy[9] observed eight different routes to entrepreneurship. These routes involved:

1. becoming self-employed on a part-time basis, e.g. while a student;
2. starting a full-time business as a result of part-time employment;
3. taking over an established family business;
4. buying a franchise;
5. as initial employment – starting a full-time business from scratch;
6. breaking away from another business;
7. seizing an opportunity, e.g. call for proposals;
8. developing a part-time business while in full-time employment.

These eight routes were used as a benchmark to identify graduate entrepreneurial activity. The information was gathered from first destination statistics gathered by the Institute along with direct interviews with graduates. The results were plotted as a percentage for each of the six years covered by the study. Whilst there seemed to be an initial correlation with the rise in patents and the number of WDA Technology Prizes won there was little evidence of causation. The data can be explained in a number of ways. Firstly, the higher proportion of entrepreneurial activity reported in the three years from 2001 to 2003 could be the result of more accurate data collection. Secondly, the lower figures reported in the three years from 1998–2000 may well be the result of better employment opportunities. Thirdly, the introduction of European Union Objective 1 funding to many parts of Wales may have encouraged more graduates to become entrepreneurs. Finally, the rise may be seen as a direct result of the revised teaching, learning and assessment strategy adopted in 2000.[10]

Review of the pedagogical model

From the outset, this project was aimed at establishing an environment within which both undergraduates and academics would be encouraged and given opportunity to innovate. It was essential therefore to create a formal structure for teaching, learning and assessment, which met the rigorous academic requirements of the University and QAA, which also provided scope for an innovative experience. The resulting pedagogical model was described in a programme document produced in September 2000[11]. The review of this model constitutes the core of this paper. The aim of the review was to

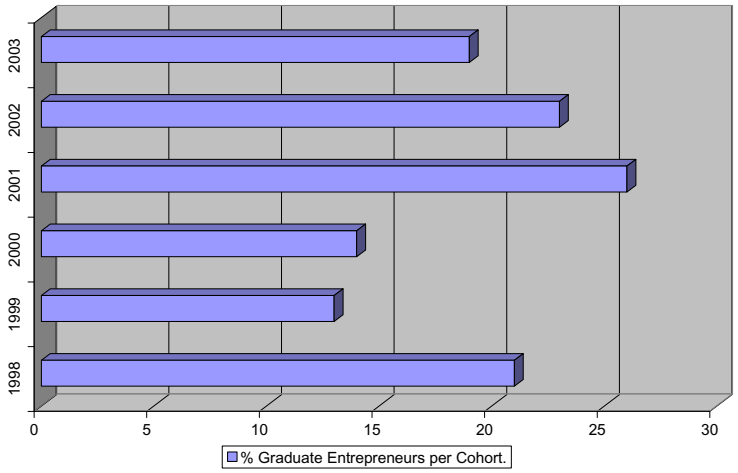

Figure 4. Entrepreneurs as a percentage of Swansea Industrial Design graduates.

9 Olm and Eddy 1985.
10 Walsh et al. 2000.
11 Ibid.

assess the impact of the new model on the level of entrepreneurial activity by identifying the factors that played a positive role and those that had a negative one. Those were identified as:

1. Negative factors

Programme structure. Modular programmes of study can have a negative effect on entrepreneurship. Modularity creates discrete independent "ghettos" of programme elements that cause the undergraduate to lose sight of the big picture. The implementation of the pedagogical model described has not delivered the desired results. There remains a perception of fragmentation on the part of the undergraduates. Semesterisation and the resulting division of the programme into fifteen week teaching blocks creates artificial barriers to the free development of ideas.

Over-assessment. The new teaching, learning and assessment strategy developed for the programme is appropriate for determining academic progression and attainment. In terms of the enterprise culture, it can produce an adverse effect. Undergraduates, ever conscious of grades, tend to "play-safe" and avoid the risk taking essential if dynamic entrepreneurial activity is to flourish.

2. Positive factors

Committed academics. This was key to initiating the initial project and has been essential in the realisation of Phase 2 and its subsequent review. The Faculty possesses a body of academics with a strong belief in the programmes and a commitment to developing entrepreneurial activities.

Communication. The beginning of Phase 2 of the project witnessed the creation of a consolidated Studio, CAD and Workshop Facility. This new environment, where students and academics work alongside each other has dramatically improved communication and has thereby supported the emergence of a culture of innovation. This culture is vital if entrepreneurial activities are to develop.

Committed Students. The support of the students ensured that the project was a dynamic collaboration of ideas. Discussions were held with student representatives to discuss the common vision for the programme. This ensured that changes to the structure took full cognisance of students' needs and aspirations.

Support from the Faculty. Faculty support was assured and resources made available. As a result of the success of the project the Faculty has established a new School of Industrial Design. This has resulted in a strengthening of the entrepreneurial culture and thereby ensured the continued research activity within the industrial design area.

Conclusions and discussions

Conducting a sustained study, as was the case here, is not without its problems. Significant challenges have to be met and overcome. However, in overcoming these challenges, the team became stronger and the benefits to the educational experience of the undergraduates were significant. The success of the project was tangible and immediate with three students winning Welsh Development Agency technology awards in three years. The achievements during the three years of the second phase of the project have been remarkable with a further seven graduates winning WDA awards. This has been matched by an increase in the number of graduate business start-ups and a dramatic increase in the percentage of students submitting patent applications.

The major challenges faced were:

– programme management: the management of the timescales and deliverables to ensure that students had flexibility within semesters but still met assessment deadlines;
– dissemination of information: in order that the value of the intellectual property remains intact, systems have to be established to control the dissemination of project information. This must not conflict with the need to maintain openness and transparency in assessment;
– confidentiality: academics have to maintain strict confidentiality when discussing projects that are party to the scheme and avoid the temptation to discuss developments with colleagues and visitors.

The benefits of creating a culture of innovation and enterprise are profound and include:

– creation of a progressive and dynamic environment for sharing information and ideas;
– a greater emphasis on wealth creation – leading to greater respect amongst undergraduates for the academic endeavours of other;
– encouragement of risk taking amongst undergraduates;
– greater creativity, which permeates the entire department and ensures that the entire team constantly reflects upon its practices;
– the dissemination of the developed pedagogical model to other departments;
– the creation of a new taught post-graduate programme in "Innovation and Entrepreneurship".

The benefits of undertaking such a series of reviews and restructuring of the academic environment are deep and far-reaching. The impact on an industrial design department has been to raise aspirations and create a shared vision. This vision has led to a culture of enterprise that extends beyond the bound of the undergraduate programme. Graduates continue to be involved and regularly return to share their experiences. The economic benefits to the region are beginning to materialise with new graduates launching start-up companies to exploit the generated IPR. The recommendation of the author, some six years into the project, is that whilst at the outset it may be daunting and the increased workload during the initial phases often exhausting, the results more than make up for it.

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Design Innovation, Information Handling and Design Management

From industrial design, via design management to firms and corporate organizations that work with designers, there exists the idea that design is or brings about innovation. After all, designing implies the making of something new. Meanwhile, stressing the general value of innovation in competitive markets, it has recently been claimed as one of the top three priorities for 2002/2003 by no less than 80 percent of Fortune 500 US companies[1]. However, from a design management point of view, it is not always all that clear how this process of innovation with respect to design operates, what it entails and how it can be used. This is problematic, of course, since design management sets out to handle the various situations that are concomitant to the use of design. In other words, what is it that design management thinks it manages?

One answer is that design management, as all kinds of management activities will do, handles and channels diverse flows of production towards a desired end. These diverse flows would include the protagonists in the situation, designers on one hand and the clients on the other, and design management would exist to supervise, facilitate and direct the relation between these two groups. In other words, the management task would consist of managing the difference between the two groups. However, this supposition does not bring much more clarity to the initial problem because the next question would be what does this difference consist of?

In this paper, I would like to address this question from a design management point of view by looking closer at what designers actually do. My remarks are partly motivated by a concern that some very basic characteristics of design often seem to be left behind as design management makes every effort to cater for the commercial and corporate side of its operative field. Furthermore, the observations are made with loose reference to some of the problems I have posed to industrial design students at the Oslo School of Architecture. My approach to these problems, whether posed theoretically in design management or practical through teaching, emerges from personal curiosity as much as the aim to see design students explore their talents and bring their work to fruition in proposals for new products which are integrated with a view to strategic product development and marketing.

The agenda of design management is to facilitate the best possible use of design for organisations, firms and corporations so that their services and/or products are competitive in the market. The task is to manage a situation that as a rule involves complex processes and relationships between the different protagonists on, respectively, the design and client sides[2]. To manage means to control, direct or administer; and, in some respects, design management's function is to barter between diverging forces and motivations in order to produce the best possible result in a situation where design is held to be a key vehicle for success. Generally, this situation can be characterised as arising from difference where the basic one is the assumed difference between designers and their client counterparts.[3]

However, in the design management literature it becomes obvious that the profession and academic

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1 As cited by von Stamm 2004.

2 A great amount of research and literature has focused on the importance of interdisciplinary teams to nurture creativity and accelerating the innovation processes in firms. See for example Walton 1997.

3 This difference has been addressed and characterised in various ways. Consider, for instance, how designers are referred to as "artsy type" instead of "business persons", Olsen 1991, p. 5, and when design is understood as a "right-brained activity by managers whose education has been largely left-brained, verbal, linear and analytical", Lorenz 1994.

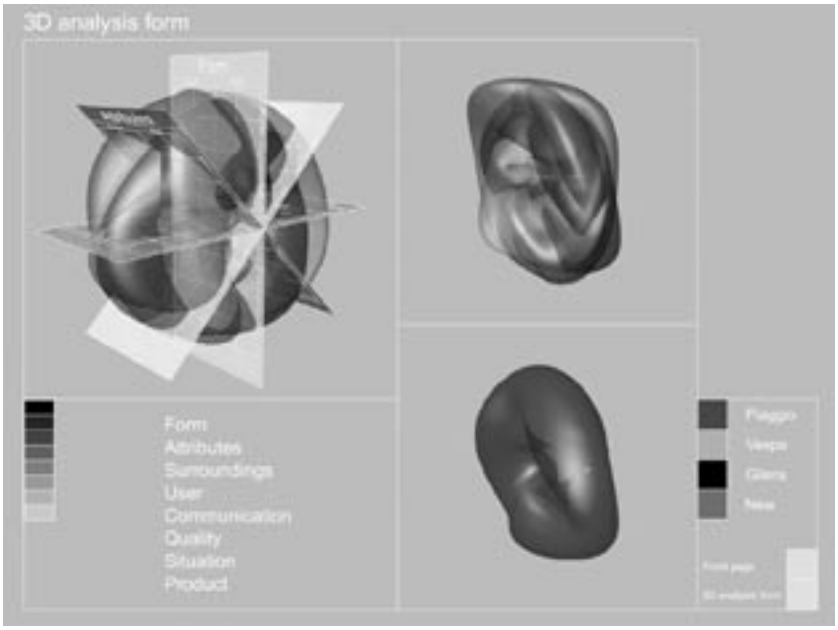

Figure 1. Example: Jarno Sundell: Analysis of Vespa, Gilera and Piaggio, 2003. The comparative analysis of scooter products offered valuable insight to their respective characteristics relative to their brand value. To the left: variables accumulated in figure rendering the brand attributes. Bottom, to the right: example of figure for Piaggio.

field have been at some pains to put a finger on exactly what constitutes this difference. One possible line of attack is to define it in cultural terms, that is, to say that designers and the manager clientele constitute fundamentally different cultural groups[4]. Culturally differentiated groups would arise from different "process(es) of reality construction that allow people to see and understand particular events, actions, objects, utterances, or situations in distinctive ways."[5] To the degree that such a cultural approach can be further detailed, it holds the potential to unravel some of the complexities at work by the assumed difference between the two groups. In consequence, one may be lead to better premises for communication between the groups and to the possibility of a strategic and conscious use of the difference as a resource for the working processes instead of negative conflicts, which are the other possible outcome when different cultural groups meet.

There are different ways to map a cultural difference. In order to clarify the cultural distinction between two social groups one may focus on any one of the following characteristics that are generally held to be true: different cultural groups think in different ways; they may have different cognitive modus operandi, different sets of references, languages and goals. Further qualification of the situation involving designers and their clients may be called for. An important contribution to understanding the condition has been made by Jeanne Liedtka, an American strategic management theorist. Liedtka offers a series of characteristics of the way designers think and argues that this is fundamentally different to the equivalent by managers.[6] The six points are:

1. Design thinking is synthetic, which means that it has the capability to make a coherent overall strategy out of a relation between disparate things.

2. Design thinking is adductive, which means that it can devise strategies for realising intentions relating to desired future situations.

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4 This approach is the one I am currently pursuing in my doctoral thesis where my aim is to show that a cultural paradigm can be most beneficial for design management purposes. As culture is mentioned in the design management literature the focus is mainly on difference in firms and companies various corporate culture. One example of corporate culture goals is to assimilate and, in relation to a specific work task including different partners, "finish with a single voice". Faust and Langenderfer 1997.

5 Morgan 1986.

6 Liedtka 2000. Liedtka bases her six points about design thinking on an earlier piece of literature by Vladimir Bajaneck, a design theorist. Bazjanac 1974. Besides Bazjanac, Liedtka relies on a series of other designers and design theorist to bolster her argument – among them Frank Gehry, Nigel Cross and Richard Buchanan.

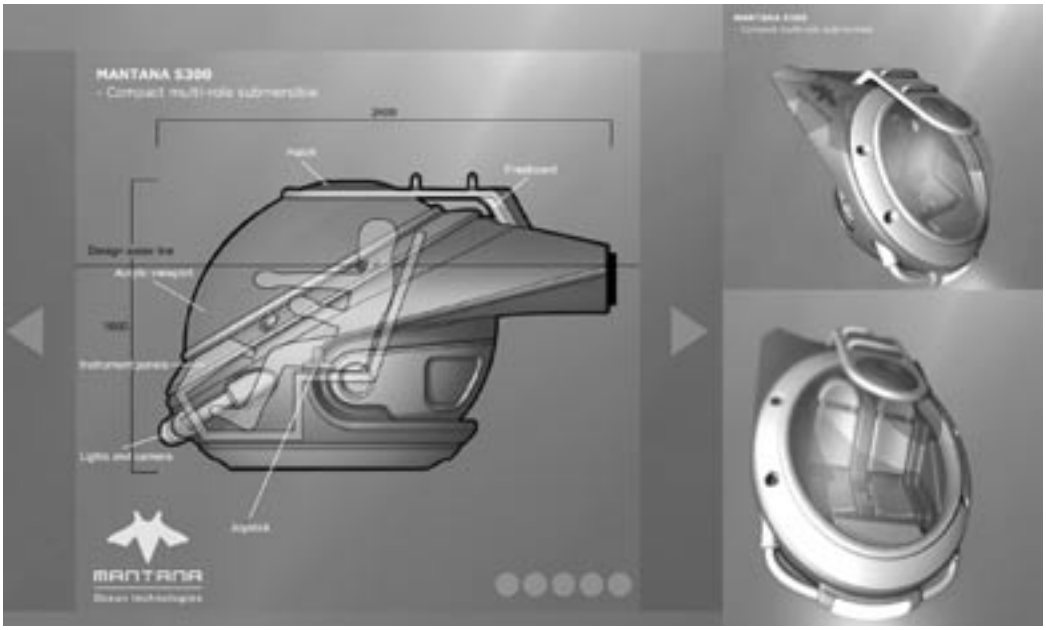

Figure 2. Example: Jarno Sundell: Mantana S300 Submarine, 2003. Two-seat submarine for deep-sea explorations. The target groups for the product include scientists and adventurers. The design of and brand strategy for the submarine was based on the analyses of the scooters.

3. Design thinking is hypothesis-driven, which enables it to employ conjectural strategies for creating "what if"-situations that subsequently are tested for an embedded strategy of assumptions about cause-effect relationships, an "if then"-type of logic.

4. Design thinking is opportunistic, which means that it is capable of making use of new and emergent possibilities within its own process of production.

5. Design thinking is dialectical, which reflects its ability to negotiate between givens of the present with unknowns of the future; that is, design thinking is always projective, using and transcending today's constraints for tomorrow's possibilities.

6. Design thinking is inquiring and value-driven – which goes to say that it welcomes inquiry and scrutiny and is willing to explicitly engage with its audience.

Liedtka's point is that business strategy processes would benefit from implementing some of the dynamics that design thinking at large represents. Business management milieus are seen as restricted by their too stringent focus on direct problem solving; it is "a culture and a strategy that foster efficiency, cost-cutting, incremental changes, and a focus on day-to-day business."[7] The potential of design for management processes lies precisely in the other way of thinking, in its capacity for inventing the unknown and finding new solutions. It is design offering something else than simply a product, design or, to be more correct, design thinking, becomes integrated in the strategic processes where these otherwise are threatened by a narrow, goal-oriented singularity.

The interface between these ways of thinking, between management and design cultures, is all but unproblematic. Management cultures proffer an initial threat that may erase the opportunity to benefit from design thinking even before the game has started. The threat is "a strictly mechanical approach to management, with its stress on clearly defined objectives, roles, and structures, (that) would kill the creativity that lies in the heart of design."[8] In order to protect this potential of design and design thinking – and, in consequence, the potential of innovation, design management would have to be keenly aware of what is at stake. How is it that this design thinking is so different? Where or to what can it be located?

Naturally, in order to find an answer, one would turn to what designers do: they design, and they do so

7 von Stamm 2004.
8 Lester, Piore et al. 1999.

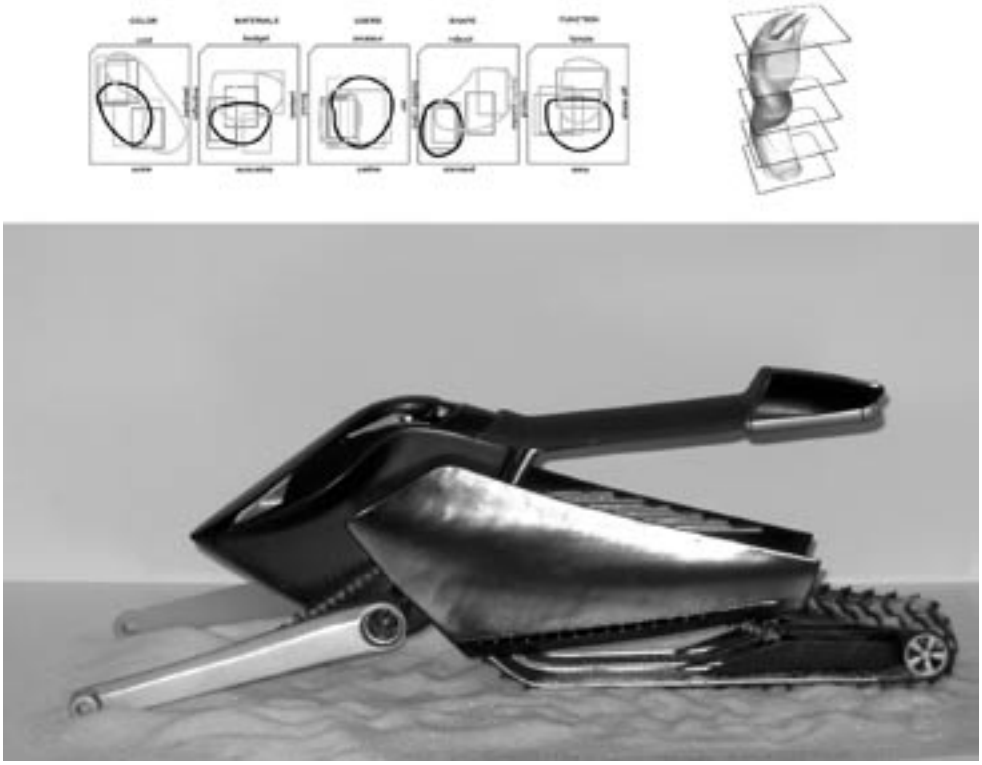

Figure 3. Example: Markus Høy-Pedersen: Analysis of ski goggles and Natak Science, 2003. The comparative analysis of five different ski-goggles offered valuable insight to their respective characteristics relative to their brand values. Top, right: rendered diagram figure for variables pertaining to two of the ski-goggles studied. Bottom: picture of the model of a fast-moving single-person snow vehicle whose qualities and brand strategy was based on lessons from the ski-goggles analysis. The vehicle is designed to tilt in and out of turns giving a smoother ride than any other existing snow product.

by-and-large through the visual medium. In other words, the six ways that, according to Bajaneck and Liedtka, characterises how designers think takes its form through visual thinking and visual logic.

With respect to this centrality of the visual medium in design, it is not all that clear how design management sees or relates to it. We can make a somewhat disconcerting observation about the development of the design management field in this context by comparing two issues of one of its main journals, the *Design Management Journal*.[9] In 1995, the spring issue of this was dedicated to Innovation with the subtitle: Nurturing Creativity throughout the Organization.[10] The contributors were drawn from the academia and professional spheres related to design. Among them, William Hannon[11], for instance, identified the visual medium in design as an essential tool for product innovation. Drawing, he argued, is the locus of innovation as innovation "begins in the imagination". He went on to specify that he did not talk about renderings but techniques of drawing that express "those far fuzzier dialogues with the other half of our brains."[12]

Almost ten years later, in the most recent issue of the same journal, the theme is Frontiers in Visual Communication.[13] The issue is wholly devoted to graphic design in the service of corporate goals and thus implicitly reifies this as the cusp of visual communication. Graphic design is qualified by classic visual strategies, "the significance of fonts,

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9 The *Design Management Journal* is published by the Design Management Institute and is devoted to articles and case studies exploring how design in products, communication and environment – is an essential resource, a component of every organisation that can be effectively managed to make important contributions to the bottom line and to long-term success.

10 Walton 1995.

11 Besides being one of the editorial advisors in the *Design Management Journal*, Hannon is a professor of industrial design at Massachusetts College of Art.

12 Hannon 1995.

13 Walton 2003.

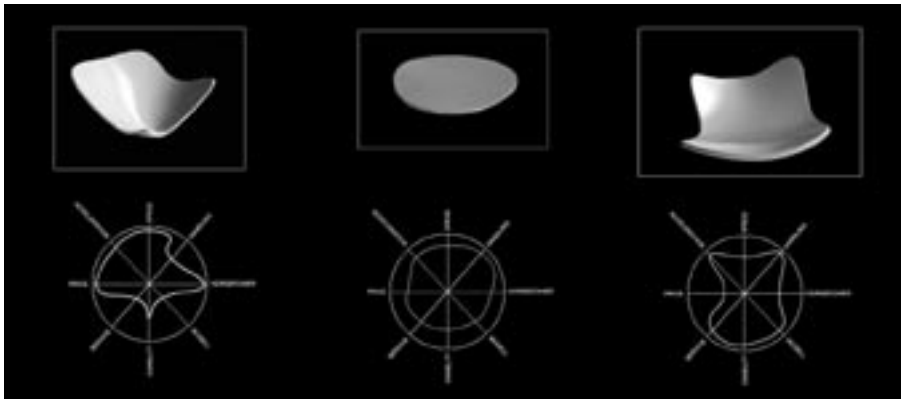

Figure 4. Example: Martin Meiholt: Analysis of Lamborghini, Ferrari and Porsche, 2003. The three-dimensional diagrams give a comparable basis for understanding, for instance, performance and power, between the three cars. At the bottom, top views are given of the diagram outlines.

Figure 5. Example: Martin Meiholt: Njord Sportscar, 2003. Renderings of the Njord Sportcar whose design was loosely based on the analyses of the three sport cars. Njord is a fast sport car especially developed to handle demanding and winding mountain roads.

colour, illustrations and narrative in storytelling", besides the potential that lies in new media and technology; its results take the form of corporate reports, folders, logos, packaging, advertising and new digital communication. There is nothing unusual in this qualification of graphic design in visual communication. The problem, though, is not what is being stated, but one is left with the unsettling impression that something is being left out, that design, in its workings and possible service to those who might employ it, is being reduced to a sheer medium for communicating visual messages to consumers. But design, not counting the construction of physical models, is virtually altogether visual. Hence, the precious operation of design thinking, its potential to explore and analyse, its function to construct bodies of information and reveal new relations between pieces of it, may soon be lost in the pure service of market communication. To design management, the danger is that it oversteps this crucial and fragile moment. After all, design management is based on a curious and troubling bias: theoretically it emerged from the business related field of organisation and management theory and has till this day poorly reflected and accounted for the other half that it is set up "to manage", namely design and designers.

It would be impudent to argue that design management, as reflected in the comparison of the two issues of the *Design Management Journal* above, has gone through a rudimentary change with respect to how design is approached and handled. However, as design is gradually being accepted as a fundamental resource to differentiate a service and/or product in an increasingly competitive market, the pressure on designers to conform and deliver within the tenets of the market may soon endanger the otherness of design.

Les Wynn, also in the *Design Management Journal,* observes this danger by pointing to the often-occurring and erroneous reference to design as a strategic tool for firms and companies alike when it really is used merely as a service provider. He argues

that design in many instances should be referred to as an important rather than strategic tool. He sees design "in essence… (as) a pure service activity – a consultative activity". For design to become strategic, he continues, it needs to take part in "the activities traditionally left to the parts of an organisation responsible for identifying opportunities – to become as much the client as it is the service provider.… Unless the design functions are involved in defining the values the product's image is to represent, design functions only as an implementer of strategy".[14]

It seems to me that design management needs to pursue actively an understanding and implementation of design that reflects these unique aspects of the field. As Les Wynn suggests and Jeanne Liedtka in detail describes the anatomy of, it is only when design is taken for what it actually is that it can fully blossom as a strategic vehicle for development and innovation. However, this may demand that design management also begins to approach that which qualifies designers as distinct and resourceful, namely their talents for working and thinking through the visual medium.

In a series of annual one-term studios with third-year industrial design students here at the Oslo School of Architecture, I have attempted to address this visual aspect of design. Instead of merely defining the result of design as a product, the students have been asked to use their design talents for different types of analyses, conceptual development and brand strategies, as well as product development. Approaching the studio from a design management perspective, the fascination has been to see the designer as a constructor of information – not only a presenter of it, in addition to being a constructor of products. Moreover, although the results have varied and the approach, for various reasons, is not unproblematic, numerous projects have demonstrated that the students' capabilities extend in a productive manner far beyond the mere designing of objects.

The aim of the course is to provide the students with an understanding and knowledge of the conceptual and operational methods and tools that play an active role in industrial design in relation to brand building. The studio offers the students to choose and work with a product-type from a given range of products. This year, the range has been limited to pertain to sports and leisure activities. The students are asked to formulate a complete product strategy, including one for brand building and marketing. The strategy, in turn, is based on in-depth analyses of the product-type or related activity plus an analysis of an independent product brand. Using these sets of analyses as reference, each student is expected to conceive of and develop an overall concept for the product, and then design this together with an example of how it were to reach its user-group(s) – in other words, a goal-oriented project formulation that comprise a comprehensive design strategy and a potent brand concept.

Throughout the work, the students are encouraged to engage with modelling of their findings and results in an explorative manner. The task of constructing different types of models to present the information that each student handles is seen as a way to open up and develop the initial problem.

Edward Tufte argues that graphics "are instruments for reasoning about quantitative information…".[15] Reflecting this view, the students are encouraged to investigate mechanisms and techniques for constructing visualising information systems that can provide them with new ways of understanding the topic of interrogation. Various types of maps and both two- and three-dimensional models have resulted. Then the task becomes how to read and understand these new information-constructs, a task that has proven just as difficult as the construction of the maps and models in the first place.

The more comprehensive and complex the maps and models are, the more potent they may also be in offering suggestions for new relations between subsets of data. The maps and models may be referred to as diagrams when they comprise a "figure, chart, or scheme that more visually express logic and thinking processes".[16] Kawasaki argues that there is a current

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14 Wynn 2000.

15 Tufte 2001.

16 Kawasaki 2004. Diagrams are defined as a sketch, drawing, or plan that explains a thing by outlining its parts and their relationships, workings, etc. Webster Dictionary.

demand "for the invention of diagrams as denotations system for communication…. And the diagrams that should be designed in the future are 'meta diagrams' that transcend conventional visual expression". [17]

The motivation for introducing the students to these kinds of problems hopefully reflects a number of the issues that I have attempted to address herein. The key issue in all of this is the nature of design that so fundamentally is hinged on the construction and mediation of information through the visual medium. Secondly, this I have argued, relying on Bajaneck's six points as presented by Jeanne Liedtka, is also the medium through which design thinking operates. It is at once one of the fundamental things that sets designers apart from their managerial counterparts and renders design potentially as a powerful strategic tool for innovation. Since the complex course of creating potent products and services for social and consumer related ends depends on the precise and targeted processing of information, both designers and their corporate counterparts could uncover additional creative aspects of design through understanding and using the creative dimension of this in visual terms.

This said, it follows that design management may find a new lease for its own agenda by approaching designers on the premise of design and less on that given by pure market considerations defined as the a priori condition for success. The role of the visual medium in this would be obvious. "Designers, by virtue of their discipline", argues Jordan, "are in a unique position to rescue design teams from premature acceptance through skilful questioning, introduction of a problem-solving framework, and visually representing ideas." [18] It is in this extended understanding of information handling that innovative moments in a project development may take place.

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17 Kawasaki 2004. Kawasaki is Professor and Dean at Graduate School of Design and Architecture at Nagoya City University.
18 Jordan 1997.

Modeling the Strategic Impacts of Design in Businesses

Abstract

This paper presents a research project at the University of Art and Design by Designium, the New Centre of Innovation in Design in co-operation with MUOVA, the West Finland Design Centre. The project is a part the Design 2005 technology program, launched in 2002 by Tekes, the National Technology Agency of Finland. The research studies the impacts of design in different types of companies, and seeks to ascertain the benefits of design to businesses. The objective of the project is to model the use of design in businesses in different strategic situations, such as the development of the product or starting a new business, and this way find causal connections between the use and impacts of design. In this paper, the strategic role of design is evaluated through the innovation process.

The study is conducted in companies of several different types which broadly represent the Finnish export industry, both BtoB and BtoC companies. The research consists of the background research and interviews of the participating companies. The research group is cross-disciplinary and supported by the international Advisory Board, chaired by Earl Powell, the president of the Design Management Institute (DMI).

By now, the background research has been carried out and the interviews of the participating companies are going on. As a result of the background research, the preliminary evaluation model was developed. It works as a tool with which the analysis for each case can be conducted. As the study proceeds, the objective is to analyze and compare the relationships between companies' competitive strategy and design strategy, as well as to analyze the strategic decision-making practices.

1 Introduction

Although the impacts of design are known, the modes of operation, which enable the effects to take place, remain unexplored. Finnish industry has already made considerable use of design in its operations, but the use of design at the strategic level remains rare (figure 1). The strategic use of design contributes for instance to[1]:

– brand signature: visual identity, look & feel, harmonization;
– appealing products: the relevance of the offer;
– innovative solutions: anticipation of user requirements; and
– deployment of company culture and design awareness through products to the end users.

Moreover, studies conducted to date have not been able to ascertain with sufficient clarity the causal connections between the factors of the design process and the benefits of design. Instead, they have either

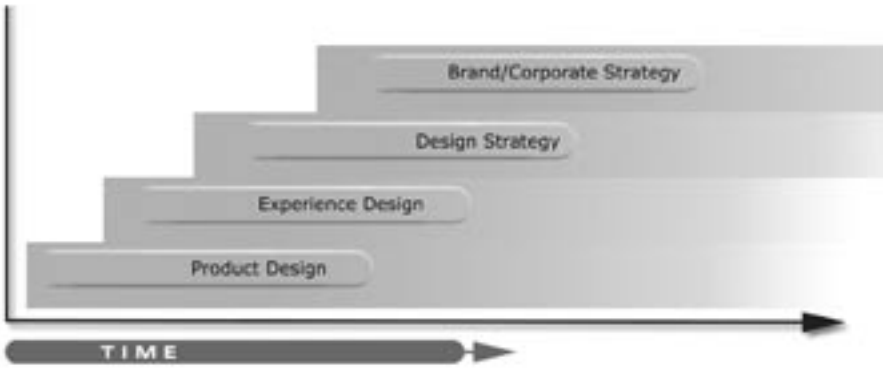

Figure 1. Four levels in the use of design.

1 Decathlon 2004.

provided correlations between good design (different indicators, for example design prizes) and business success, or management views on the impacts of design in companies which utilize design successfully.

The Finnish Government made a resolution on Finnish design policy in 2000. The objective of the design policy is to establish a dynamic system of design in Finland to enable Finland to achieve the status of a pioneer in the utilization of design. This project is a part the Design 2005 technology program, launched in 2002 by Tekes, the National Technology Agency of Finland. The program is one of the key measures in the resolution, the purpose of which is to improve the competitiveness of Finnish industry through design.

The objective of the project is to model the use of design in businesses in different strategic situations, such as the development of the product or starting a new business, and this way find causal connections between the use and impacts of design. In addition, the objective is to create evaluation criteria for the use of design and applicable business performance measures. The study is conducted in companies of several different types, which broadly represent the Finnish export industry, including ABB, Ekeri, Iittala, Kone, Nokia NMP, Oras, SK Tuote, Suunto, and T-Drill. As the study proceeds, the objective is to analyze and compare the relationships between companies' competitive strategy and design strategy, as well as to analyze the strategic decision-making practices.

The project is carried out at the University of Art and Design by Designium, the New Centre of Innovation in Design in co-operation with MUOVA, the West Finland Design Centre. The international Advisory Board, on whose assessment the future evaluation model will be based, will assess the results of the research team. The Advisory Board is chaired by Earl Powell, president of the Design Management Institute, Boston and co-chaired by professors Robert Hayes, Harvard Business School, Marjorie Platt, Northeastern University (finance) and DMI Senior Research Fellow, and assistant professor Lisbeth Svengren, Stockholm University; Eija Nieminen PhD, Designium, the project leader; Markku Salimäki PhD, Helsinki School of Economics, IDBM-program [2]; and Satu Lautamäki PhD, MUOVA, represent Finnish expertise.

2 Research methods

The strategic dimension of design requires integrating design closely into company's decision-making processes; therefore, the aim is to find the key decision points and the role of design in them. In order to maintain the objective perspective, the benefits of design are examined "outside-in" from business point of view. The research consists of the background study and the on-going interviews of the participating companies. In this study, the use of the term design is restricted to the verb form, as in *to plan and carry out, especially by artistic arrangement or in a skilful way*[3] as practiced by individuals from the design disciplines – e.g. graphic, fashion, industrial, and interior designers.

The background research was conducted by studying numerous case studies and other design literature in order to find the successful principles of using design as well as the impacts design. The research team had access to case material on about 100 companies gathered over a period of several years by the IDBM program and MUOVA. In addition, case studies from Design Management Institute (DMI), Harvard Business School, and Design Council were studied. At the same time, the framework for the evaluation model was developed based on business literature: criteria for business success and business performance measurement, for example EFQM-model and Balanced Scorecard. Based on the results of the background research, the preliminary evaluation model – a tool with which the impacts can be modelled – was developed and the questions for the next step, company interviews, were formulated.

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2 The International Design Business Management programme (IDBM) is a joint teaching and research program of three leading Finnish universities: the Helsinki School of Economics, the University of Art and Design Helsinki and the Helsinki University of Technology.

3 Webster's New World College Dictionary 1996.

3 Evaluating the strategic role of design in innovation process

According to Simons[5], the ability to manage successfully a multi-year product development process or to develop a capability to reach entirely new categories of customers may be more critical for future economic performance than managing existing operations efficiently, consistently and responsively. We studied four perspectives for translating vision and strategy:

– financial: how do we look to shareholders?
– internal business: what must we excel at?
– innovation and learning perspective: can we continue to improve and create value?
– customer perspective: how do customers see us?

Maidique and Zirger[5] found that there are a series of key attributes associated with the firms that produced the successful goods:

– understanding of user needs
– attention to marketing and publicity
– efficiency of development
– effective use of outside technology and external scientific communication
– seniority and authority of the managers responsible for the development
– efficient planning and execution of R&D
– co-ordination of R&D, production and marketing phases of product development

Furthermore, Maidique and Zirger emphasized the importance of learning by doing and learning by failure. They discovered that often a successful product was born from an earlier failure.

3.1 The role of design in innovation process

In contemporary economic theory, innovation is regarded as a process involving a series of interacions between business, customers and, more broadly, society as a whole. The economic model of innovation (figure 2) comprises elements of both "technology-push" innovation (i.e. technological developments drive innovation) and "demand-pull" innovation (i.e. innovation is driven by market needs).[6]

The interactive innovation model overlaps significantly with design; clearly, design and innovation are inextricably linked (table 1). Through the application of design in the innovation process, businesses can seek originality, allow collaboration and the adoption of what is new, invest for future and experiment without certainty of return.

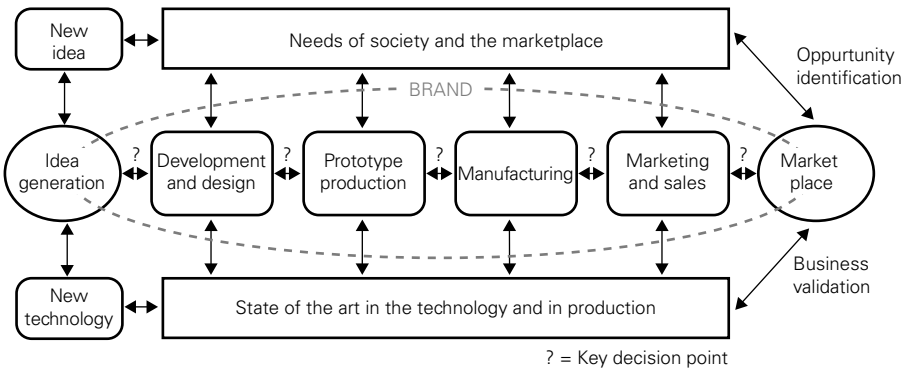

Figure 2. Description of the innovation process.[7]

4 Simons 2000.
5 Maidique and Zirger 1984; 1985.
6 Walton 2003.
7 Modified from Clark & Guy 1997.

Table 1. Design and innovation – correspondences.[8]

DESIGN ELEMENT	INNOVATION ELEMENT
Research	Assessment of needs of society and market place
Concept development	Part of idea generation
Concept validation	Part of idea generation
Design resolution	Development and design
Productionization	Use of new technology, manufacturing
Communication	Marketing and sales

Also Heap[9] states that it is hard to establish where innovation ends and design begins, but generally designing is a more structured process. A designed product may or may not be the result of innovation. Thus, innovation and design are part of the same continuum – it is the degree of pre-specification in the brief that differentiates one from the other. Continuous efficiency and discontinuous innovation must be complementary approaches, both parts of the strategic plan. Design lies somewhere between the two, applicable at both ends of the scale and ideally used to bridge the two extremes. Innovation and good design are important to all organizations who wish to retain their competitiveness.

Tso and Wu[10] suggest that innovation is also *a complex interactive process*. They have found out that in-house R&D, acquisition of embodied technologies and product designs are the most important elements of increasing innovative activities. The companies are expecting from their innovative activities increase in market share, improvement of product quality, and extension of product range.

According to Heskett[11], the key economic functions of design are:

1. Design is the function that gives product concept tangibility – it is the vital stage in translating from theory, or aspiration, to practical possibility.
2. Design specifications essentially determine manufacturing feasibility and therefore cost.
3. The reality of designs as perceived by users ultimately determines market success. Many products fail because of inefficient product development, above all, due to a failure to ensure, at the earliest possible stage, that a product concept is appropriate for its intended users. Competitive advantage, in any respect, is inconceivable unless manifested in the product. An essential function of design is concerned with uniqueness and superiority, the prime determinants of economic value in a product. The key points at which the value of design methodologies can be vital competitive advantages can be summed up in abbreviated form as:

A. faster: rapid prototyping and speeding the development process
B. higher: adding higher value to products
C. stronger: systemic development

3.2 Design performance measurement

The most frequently used financial measure for design performance is the product cost, a key component in determining product profitability and, ultimately, company profitability. Definition of good design can be attained by considering such factors as:

– quality of the company's design program (e.g. number of design awards, peer recognition)
– quality/excellence of design evidenced in the company's products, services, collateral, and so forth (for example, assessment of the company's design products and materials)
– importance placed on the firm's design program; for example, large investment in design[12]

8 Walton 2003.
9 Heap 1989.
10 Tso and Wu 1999.
11 Heskett 1998.
12 Platt, Hertenstein, Brown 2001.

The creative solutions brought by designers to the new product development process often lead the manufacture and sales of products by months or perhaps years. Therefore, it is questionable value to tie designers' current performance to current sales figures. The product design managers' preference for non-financial measures of design performance probably reflects two things: firstly, the non-financial measures may better reflect design's contributions to the development process and secondly, they may be able to showcase design's contribution to a project with less of a lag in timeframe. The following measures can be used:

– *strategic measures:* alignment design with company strategy, achievement of specific strategic goals
– *design effectiveness measures:* percentage of projects that reach production, percentage of first designs meeting the needs, assessment of CAD use, team assessment of design effectiveness
– *employee-related measures:* employee morale, team assessment of individual contribution, ratio of designers to all employees
– *design efficiency measures:* number of design modifications, frequency of specification changes
– *timing measures:* time to market, cycle time – by phase, time to revision, time to break even
– *volume measures:* number of products in pipeline, number of products started, and number of products completed
– *innovation measures:* number of patents, number of new products developed, number of new products introduced, number of design awards, peer evaluation of design work, percent new features[13]

Cooper & Press[14] suggest that when auditing design management the following issues should be taken into consideration:

– *environmental issues*, which affect corporate strategy and design strategy, for example legislation, market trends and competitor trends
– *corporate culture,* the levels of design awareness, including values and vision, the design strategy and the tacit design decision-making
– *management of design* and design projects and processes and design skills available
– *physical manifestations of design:* the product or service, place and communication in all the organization's activities (target of auditing depends on what is important to the business)

4 Results of the background research

The results are based on the literature study, and they include the definition of the "know-how of design" and the preliminary evaluation model of strategic impacts of design. The preliminary evaluation model works as a tool with which the use and impacts of design can be modelled for different strategic situations.

4.1 Definition of the design know-how

The know-how of designers includes aspects such as:

– creativity/innovativeness/future vision
– user focus: aesthetics/usability/functionality
– visualizing and concretizing the ideas and the views of different disciplines/supporting the decision-making
– reducing production costs and time to market
– corporate/brand profile and communication

4.2 The preliminary evaluation model

The developed evaluation model works as a tool, with which company's drivers, processes, and the results of operations can be modelled. The evaluation model (figure 3) consists of three parts: drivers, enablers, and the results of using design. The frames are based on the common business performance evaluation models, for example the EFQM-model. The basis for building up the evaluation model was to understand business activities in general and then to position the use of design and its strategic impacts into the overall model. The reason for this approach was to place design into realistic position in business activities and to differentiate the impacts of design from the impacts of other activities. The other reason for the chosen

13 Hertenstein & Platt 1997.
14 Cooper & Press 1995.

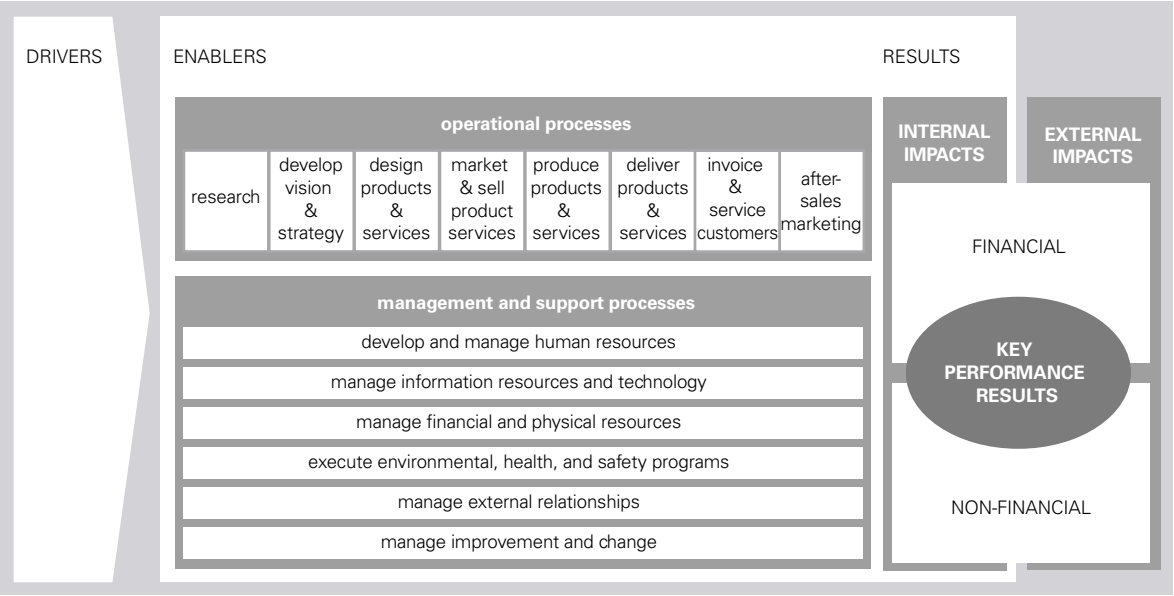

Figure 3. The preliminary evaluation model.

approach was to find as many business processes as possible in which companies may use design.

Strategic decision-making points are described as drivers in the model. Drivers include external drivers such as market need, as well as internal drivers such as a new product innovation. Drivers constitute the input for vision and strategy development.

Enablers concern the utilization of design in companies' operations in different strategic situations: the ways of using design and the role of design in managerial processes. For instance, the company may use design to visualize concepts of new products in product development process. This enables team members to discuss the emerging product and develop it further. The enabler classification is based on the Universal Process Classifications Scheme. It was developed by a team of business professionals from Arthur Andersen, IBM, DEC, Xerox, and the American Productivity and Quality Center. The International Benchmarking Clearinghouse has endorsed the scheme as an industry standard, which contains 13 business processes that apply to almost any business. Operational processes are categorized into seven processes in classification scheme, but two alterations were made: process of understanding markets and customers was modified into research process, and after-sales marketing process was added.

The third part of the model consists of the results arising from the use of design. Results are classified into five different groups. Results consist of impacts design has inside the company – *internal impacts*, and outside the company – *external impacts*. Internal impacts are the effects that are taking place inside the business activity, for instance company effectiveness and flexibility. External impacts include for instance customer satisfaction. The internal and external impacts are further categorized into *financial* and *non-financial* impacts also called as tangible and intangible. Financial impacts are either internal or external. The most important part of results are the key performance results. The *key performance results* are market share, ROI, and sales volume, for instance. They indicate ultimately the impacts of design in businesses.

5 Next step: company interviews

Now, the interviews of the management of the participating companies are going on. The aim of the interviews is to map the strategic use of design and its impacts in companies. The objective is to analyze and compare the relationship between companies' competitive strategy and design strategy, as well as to analyze the strategic decision-making practices.

As the study proceeds, the company interviews will be deepened. The second phase of the project aims

at modelling the use of design in businesses comprehensively:

– in the strategic level concerning for instance the corporate culture and brand development
– in the tactic and operative level concerning innovation, concept building, research, product development, marketing etc.

In addition, the objective of the second phase is to produce preliminary quantitative indicators.

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The Triple Helix

Design & entrepreneurship in the UK

This paper aims to illustrate the current picture of design and entrepreneurship in the UK. Themes of education, industry and government will be explored and how they interact with each other to create a fertile environment for innovation and design within the UK.

"Successful businesses recognise that design, innovation and creativity have had an impact on their performance over the past three years. They acknowledge its contribution – to a great or fair extent – across a range of success indicators more readily than companies in general."[1]

Education

The provision of Higher Education is expanding with more and more students entering undergraduate programmes. As well as over 2775 subject-specific design courses, there are also 57 Design Management courses. In addition to these more traditional programmes there are also 88 entrepreneurship degrees on offer such as BA (Hons) Design Management & Innovation, BA (Hons) Enterprise and BA (Hons) in Entrepreneurship.

Most Higher Education Institutions have a department devoted to enterprise and innovation; for example, the Department for Academic Enterprise at the University of Salford boasts an associate Dean for Enterprise and considers "linking academia with enterprise central to its activity". The department has no fewer than 50 people dealing with intellectual property, knowledge transfer, technology transfer, funding, teaching enterprise and enterprise learning.

Government

Not surprisingly, the government features large in any discussion about enterprise within the UK. Central to its influence is the Department of Trade and Industry (DTI). In their own words, the "DTI drives our ambition of 'prosperity for all' by working to create the best environment for business success in the UK. We help people and companies become more productive by promoting enterprise, innovation and creativity".[2]

Further work from the DTI includes a new, on line resource – the "Living Innovation" website, and from it the quote: "Sustainability, usability, e-everything, globalisation, creativity, demographics, technology, society and culture, consumer values: just some of the many emerging agendas in design, both in industry and education".[3]

The Design Council is funded by a grant from the UK Government's DTI, its purpose is to "inspire and enable the best use of design in the UK, in the world context, to improve prosperity and well-being."[4] The Design Council was founded to "…help people and organisations in business, education, public services and government understand design and use it effectively as a part of their strategy".[5]

By working directly with businesses, the Design Council aims to demonstrate the methods and processes behind design success, making them easier for companies to adopt. The council's work includes:

– international exhibitions
– Designers into Schools Week

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1 Design in Britain 2003—2004, 2004.
2 Department of Trade & Industry 2004.
3 Living Innovation 2004.
4 Design Council 2004.
5 Ibid.

– events
– publications
– case studies

NESTA, the National Endowment for Science, Technology and the Arts was set up by an Act of Parliament in 1998 and uses the interest on a National Lottery endowment to "pioneer ways of supporting and promoting talent, innovation and creativity". Common to all projects it chooses to fund is the emphasis on both creative and commercial value. NESTA was created "to give individuals the time, space, money and support to push at the boundaries of knowledge and practice". NESTA offers a variety of schemes under which funding may be applied for, these include:

– Invention and Innovation
– Learning
– Fellowship
– Graduate Pioneer
– Ignite
– NESTA Futurelab
– Planet Science
– Partnerships and competitions

To date (March 2004), NESTA have made 441 awards for projects with titles as far ranging as an operatic version of "Charlie and the Chocolate Factory" to an "automatic guitar tuner" to "kids designing their own school spaces".

Industry

That design influences and improves industrial and commercial effectiveness is not new thinking, indeed in the article "Valuing Design – Enhancing corporate performance through design effectiveness" the author succinctly states: "good design is indeed good business" and "design-conscious firms generally do better''. [6]

Recent and most impressive evidence, (if further evidence is needed), of the importance of design to industry is to be found in "The Impact of Design on Stock Market Performance", a report published by the Design Council in February 2004. To quote David Kester, the council's Chief Executive Officer: "This report proves unequivocally that investing in design has a direct impact on a company's performance and increases shareholder value over the long term."

Over a period of ten years (1994–2003), the share price activity of 166 companies, known for their strong use of design, was monitored. The research found 63 companies grouped as the "Design Portfolio" on the basis of their high level of success in numerous design award schemes, did substantially better than their peers in both the bull and bear markets between 1994 and 2003.

Indeed this group, dubbed the "Design Portfolio", group recognised as effective users of design outperformed key FTSE indices by 200%.

A cross-section of industry was represented including.:

– finance: RBS, HSBC, Barclays & Egg
– retail: Tesco, Marks and Spencer, Boots and J.Sainsbury
– air transport: BAA, British Airways and Easyjet
– industrial and manufacturing: Rolls Royce, BP, Unilever and Reckitt Benckiser
– leisure sector: Manchester Utd & Weatherspoon

The Design Council is now working with FTSE to create a new index based on this study (to be launched later this year) to measure performance of design-led companies on an on-going basis. It should be noted that an "Emerging Portfolio" that is 100 quoted companies – those with only slightly fewer award nominations and wins – also consistently outperformed the FTSE indices over the 10-year period. To quote the Design Council: "Our aim is to persuade businesses to invest in design to drive growth, and also to give investors the chance to employ the use of design as an indicator of corporate performance and potential." [7]

Collaboration

The government has funded numerous initiatives to promote design and enterprise including in 2001

6 Hertenstein & Platt 2001.
7 Design Council 2004.

£115m worth of grants to foster business links with universities – known as the "Higher Education Innovation Fund" (HEIF). One example of how the money has been used is the "Creative Enterprise Initiative", jointly funded by the HEIF and the European Social Fund ESF "to promote the development of creative business in the South East region". The project unites the expertise of Surrey Institute of Art & Design and regional and national business support agencies in order to better support creative entrepreneurs in the southeast region.

"Bridging the Gap", a recent report by the University of Arts, (formally Central St Martins, part of London Institute), funded by the Design Council found that businesses benefit from collaboration with design schools through:

– access to the wide skill-set available in such schools
– relevant expertise
– cutting edge thinking and technological know-how
– creativity and modern, fresh thinking
– having more than one brain on the job
– potential new employees

Collaboration leads to innovation and enterprise

When the two mind-sets of academia and industry work together they have the potential to generate wonderful results – results that would not be possible from the two distinct and separate worlds alone. "…Collaboration works. It creates highly innovative products and services.... There is the need to increase the volume and effectiveness of collaboration without damaging richness and freedom of universities' research and teaching environment."[8]

"The Lambert Report" (2003), commissioned by Gordon Brown to "come up with ideas to improve technology and information transfer between universities and business". The report found that investment in R&D "leads to productivity gain over the medium to long term". It is therefore essential that anything that impedes a transfer of knowledge is identified and processes of transmission be improved to enable a productive partnership.

Knowledge Transfer Partnership (NTP) (formerly known as the "Teaching Company Scheme" (TCS)) is funded by the DTI, and is an excellent example of collaboration on a very practical, and successful level. Two examples, which illustrate this partnership effectively, are:

1. Primal Pictures who produce Human Anatomy CD-ROMs have formed a partnership with the Medical Graphics and Imaging Group of University College London. The result is that medical students can learn how joints move without having to dissect corpses. This innovative project won the award for the best TCS programme in 2002; and

2. "lastminute.com", an e-commerce success story which since 2002, have sponsored full scholarships at Imperial College London in Computer Science and hosted student internships in which it encourages a new generation of computer "whizzkids" to develop innovative ideas for the business. It is not difficult to see how collaborations of this type cannot fail but benefit both parties, and ultimately of course the (growing) e-commerce customer base.

The already promising results will be repeated through increased and better funding and management.

Creativity is the key

Put simply, the link between "good design" and "good business" is proven and evident everywhere one looks; this should come as no surprise as innovation is central to the role of a designer. If one defines a designer's role, the resultant definition is seen to be that of an innovator or entrepreneur; both can be seen to:

– take risks
– research, explore and experiment
– focus on customer needs [9]

Designers also have the ability to communicate their ideas to the client/customer.

8 von Stamm 2004.
9 Ibid.

"A designer thinks from the perspective of the customer, spotting potential gaps in the market and using a mixture of creativity and commercial insight to respond." [10]

Case study: Innocent Drinks – the story of an entrepreneur

Richard Reed showed entrepreneurial tendencies when aged nine he began cleaning his neighbours windows for money. Within two years he was in trouble at school for selling Smurf stickers, and by the tender age of 16 was employing school friends in his "Two Men went to Mow" lawn-mowing enterprise.

When Richard went to St John's College, Cambridge he met fellow undergraduates Adam Balon and Jon Wright with whom he ran club nights and events – this collaboration and friendship was to (in a few short years) manifest itself as the highly innovative and successful venture known as Innocent Drinks.

Before becoming a true (commercially successful) entrepreneur, Richard was to serve time as Account Executive at BMP DDB and in four short years promoted to account manager and then account director he left in 1998 to set up Innocent Drinks with his two former college pals Adam Balon and Jon Wright.

The story of how they made the final decision to set up the company is now legendary. They purchased £500 worth of fruit and set upon a stall at a London music festival. Aside their stall was a notice which read: "Should we give up our day jobs to make these smoothies?"; beneath were two bins – one labelled "yes" and one "no". As the "yes" bin began to overflow they knew where their future lay.

Innocent Drinks prides itself on its "Eco-humanist philosophy": a desire to genuinely do good through its work – illustrated perfectly by the "halo-face" logo. The drinks are pure and unadulterated, the brand is about feeling good and Reed says of Innocent: "The image and the product are the same." [11]

"What people really desire are not products but satisfying experiences….Design has to move beyond brand recognition and brand acceptance to being the brand of choice – the experience customers hail intellectually and emotionally as the best and most desired… seamless and well-co-ordinated experience…." [12]

This is where Innocent have been so successful in their innovative approach – their headquarters in London is affectionately known as "Fruit Towers", their packaging is not only well-designed and aesthetically pleasing but entertaining and amusing; their website [13] is a joy in itself – complete with a virtual gym.

Innocent has grown from weekly sales of 20 drinks in 1999 to 250,000 drinks in 2003, has grown at a rate more than three times the sector average since February 2002 and is now sold in 3000 outlets including Sainsbury's, Waitrose, Tesco, Safeway & Somerfield.

In 2002 Innocent won the Investors in People Growing Business Awards category: "Innovative Company of the Year Award". In 2003, it won the Marketing Society prize for best marketing campaign. The £1.5m campaign featured a double-decker bus covered in Astroturf offering free rides and smoothies along key London bus routes. Brand awareness is further enhanced by the use of "cow" delivery vans (complete with tails and moo sound effects). Other techniques include the sponsoring of cycle lanes and the issuing of guidebooks advising "lie downs" in the office.

As a result of this unique mixture of design, ethos and PR, brand awareness of 35% has been achieved in 3 years on budget of less than £100,000.

The future

"Entrepreneurship and innovation are central to the creative process in the economy and to promoting growth, increasing productivity and creating jobs.

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10 Humanising Technology 2004.
11 Reed 2003.
12 Abbott 2002.
13 Innocent Drinks [Online], available at: <http://www.innocentdrinks.co.uk>.

Entrepreneurs sense opportunities and take risks in the face of uncertainty to open new markets, design products and develop innovative processes. In the knowledge driven economy this process is even more critical, in small and large businesses alike. The pace of innovation means the competitive advantage has to be refreshed constantly. The UK needs more risk takers who can rapidly turn ideas into products and services." [14]

The future of design and entrepreneurship in the UK looks healthy. The importance of design to business has been recognised and celebrated; the groundwork is in place but there must not be complacency. "Education providers need to work on improving education of both the designers (about business concerns and issues) and business people (value of design and how to integrate it into business processes)." [15]

Collaboration should continue between education and industry to build on the already excellent results emerging and the Government through bodies such as the DTI must continue to fund initiatives that enable the process to take place.

The consumer is becoming more and more design-conscious – brand and image is everything (and everywhere), this can only lead to a more demanding public who will not settle for anything less than "good" design. This is good news for those in the business of design and for the design of business.

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14 DTI 1998.
15 von Stamm 2004.

Integrating Design & Craft – Problems & Potentials

Design as a discipline is a product of modern industrial culture. It is a separate function vis-à-vis manufacturing (making) and marketing (selling) and accepted as such in an industrial organisation structure. Over the years, the discipline of design has matured and has developed characteristic and methods to suit the modern mass-production industrial culture to make it relevant. It has developed ways and techniques to link to other functions (production, marketing etc.) of an industrial enterprise. Some of these techniques are termed as design management, and they have developed to a high degree of sophistication becoming a discipline in its own right. One of the special features is the management of feedback and communication with other functions. This feedback and communication between various functions in a modern industrial enterprise forms an explicit and visible "external loop". The dispersal of these functions in time and space has lengthened this loop and added to its complexity.

Craft on the other hand is an individual centred activity. Craftsman is a person who is designer, manufacturer, buyer, seller rolled in one. Functions like design or manufacturing are so well integrated in craft that their boundaries are undefined. The craft process is highly coordinated and orchestrated. Brain, hands, material and tools are in direct communication with each other and the feedback forms an implicit and invisible "internal loop". Craft is a simultaneous act of conception and execution and therefore not separated in time and space. We have therefore, yet to invent the term "Craft Management".

Thus, we see "craft" and "design" as disciplines are quite different. Where is the meeting ground? How do we get these two alien cultures together? Some well-meaning people have attempted just to do that, bringing external design inputs to the craft process and hoping to raise the levels of the craft and trying to make it economically viable. Many of these attempts have failed miserably, but some have succeeded. In the presentation (Editors note: the presentation not included in the publication), I have shown some case studies of failures and successes and discussed the problems, and analysed the anatomy of potential successes.

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A Vision-based Methodology – a New Approach to the Design of Innovative Products

Abstract

This article presents a vision-based design methodology for the development of products. This methodology was developed as part of a doctoral thesis. The background for developing the methodology was the observed limitations with several existing design methods, such as specification coming prior to synthesis, lack of embracement of the aesthetic dimension of products, lack of connection to motivation and inspiration, lack of focus on the use of the body and space as part of the development.

The methodology proposed in this article is visual, expressive and associative. It uses three major types of references in the design process, on different abstraction levels, that are continuously under development: a value mission, a product vision and a product specification. At the start of a project especially the vision, incorporating the intended user experience, is used as reference for developing ideas. In this stage, one is continuously shifting between working with the abstract vision and with concrete ideas. After promising ideas have been developed, the specification becomes increasingly important as framework for optimising and transforming selected ideas. Besides the three types of references, central elements in the methodology are the broad range of expressive means, different exercises and arrangement of space to facilitate the design process, and the use of intensive workshops.

The methodology is viewed as part of a new school in design thinking and practice. It has been developed and taught over several years in design courses and workshops in Norway and Denmark. It seems promising for projects with a creative and conceptual orientation, where the aesthetic part of the product is viewed as central. Thus, it is well suited for creative design processes, where the final aim can be entrepreneurship.

1 Introduction

In the last years the focus in design research and education has been increasingly on values, aesthetics, emotions and user experience, especially related to interaction design. There is even a new conference devoted to research on design and emotions. Still, overall methods and methodology supporting the design process that embraces these new directions seem largely to be missing.

Stoltermann[1] has described two major schools of thought in the approach to the design process. The first school, called "the aesthetic approach", has an approach based on intuition, personal experience where the designer is "guided" through the process by his own ideals and values. This description can be related to the school that Jones[2] describes as viewing the design process as a "black box", which cannot be understood rationally and viewed from the outside. This school has its background in handcraft design, art and industrial design. The second school is called "the guideline approach"[3]. According to this school the design process can be described rationally. It is possible to formulate the guidelines as generic design principles and therefore they do not depend upon a specific designer or design situation. The guideline approach is process-oriented, in the sense that it is assumed that by controlling the design process it is possible to control the result. This description can be related to the school Jones[4] describes as viewing the design process as a "glass box". This school has originally its background and basis in engineering design.

The major motivation for developing the vision-based methodology proposed in this article was originally the limitation observed with existing design methods, especially related to the guideline approach[5]. Some of the limitations were the following[6]:

1. Specification comes prior to synthesis. By formulating a specification prior to synthesis, the solution space is fixed inhibiting creativity and unexpected solutions.

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1 Stoltermann 1994.
2 Jones 1981.
3 Stoltermann 1994.
4 Jones 1981.
5 E.g. Roozenburg and Eekels 1995. Ulrich and Eppinger 1995.
6 Lerdahl 2001.

2. There is a progression through discrete stages, following a sequential order.

3. There is a lack of focus and embracement of the aesthetic dimension of the product.

4. There is no clear connection to motivation, inspiration and intuition, even though such aspects are central for creativity.

5. There is lack of focus on the use of the body and physical space as part of the design process.

6. The methods attempt to be context independent.

7. In the methods, there is a well-defined problem or need at the start of the project. Such methods seem especially limiting when approaching conceptual design projects and projects where the aesthetic part of the product is viewed as central[7].

An early source of inspiration for the vision-based methodology was the ViP (Vision in Product) approach, developed by Hekkert[8] and his colleagues. This approach was viewed as an important contribution in the direction of design approaches that put more emphasis on moods and user experiences. In this approach, Hekkert suggests to first break down the old context, create a new context and develop both an interaction vision and product vision as tools for generating new product ideas. Some shortcomings and drawbacks in this approach were observed, when it was tried out[9]:

1. There was no link to the use of specifications, which is central for developing a sound product.

2. It emphasised a move from abstract visions to concrete ideas. This made the step from vision to ideas often difficult and too large.

3. The approach lacked the focus on the use of exercises and the use of the body as an integrated part of the approach.

4. The expressive means used in the visions were mostly notions (like "soft, aggressive, distant, sharp") and eventually photos. It lacked expressive means like scenario play, metaphors, mood drawing and sculptures, which in this methodology are viewed as crucial for making the link between visions and concepts.

The objective for developing the vision-based methodology was to have a methodology that was not prescriptive and linear, but was a direct guideline and support at the different stages of the design process, from early conceptual thinking to refinement of solutions. The methodology has been taught, developed and improved over many years through design courses with students and workshops with companies. The author has used action research with observations and written and oral feedback from participants, both during and shortly after courses[10]. The vision-based methodology consists of the following main components:

1. vision-based model
2. three major types of references / frameworks
3. process approach / stages
4. exercises, arrangement of space and workshops

All these components are closely intertwined and interconnected in the overall methodology. In the following sections, each component will be presented and discussed.

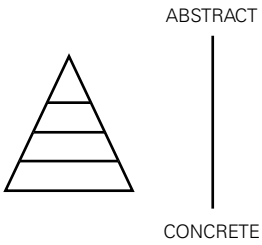
2 The vision-based model

The methodology is largely based on a vision-based model[11], which views products from four levels of abstraction: a spiritual, contextual, principal and material level, see figure 1. The spiritual and contextual levels are linked to the immaterial aspects of products, while the principal and material levels are linked to the material aspects. All levels are equally important, and in practice, there will often be an overlap between the levels. A change on one level influences the other levels. The pyramid form indicates an increased complexity – in a design process it is possible to start anywhere in the model.

3 References and frameworks

A fundamental aspect of this vision-based methodology is that the references or frameworks used should reflect the needs for support at the different stages

7 Lerdahl 2001
8 Hekkert 1997.
9 Lerdahl 2001.
10 Ibid.
11 Ibid.



SPIRITUAL *Intention*	Philosophy, values, purpose, myth, identity
CONTEXTUAL *Expression*	Story, staging, interaction, course of actions, style
PRINCIPAL *Concept*	Product principles, principal form and function
MATERIAL *Product*	Product details, materials production processes

Figure 1. The vision-based model.

of the design process. In this methodology, there are three main types of references and frameworks to support the design process, on different levels of abstraction:

1. value mission
2. product / interaction vision
3. product specification

Below, each type of reference is presented more thoroughly, with some examples.

3.1 The value mission

The value mission is about the underlying, fundamental values for a project. Why do we work on this project, based on a human perspective? What is our moral, what do we want to contribute? It is the basis and pillar for the vision and the specification. The mission is usually presented through 3–4 keywords, see figure 2, as an example. It is usually combined with some abstract pictures and frozen body sculptures, to get a visual and bodily anchoring and awareness of the words. The mission has usually also an abstract statement like "not live in the house, but with the house". The mission is not directly an operational tool for developing concepts, as the vision is. It lies behind, as a shared ground. It is especially important for conceptual projects in the direction of entrepreneurship, where the core values are new and important.

3.2 The product / interaction vision

The vision should incorporate the intended, abstract product qualities and should be visual and expressive. In project with a strong focus on interaction qualities the vision is called an "interaction vision", while in other projects it is called a "product vision". The vision functions as an open and associative guideline in the design project, giving it direction. One student said it was "the open framework and guideline that inspired and gave room for new associations".

Figure 2. An example of a value mission, with keywords and pictures.

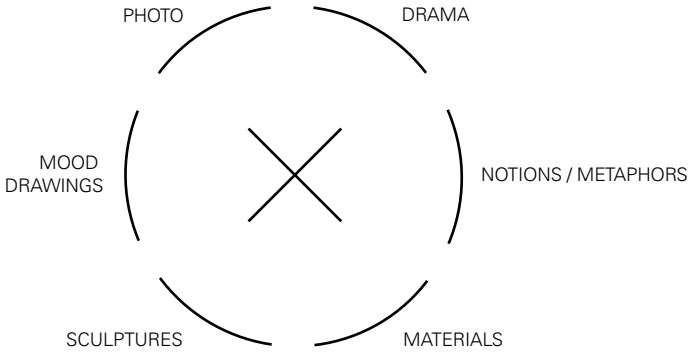


Figure 3. Different expressive means as part of the vision.

The vision can be described as a guiding star that creates the overall, shared understanding in a design team. The vision should directly stimulate the senses and needs to be experienced. It helps to make the bridging between the abstract core values and the concrete specifications. It also functions as a "soft" evaluation tool, for choosing ideas, and gives support for the conceptual thinking process.

The vision is usually presented through a variety of expressive means, depending on the project. These means are usually a mixture of notions, metaphors, mood drawings, abstract and concrete photos, scenario play with sounds and sculptures. Short stories or storyboards can also be part of the vision. It is the totality of means that creates the vision, see figure 3. The variety of means is a central aspect of the methodology. Through for instance drama, the design team gets a bodily relation to the intended experiences. By using verbal, bodily and visual means to express the intended experiences, one increases the designer's vocabulary and makes the vision more precise. The use of different expressive means also helps to give a deeper understanding of the vision, and makes the vision easier accessible to others.

In figure 4, examples are given of visions, with photos, notions, metaphors and mood drawing. Scenario play (with sounds) and sculptures are shown in figure 5.

3.3 The product specification

The product specification is a more concrete and precise framework than the vision. It is linked to

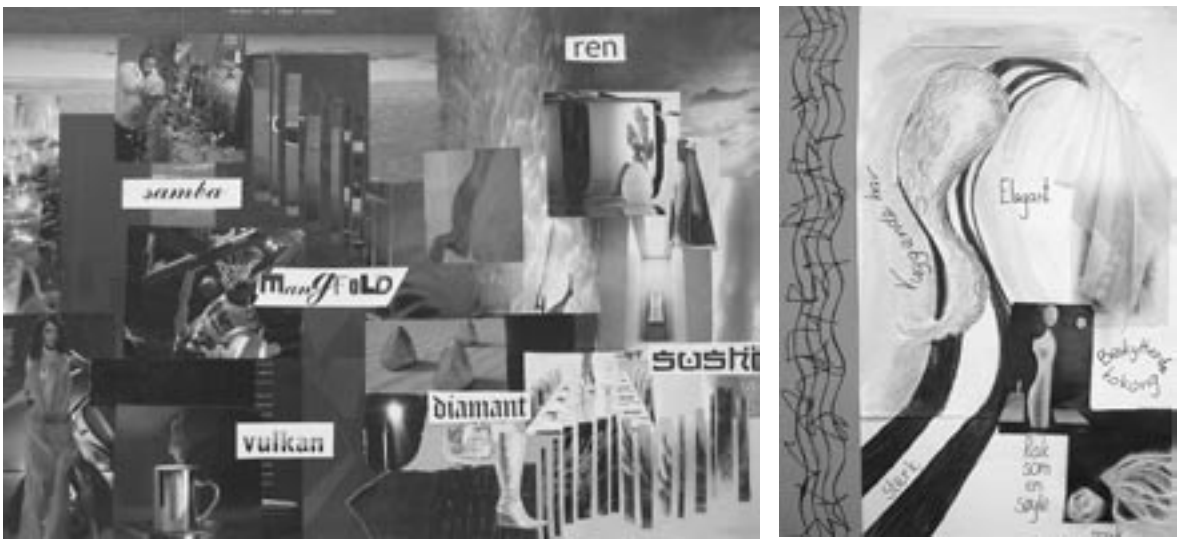


Figure 4. Examples of visions with photos, notions, metaphors and mood drawing.

Figure 5. Examples of scenario play and sculpture, as part of visions.

the lower levels of the vision-based model. It is a framework that should help to modify and transform product concepts, and help to detect strengths and potential improvements. It should also help to take into account all necessary requirements for the product, related to production, function, marked etc. The specification narrows the solution space and helps to fix the mind in a more precise direction. In traditional methods specifications tend to become very "dry", rational and complex. It seems to kill motivation and inhibit creative thinking. In the vision-based methodology, the specification should be combined with images, metaphors and drawings. These images should be more precise than in the vision, and illustrate functions and desired qualities in a concrete way, see figure 6. It is also quite useful to present the specification with concrete objects, which also show product functions and qualities. By using images and examples, the specification is easier to grasp and it functions more easily as a tool for dialogue in a team. As a student remarked: "I experience that the specification functions well when it is linked to inspiring pictures and images. Such images seem to facilitate the communication and dialogue."

In complex design projects, it will be fruitful to divide the specification into two levels of abstraction, similar to the two lower levels in the model: a principal specification and a detail specification. The principal specification is then more open and general, with the use of many images and metaphors. Such images help to give an overview and for stimulating the synthesis process. The detail specification is on the other

Figure 6. An example of product specification with images.

hand more precise and specific, and is important for ensuring that all necessary requirements are taken into account. It is important not to use a detail and complex specification too early, since it may narrow the solution space and inhibit creative moves and explorations.

3.4 Differences between vision and specification

One student remarked the differences between vision and specification in the following way: "The vision gives inspiration, helps to unite the group, leads to creativity, gives energy and helps to motivate. It is an open guideline or undefined framework. The specification is instructive with a clear framework, it limits and narrows the solution space, helps to make decisions. It gives arguments for choices and is easier to grasp for outsiders." Another student wrote: "If the vision is about images, experiences and moods the specification is about how we can obtain these." The differences can be illustrated graphically, see figure 7. The vision is an open guideline, while the specification is a more closed framework.

Visions, which are visual and holistic, are the framework often used by designers in the design process, even though they often are not formulated consciously and verbally. On the other hand, traditional specifications without images and concrete examples are the framework often used by engineers in the design process. It seems that a visual specification, with the use of images, metaphors and product examples, might be the "missing link" between these two "cultures" and ways of approaching the design task. Such a specification, as a tool for dialogue between designers and engineers, deserves further research.

4 Process approach / stages

There are many ways of approaching the design process, based on the model and references just described. In the following section the way in which the design process is approached when developing completely new concepts, will be described. It consists of a vision- and specification-based stage. The vision-based stage is especially important in open, conceptual projects, where there is a need for creative, unexpected solutions, for instance when aiming for entrepreneurship. Research, analysis and user/client involvement should be integrated prior to the vision-based stage and in both the vision and specification-based stages. This involvement is not discussed thoroughly in this paper due to limited amount of space.

4.1 Vision-based stage

A crucial aspect of the methodology is the continuous shifting between abstract and concrete work, related to the levels in the model, see figure 8. In the early phases of the project, called the vision-based stage, one develops a wide range of product ideas, based on the design task and some preliminary research, using different types of creative techniques (brainstorming, brainwriting, forced relationship, storyboard, extreme thinking, mind-mapping, scenario writing, etc.). This can be described as a horizontal movement within the same level in the vision-based model[12].

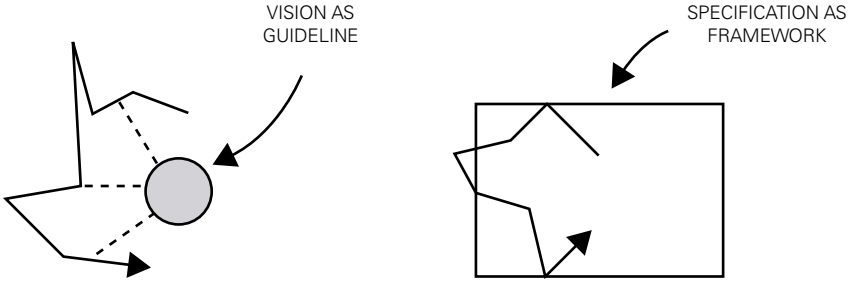


Figure 7. Illustration of differences between vision and specification.

12 Thollestrup 2004.

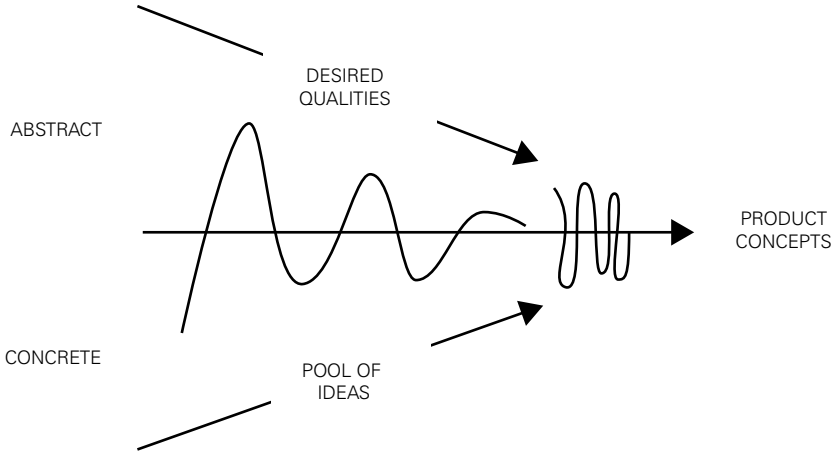


Figure 8. Shifting between abstract and concrete work.

The product ideas developed at the start of the project are not evaluated, just quickly sorted out. At the same time, one formulates core values (mission) and starts to develop a vision.

Quite early in the process, as the designer or design team starts to have a vague vision and some potentially, interesting ideas, they should start to make a conscious link between the vision and ideas. This is achieved by developing ideas based on the vision, and abstracting qualities from the potential ideas, see figure 9. This can be described as a vertical movement between levels, in relation to the model[13]. Through this shift back and forth, the jump (or gap) between abstract and concrete work becomes smaller and smaller and easier to do, see figure 8. The designer or design team becomes more and more precise in both vision and ideas, which then serves as basis for dialogue and development with clients and users.

4.2 Specification-based stage

As one develops further the ideas, through combination, association and experimenting, the product ideas slowly become product concepts. At this stage, called the specification-based stage, it is important to select a few premature concepts and start to formulate a specification for each concept, see figure 9. The specification is more concrete, specific and precise than the vision. At this stage the designer or design team should have a triangular movement between the vision, specification and concepts. The specifications will then influence the concepts and vision, and vice versa. Especially the specification and concepts are continuously developed and improved at this stage. The tension between the intended expression and product qualities (vision), the overall requirements (specification), the temporary solutions (concepts) and user and client feedback (real context) awakes creativity, deeper understanding and better solutions.

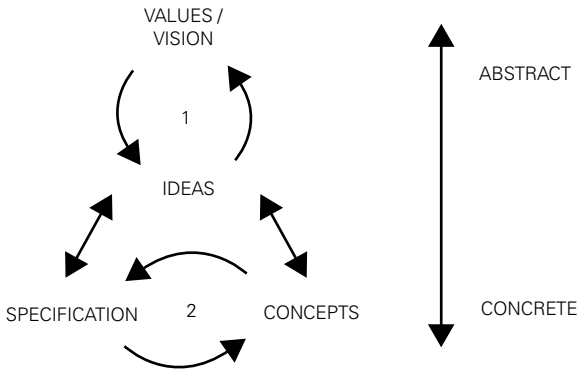


Figure 9. The synthesis process.

[13] Thollestrup 2004.

The vision is in this stage very important for maintaining a holistic perspective of the design project. Occasionally, when the designer or design team feels mentally locked in details related to specifications and solutions, it will be very useful to return to the mission/vision and to the deeper intention for the project. This will usually help to loosen up, and regain motivation. When a group disagrees on the specification, they can return to the vision, which is a shared, common ground. Therefore, at all stages of the process, one should work with all levels of the vision-based model, but where the focus is changing towards the concrete, see figure 10.

Through the whole process both the mission, vision and specification change so that they finally should reflect the final product. In such a way, they are not only support along certain stages of the way but through all stages of the process.

5 Exercises, arrangement of space and workshops

A central factor in the methodology is the conscious use of exercises, as a tool for creating a good and playful atmosphere in the class. These exercises are also tools for learning aspects of the methodology and a way of training abstract and associative thinking. Exercises are often used at the start of the day, when having workshops. The best exercises have both process and problem-related effects[14]. They help to get closer to the problem or task and at the same time influence the atmosphere, process and learning. An example of an exercise would be to write scenarios in groups, directly related to the design task, and later play them out in drama.

In the methodology, the arrangement of space is also viewed as central. The walls are used for exposing visions and ideas. Relevant products and pictures are within sight as a source of inspiration. The design students shift between standing and sitting, and move frequently around the workshop space, to get inspiration and new perspective. Areas of the space are used for scenario play, both for presentation of the vision and for presentation of the ideas and concepts, during the whole project. The whole space is used actively during exercises, as part of the workshop.

In the methodology, parts of the project work are usually done in workshops. This is especially the case for the vision-based stage, when product ideas are developed. It appears clearly fruitful for idea development to get into an intensive working modus, over a couple of days, with frequent presentations. Idea development needs full concentration and

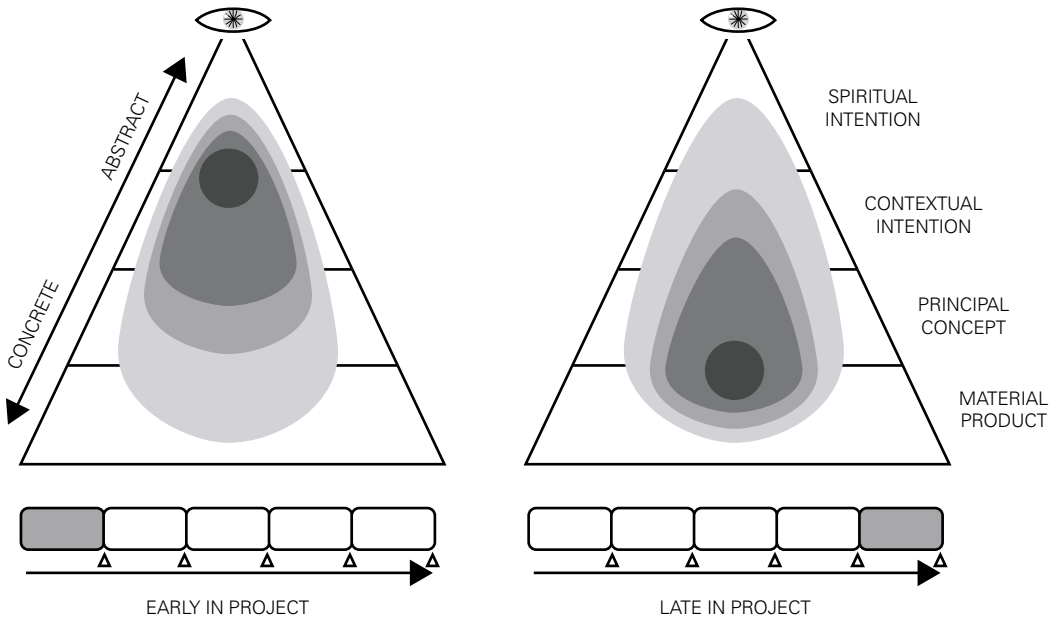


Figure 10. Area of focus during projects, using the methodology.

14 Lerdahl 2001.

participation, and in intensive workshops, the students get more easily into a creative thinking modus. Furthermore, my observation is that the methodology requires active participation to be fully comprehended, since it is quite extensive and different from traditional ways of approaching the design task.

6 Evaluation of the methodology

The major challenge with the methodology is that it requires some training to learn to switch between different levels of abstraction. Visions and abstract thinking can furthermore be hard to grasp at the start. One student wrote: "At the start it seemed strange to describe the core values, since they are not very tangible. But later in the process we could sense how the values lived on and became more tangible and concrete, through the visions, product and specifications." In practice, students also need training to get a clear understanding of the differences and overlap between the mission, vision and specification.

The methodology has now been taught and used as a whole or in parts at several design schools, in Denmark and Norway, both by the author, other teachers and students. A recent doctoral thesis has looked at the value transformation and systematic unfolding of the methodology, and developed tools for navigating more systematically between the different levels in the model[15]. The feedback from students concerning the methodology is positive, it helps them learn more about the design process, and it gives support through the whole design process, in analysis, synthesis and evaluation. Furthermore, it leads to good conceptual solutions. The methodology seems especially promising for projects with a creative and conceptual orientation, where the aesthetic part of the product is viewed as central. Thus, it is well suited for creative design processes, where the final aim can be entrepreneurship. It is important for entrepreneurs to develop new products with conceptual strength. At the same time, it is important that the products are optimal in terms of production, price, ecology, aesthetics, marked potential etc. The vision-based stage helps in the search for creative and unexpected solutions, while the specification-based stage ensures the quality and refinement of the solutions.

When relating to the two schools by Stoltermann[16], this methodology is viewed as part of a new school of design philosophy and thinking, where the design process is viewed neither as a "black box" nor as a "glass box", but somewhere in between. It does tell directly and rigidly how to proceed, step by step, in the design process, but still has some guidelines and means to support the design process. This school strongly embraces values, personal experience, intuition and aesthetics. It gives some means and open guidelines for working, expressing and communicating such aspects and integrating them with more "tangible", functional and concrete requirements.

Acknowledgement

I would like to thank Per Finne and former colleagues at the Department of Product Design Engineering, NTNU, Trondheim, for many fruitful discussions during the early development of the methodology.

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15 Thollestrup 2004.

16 Stoltermann 2004.

Designers as Entrepreneurs or Intrapreneurs: Insights from Design Research

Design history has numerous examples of designers as entrepreneurs whether as founders of organizations (from Gallé to Dyson) or as managers of design consultancies (from Dreyfuss to IDEO). However, designers are also intrapreneurs – they run design departments in organizations.

Researchers on design, coming from management and economic backgrounds, have conducted numerous studies since 1990 and explained how designers bring value to a national economy or to a company:

– Design contributes to the success of an economy at various levels: designers generate profits and revenues as entrepreneurs; they improved performances of products or services and so sharpen the competitive edge of a country and its performances at exports; the development of the services industries foster the demand for retail design; design cannot be dissociated to the success of brand and branding in our post-modern economies. Design plays also an important role in innovation either in the concept phase for radical innovation or in the creation phase for incremental innovation. Designers are "technology brokers". They help the social acceptance of technology. Nevertheless, they also contribute to social and development issues: revitalization of a region or welfare issues of quality of life.

– Impact of design on business success: design as a profitable investment. Apart from a good return on investment, various studies have proved the impact of design on sales margin and perceived value. Design is essential to the success to a firm's innovation and brand policies.[1]

However, most of these studies have been economics led. They concentrate on product design and the impact of products on the marketplace and competition: sales, market share and price premium. They focused on demonstrating that designers' creativity and original outputs provide a differentiation in products and brands that is valued by the markets and thus creates a competitive advantage for the firms.

Our presentation will try to explain this "economic" or market value of design as only one level of design importance and performance. Design has also managerial and strategic value; it can generate both an external value as a competitive advantage and an internal value as a core competency.

Our model demonstrates that there are three levels of creating value through design.

1 The European design prize research

1.1 Analysing design policy of 33 European SME's all excellent in design

The European Design Prize competition – research context and methodology is illustrated in table 1.

1.2 Identifying how design brings value – Identification of the 21 variables characteristic of Design in Business

21 different variables characterising design and business were analysed and classified in order to isolate the variables with the highest scores in the data matrix.

1 For a complete literature review of all studies on both issues of design impact at a country level or at a company level see Borja de Mozota 2003.

Table 1. The European Design Prize competition: research context and methodology.

European Design Prize	This event is organised by the European Community. Each country chose locally firms recognised for the excellence in the design of their products.
Research objective	– Describe how design penetrates the global innovation process. – Select pertinent management variables specific to design management. – Verify the assumption of a typology of design management based on Michael Porter value chain concept.
The firms in competition	– 64 firms in the final competition coming from 17 different countries (Trackara 1997) – Winners Artemide, Authentics Artipresent GmbH, Bates emballage A/S, Bulthaup, GmbH&Co, Dyson Appliances Ltd, Fiskars Consumer Oy Ab, Hörnell Elektrooptik AB, Lafuma, S.A. Mediamatic, Oken S.A., Oticon A/S. – Among these 11 winners,7 firms are in the sample of the study.
The methodology	Questionnaire was administrated by researcher directly during the award ceremony to CEO or his "design champion" 35 responses and 33 surveys were operational.
Description of the sample	– Firms less than 200 people: 57%, more than 200: 43%. – 57% of the firms have more than 20 years activity.
Firms by country	– 14 different countries. – 21 firms North Europe,12 South Europe. – Germany 4, GB 1, Austria 3, Belgium 2, Denmark 1, Spain 2, Finland 3, France 2, Ireland 2, Island 1, Italy 4, Netherlands 2, Portugal 2, Sweden 4.
Expertise in design	– More than 10 years experience: 45%of the firms. – In the firms that have more than 20 years activity, only 10 had more than 20 years experience in design. – Design is not automatically integrated when the firm is created:2 firms had less than 5 years activity but 5 firms had less than 5 years experience in design.
Quality certification	– 60% of the firms are certified ISO 9000, 24% are in the process of certification. – Quality and design are judged as management tools that cannot be dissociated for 44% of the firms.

The top managers of companies gave these scores. Table 2 shows what these managers value in designers (variables 1 and 2):

– the way they create a competitive advantage for their product line; or

– the way designers create internally a core competency that becomes a resource difficult to imitate.

In third position comes the perceived value of design. Because design has a value that is perceived by a customer, the field of design penetrates the marketing field through the marketing research domain of customer behaviour. Managers refer to design or to brand management in the same manner they refer to the emotional response created through a form-design on customer behaviour. The business objective is to identify and communicate the value of product specifications and to build customer trust, memories, associations, preferences and behaviours through product, packaging and brand design. The value of design lays in its value for customers and on its possibility to change their behaviour. "Good design is good business " – not forgetting that a brand or a form-design can be protected and generate royalties and more licensing value.

However, if we look in detail in the top 10 variables of table 2, the results validate our assumption that design value goes beyond its economic value measured by its impact on sales, price and market share (variables 5, 6 and 7). Some managers value design for other reasons than market value or its impact on customer preferences, such as how design affects the way they manage their business - there is a managerial value to design. Designers and the design process can make the whole firm more creative, foster a more customer oriented organization and a more collaborative effort in innovation (variables 4, 8, 9 and 10).

Design is a process that can change the company processes and culture. Therefore, it is not only the outputs or the creative forms that are valued; it is

Table 2. Classification of 21 variables of Design Management.

VARIABLE	MEAN	DISPERSION
1. Design creates a competitive advantage	5,39	0,55
2. Design is a core competency	5,12	1,04
3. Design contributes significantly to benefits perceived by consumers	5,00	0,97
4. Design changes the spirit of the firm that becomes more innovative	4,94	0,86
5. Design develops exports	4,88	1,15
6. Design increases market share	4,75	0,94
7. Design allows to sell at a higher price	4,69	1,16
8. Design improves co-ordination between marketing and R&D	4,68	1,07
9. Design is a know-how that transforms the activity processes	4,64	1,12
10. Design develops a customer -oriented innovation policy	4,60	1,25
11. Design generates technology transfers	4,22	1,47
12. Design gives access to a wide variety of markets	4,19	1,55
13. Design accelerates the launch of new products	4,07	1,28
14. Design improves co-ordination between production and marketing	4,00	1,16
15. Design develops project management of innovation	3,93	1,20
16. Design creates a new market	3,90	1,72
17. Design improves the circulation of information in innovation	3,80	1,34
18. Design means higher margin or costs reduction	3,80	1,31
19. Design is difficult to imitate by competitors	3,76	1,43
20. Design changes relationships with suppliers	3,70	1,23
21. Design improves co-operation between agents	3,64	1,18

6 = Fundamental , 5 = Very important , 4 = Important

also the process that leads to these outputs. Design is valued both as a process and as tool for creating a market difference.

1.3 The Design Management model

Our model issued from this research is built on two main issues:

– Design is either limited to creating a competitive advantage or enlarged to inventing a core competency.

– There are three generic design strategies and any company should choose the one that fits its objectives best.

Design as competitive advantage / Design as core competency

Using the classic theories in management literature on strategy, we can say that design value is explained either by Michael Porter five forces model and value chain concept or by the new resource based view of the firm (RBV) and its focus on specific resources and competencies.

In our research, we found that these 33 European SME'S though all similar in the quality of their designed products differed in the way they valued design in their strategy formulation. We identified three levels of value creation through design:

– design and the primary activities of the value chain: production, marketing, sales

– design and the support activities of the value chain: innovation, human resources

– design and the sector value chain: strategy, prospective, vision

The research (table 3) also identified which were the variables that help you understand which design value is preferred in your company and where to classify your design policy. The results of this research (table 3) create a model for the definition of a design strategy. They showed that the majority of these 33 European SME's prominent in design were behaving differently in their integration of design in the Porter value chain. Moreover, even if some (6) firms did not know why they were in this European design competition, the remaining 27 companies knew better.

Table 3. Research results and typology of Design Management.

DESIGN CREATES A COMPETITIVE ADVANTAGE

DESIGN IS	VARIABLES	NUMBER OF FIRMS
an ECONOMIC COMPETENCE that creates value by its action on *the primary activities* of the value chain.	– Design allows to sell at a higher price.	5 firms
a MANAGERIAL COMPETENCE that creates value by its action on *the support activities* of the value chain.	– Design improves co-ordination between marketing & production. – Design changes the relationships with suppliers. – Design accelerates the launch of new product.	16 firms
a RESOURCE COMPETENCE that creates value by its action on understanding *the sector value chain* and on *external co-ordination.*	– Design creates new markets. – Design is a core competency. – Design develops customer orientation in the company.	6 firms

Out of these 27 firms, a large majority – 22 out of 27 firms – was driven by design as a business process and the majority – 16 out of 33 firms – was interested in the impact of design in innovation management and on the support activities of the value chain. Only 5 firms out of 33 were seeing design value in the products and artefacts and limiting it to its economic value: impact on sales. On the other end, 6 firms out of 33 were seeing design value as a tool to better understand and anticipate the firm's future environment and markets and giving to design a status of core competency and specific resource not easily imitated.

2 Applying the model to the design profession

Since our model shows that there are different ways to value design in business, it is not surprising that this model applies to the way the design profession is organized.

2.1 Designers bring differentiation value

This first level of design value – called designers as differenciators – explains the importance of design consultancies for developing brands. It also explains the trends towards experiential design, "emotional branding", sensorial design with design consultancies that specialize in niches such as sound design or fragrance issues. This is the "marketing driven" value of design that follows from development of branding. This value of design for the customers is still fundamental for the design profession but it is changing from a "experience driven model" to a "relationship driven model". Designers in the future will be valued not because they bring emotions to products but because they can invent relations with customers. In the recent years, the design consultancies market was driven by retail design agencies, in the future it will be driven by user interface design specialists. The differentiation is now to be designed in customer relations and design is driven by the emerging "relationship marketing" buzz word.

2.2 Designers bring integration value

The second level of design value is more process oriented. Designers are seen as *facilitators* or *integrators,* which is particularly important in innovation management. This "tacit design" value explains the development of in-house design departments in companies, and how designers facilitate the integration of companies innovation and brand policies. Firms that recruit designers require skilled creative people but they value also the intrapreneurship spirit designers can bring with them. They value design by the way designers change the culture and spread a customer oriented and creative spirit to the company that changes the processes and routines.

This coordination value is rising directly from the creative process. Designers are open to new ideas and new technologies that can come from another sector of your company business; therefore they help the transfer of technologies from sector to sector but they also help the "appropriation" process of new technologies in society by creating new products and services that make these new technologies tangible and useful, by inventing users scenarios that help users and society understand the value of these new technologies. Also if done properly the in-house designers can help the whole firm become more creative. Finally, the design process entangled with project management give the whole innovation team a user orientation focus, which is of great value for company performance.

Moreover, the designers' visualization skills in a New Product Development team (roughs, mock ups and prototypes) are valued because it creates a vision of where the innovation project is going but also because it is if managed properly a communication tool, a common language and knowledge understandable by future consumers, engineers and marketers involved in the process. The more the designers collaborate with users, experts and society for finding new ideas the more they help the firms to be open to their environment and to be more customer-oriented. Finally by their quality of dialogue, their curiosity and their experience in problem solving, designers are valued because their input in teams can be measured by reducing costs, reducing time to market, reducing risks and inter functional conflicts between the different actors in an innovation project.

Being inside the company helps the coordination between products, brands and spaces. Though designers are not so often managing design globally, brand and product, product and retail..., they are in the position through informal networks to infuse a common vision and aesthetics. There are signs that design consultancies are beginning to understand this coordination value of design. Just like traditional Ital Design consultancies were selling both design and engineering skills, some consultancies are selling their competencies in design together with other skills:

– multimedia design and audiovisual in order to foster coherence between graphic identity and corporate film identity

– design and marketing research competency: ethno marketing and ergonomics

– design and datamining computer: customer database competency

2.3 Designers bring transformation value

The third level of design value or designers as transformator is also very interesting for company performance in our chaotic world where you cant rely any more only on statistics and prevision from the past to invent the future. Designers are entangled with corporate strategy formulation and ideation. At that level, the designers' visionary skills are valued.

Architecture departments, following the model of the automotive industry, are developing advanced design divisions and are working with R&D divisions fostering the innovative input in strategy. Concept and dream products are developed to help reformulate the company vision and knowledge management. Trends and views departments are established to work for strategic marketing on reinventing the brand.

Design becomes a core competency and designers are seen as facilitators of strategy process through trends and views and advanced design. This strategic value of design fosters the companies' pioneer spirit in innovation because it creates visual concepts that act both as communication tools but also as gatekeepers and protection against new entrants. This tacit design values the network ability of designers: networking with other sectors especially arts and fashion. It also facilitates networking with suppliers and other industries: Louis Vuitton and B&O for the brand flagships stores or the "Design for Future needs" European program.

On the design consultancies side, the "bureaux de style" invented in France in the 1970's are thriving all over the world and these trends consultancies in life styles, materials, colours, surfaces etc. that were dedicated first to the fashion and accessories industries have penetrated all economic sectors.

Table 4. Creating value through design: where designers are valued.

LEVEL	DESIGNER	
LEVEL 1: ECONOMIC VALUE	Designer: differenciator	– Designing the brand (awareness and image) – Designing the market positioning – Designing the consumer behavior:perceived value emotional and multisensorial – Designing sustainable product range
LEVEL 2: MANAGERIAL VALUE	Designer: coordinator	– Designing design process / NPD process/brand process – Designing marketing research (ethno design, user scenarios) – Designing the idea management and creativity – Designing the company design culture – Designing product life cycle and R&D coherence – Designing a coherent aesthetic system in brand management: – Designing production models with user oriented modular architecture – Designing new personnel human behaviors
LEVEL 3: STRATEGIC VALUE	Designer: transformator	– Advanced design & vision and trendsIdentity design & long term issues (brand equity) – Design and company performance (design evaluation methods) – Design audit – Design and company key success factors

The final table (table 4) summarizes the three levels for creating value through design and the different actions designers can develop at each level.

Conclusion: designers as entrepreneurs or intrapreneurs have some consequence on design education and design research and on the future of the design profession.

On design schools curriculum:

– teaching New Product Development together with engineers and marketing schools

– teaching marketing both teaching fundamental marketing concepts such as market segmentation, quantitative market research and brand but also working with qualitative market research specialists in order to invent global verbal and visual consumer research tools in social sciences: psychology, sociology, ethnography etc.

– teaching innovation management models: above the necessity for design students to be aware of project management tools and total quality management issues it is important to know the key factors of success of innovation (Cooper) and to understand the sociological model of innovation

– teaching consumer databases (computer information systems) and knowledge management issues: design schools are organized on "one shot" projects, which does not facilitate a long term view, but a knowledge based innovation vision is what companies are looking for now and visual databases of brand universe and values are needed

Design Research is fundamental for designers to take "power over their profession". Design schools are best positioned to invent design research useful for design professionals and businesses. Some research directions driven by our model:

– design evaluation tools: measuring design impact on society and firm performance on a regular basis

– collaboration with research laboratories on sensorial metrics in colour, form issues in engineer new product development

– cooperation with market research laboratory specialized in consumer behaviour

– merging virtual reality models with customer preferences tests and conjoint analysis

Entrepreneurship or intrapreneurship? Can we draw a line between designers as entrepreneurs – as

managers of design consultancies – and designers as intrapreneurs – as managers of in house design departments. Is there a difference in the strategic role of design? Not really and this probably due to the background education of designers based on "one shot" projects and not on research.

At the present time designers as intrapreneurs are behaving like entrepreneurs. Just like managers of design consultancies they concentrate their efforts on the quality of the design process. But this is changing. Designers as intrapreneurs are likely to take power on other managerial issues such as the management of ideas and creativity, the improvement of customer relations and the emerging aesthetic management model or the "economics of aesthetics".

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Project: Myvatn Nature Baths, Iceland

A number of local entrepreneurs, including the designer have been working toward a realization of a project where visitors and locals can take steam baths, mud baths and visit a warm lagoon of residue hot water from a geothermal power plant.

1 The designer has to study precedents, both formal design issues and market environment

A similar venture exists in the south-west of Iceland. The Blue Lagoon bathing resort is close to the international airport in Keflavik. This is very popular and has successfully been able to introduce the beneficial qualities of minerals in the water. The Blue Lagoon provides bathing facilities in a man-made lagoon, while this new project will also take advantage of the steam coming out of the ground for steam-bathing. The new project will also have a lagoon where silica will form covering the bottom of the lake and its edges. The Blue Lagoon project is a great commercial success. It is now the most visited tourist attraction in Iceland.

2 Context: the designer has to be well aware of political and economical climate if he is take part in entrepreneurial projects

Migration inside Iceland has not been very different to many other European countries in that there has been a move to the urban areas from the countryside. In Iceland there is only one urban centre in the south-west where almost 70% of the nation lives. This area has grown in the later half of the 20th century. Earlier in that century the population had moved from the agricultural countryside to the smaller fishing villages that are scattered along most of the coastline. After that, people have been moving from those villages to the Reykjavik area. This move has been stimulated

Figure 1. Lake Myvatn, Nature Baths in Iceland.

by various factors, the main ones being concentration of higher education and governmental control of the fishing and increasing sophistication in fish processing that does not take place in the smaller villages.

Until recently, almost all business in Iceland was in fishing and industries related to it. It is not a good strategy to base an economy on one resource. Thus, the governmental policy has been in recent decades to support other businesses, especially by building large geo-thermal or hydroelectric power stations that sell the resulting power for the processing of raw materials like aluminium and alloys. The nation has been divided about this policy because it results in great environmental changes to the countryside that is world known for exceptional un-polluted nature. There is a strong opinion in the country that the resulting energy is not environmentally friendlier than energy that creates carbon dioxide. Furthermore, those that oppose this energy policy maintain that the processing of raw materials does not induce education; sophistication in technology except on a very limited scale and thus the nation will remain a community of workers with little education. Furthermore, this policy does not support to the need to create work for women. A large faction of the community wants to induce more environmentally friendly projects in conjunction with raising the level of education and increase the services for tourism that has been increasing during the recent decades. The Myvatn Nature Baths is a project that bases its promotion to the community on the assumption that it is such a project.

3 The designer often arrives at entrepreneurial projects because of local or specific knowledge

The designer had previously done proposals suggesting amendments to a harbour in an adjacent town, Husavik when tourism like whale watching started to become important there when whaling was banned worldwide. This town has a history of a large fishing industry that has declined because of modernization in fishing methods. The designer developed a project based on a concept of intimacy with the locality using traditional materials and methods with the aim that no one will realize that a designer has taken part in the development of the seafront. This work made the designer known to the community that realized the importance of involving a designer in the very early entrepreneurial stages of possible projects.

4 The designer has to study local conditions because it is there that entrepreneurial activity will take place

This project is for geothermal baths in Jardbadsholar (meaning: Earth Bath Hills) located in Myvatn, north-east Iceland. The location is one of the most exotic in Iceland and considered one of the wonders of the world. It is a laboratory of volcanology with regular eruptions. The Myvatn Lake and its surroundings is world famous for its ecology.

All over the Earth Bath Hills (an old local name) steam rises out of various fumaroles that are openings to very hot ground-water. A well-known lava crevice with warm water Grjotagja is in the vicinity but after a volcanic eruption in the eighties, the water in that has become too hot for bathing. Fumaroles in the hills have been used throughout history for steam bathing by locals, mostly by erecting tents over the fumaroles, holding them down by stones and thus making instant steam baths. Written accounts tell of steam baths in the hills, and close to the area, there are to be found circles of stones around some of the steam holes. The Myvatn area is much frequented by visitors and in the earlier stages, numerical statistics were obtained to gain ideas about possible numbers of visitors to a new bathing resort.

5 The designer has to take an active role from the beginning. The business team would have difficulty in bringing off such a project without his involvement because of the importance of the visionary concept that is held together by the design

The locals had been discussing possibilities of creating some form of steam baths and had started a procedure of investigations into the beneficial effects of the geo-thermal waters in the area. A small group of locals contacted the designer to discuss possibilities

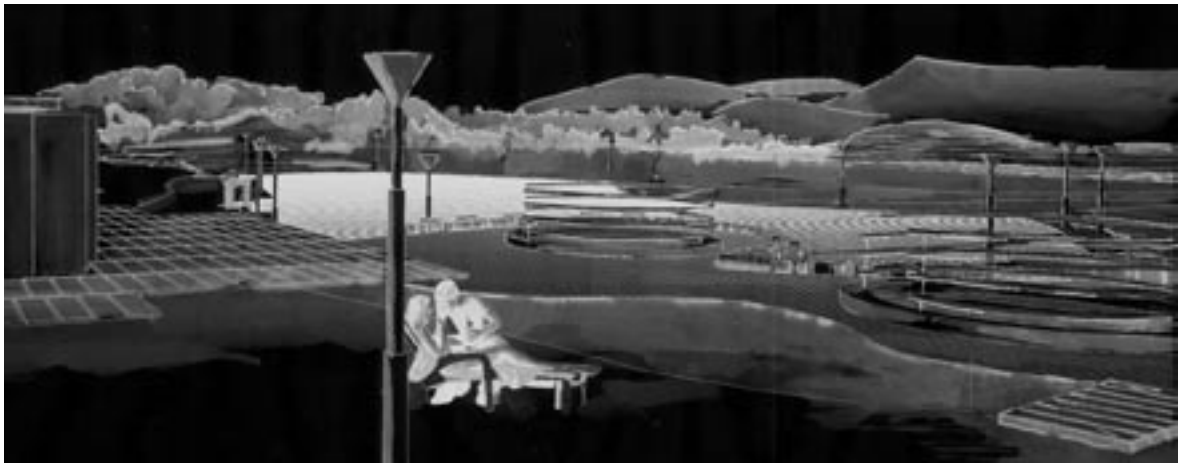

Figure 2. Myvatn Nature Paths image.

of development. These are the proprietor of the main hotel, one of the landowners and the owner of a whale-watching company. The idea is to support alternative tourism that would lengthen the very short tourist season of 6 weeks in the summer.

In the seventies, a geo-thermal power plant was built supplying silica industry and this plant creates a large quantity of residue hot water that has formed a lagoon that in some areas is warm enough to bathe in. This lagoon has been badly maintained and was never intended for bathing and is surrounded by roads and piping systems. The silica industry has been restrained because it is considered not possible to mine much more of silica from the lake. An agreement has been made between the government and locals that finance that has been generated from the silica farming should support local enterprises and the Myvatn Nature Baths received at an early stage some financial aid for a study and initial proposals. Furthermore, during the initial stages members of the entrepreneurial group including the designer had to take on financial responsibilities and work in the belief that when the project would be realized, the work would be financially rewarding.

Strong support has always come from members of the local and regional governing bodies. The Minister of Commerce and Industry has been supportive. She is a representative in the national parliament for this region. Last November she formally started the construction process on site with a small ceremony looked on by many locals and the media.

6 The designer must put forward a clear vision that will withstand various entrepreneurial forces during the process of realization

The theme of the design is to create a low-key project and not competing with the surrounding landscape. This is done with the use of traditional materials and colours and small buildings. There is an idea of celebrating the nature and seasonal changes in climate such as warm dry days during the summer and snow drift during winter. Steam will also play an important part in the presentation of the complex, floating out of various holes in the ground. The buildings and landscaping is to be made out of simple low technology materials. A number of timber structures and cladding techniques with corrugated metal sheeting or grass on roofs and homage is given to the local tradition by using dry-stone walls out of the lava rocks that prevail everywhere. The functions are placed in a number of small buildings so that no large building will dominate the landscape. This also makes the design adaptable to possible amendments and additions without apparent difference in expression in future buildings. Thus, the design is based on adaptability to different growth possibilities. This is important in an entrepreneurial setting.

An additional intention of the design concept is to give an impression of history referring to the local style in creating small mono-pitched timber houses common in the 20th century modernistic tradition in the countryside in Iceland. This way the complex

aims to achieve a sense of having grown out of the local conditions with some feeling that a dominating architect has not been involved.

7 A designer who takes an active entrepreneurial role in a project has to respond continuously with visionary conceptual drawings during the proposal period

During the initial stages, the designer decided to position the complex of buildings and the new small geothermal lagoon in gravel mines that had already damaged a certain area. Thus, the project became more viable through repairing land that has been already changed by man and thus gaining a favourable support from the community and environmentalists.

In the project, the involvement of the designer from the beginning was very important in the promotion of the concept because otherwise authorities and financiers would not have been able to envisage the proposals visually. Thus, images relating the atmosphere of the business were an integral part of the public relations exercise.

At early stages, financial consultants from the firm Deloitte and Touche made feasibility studies and cost analysis that was to be presented to possible investors. The first report that came out of that work was based on a brief done by the designer and included a number of images with design proposals and building cost analysis done by the designer. When the designer turned up with 16 images made from a 3d-computer model to the finance consultants, they immediately expressed the opinion that finding financiers for the project would become easier because of that material. Thus, designer involvement and visual communication of images became central to the promotion. This cannot be over-emphasized and should gain more prominence in design education. The Department of Design and Architecture at the Icelandic Academy of the Arts runs projects with a local business university where students from both schools do common projects. This is good experience for the design students and it promotes the idea for the business people of the future never to start projects without including a designer.

8 The designer has to be aware of social and eco-political issues and methodologies

Since the project is positioned in an area of sensitive ecology and natural beauty, the development period has taken four years. Adjustments had to be made to the master plan already developed for the local authority. In addition, an environmental evaluation procedure had to be done referring to a body of scientists in Myvatn Research Station. This is an ecological institute under the Icelandic Ministry for the Environment, and the Institute of Planning that has been specifically formed for this area because of the sensitive nature.

The design process has taken a long time because of various stages of evaluations and permits from authorities that had to be cleared. Possible main investors waited until the final planning permission was obtained in 2003, but after that, they soon decided to become involved.

9 The designer has to be able to understand the necessity of flexibility and the fast changing nature of entrepreneurship

It was necessary for the designer to be flexible and continuously update ideas whenever new data arrived from scientists and politicians. It is very important in a project of this nature for the designer to not become stuck with one fixed idea and look at new issues as tasks for new responses. The concept of the design has to be strong while at the same time flexible in its execution to accommodate the fluctuations in external pressures.

The designer had to take an active part in the environmental evaluation process by generating continuously new design proposals. Sometimes, he had to move the location of the project, reorganize the building cluster while not loosing the initial idea of the project being intimate and low technology. Images were generated continuously including both legal and actual maps with dimensions and proposed norms and emotional images of possibilities when the legal process would be over. This was important to keep the enthusiastic momentum in the group and at the same time make it recognized in the community

and make sure that possible future investors would be aware that the work was proceeding in the right direction.

When the production process at last starts, an entrepreneurial designer is fully aware of all issues. This is very good for the period of execution because the designer understands cost and political issues and can take a full role in sticking to initial financial planning and response to possible fluctuations in funding. In the project when construction started on site, new problems arose and modifications had to be made continually. The lagoon shape had to be modified a few times and an interesting problem arose when a new steam fumarole opened in the middle of the lagoon. The designer had to respond to this and change the clustering of buildings and routes on site. A designer, who is involved from the beginning, is more sympathetic and responsible during this period than a designer that is brought in at a later stage with a more closed design vision.

10 The designer should be involved in all the marketing factors in entrepreneurial projects – not only his specific field

The design of the logo (figure 3) has been based on the same premises as the total concept of the project. The designer was involved with the graphic designer when she used local natural colours and a pictorial approach that is not too flashy, but rather low-key. This is used to convey simplicity in culture and to achieve a first impression for potential visitors from far away that have no knowledge of the company. The same applies to the use of the name of Lake Myvatn in the descriptive name-giving of the company since that is one of the better know and promoted places in Iceland.

The designer was also involved in continuous creation of promotion material, using his design concept for printed material and placards such as those used when the minister started the project in front of the media. His images were published in the news of that event. The designer has to be involved in this and is not a provider of just technical information about how to make the buildings.

11 When the designer has been involved from the beginning, he has a clear understanding of cost implications in decision-making and authority because of accumulated knowledge of the project

The project is under construction, the lagoon and much of landscaping has already been formed. The project drawings for the buildings have mostly been made. Some are built and some are going through tender. The opening date of the complex is scheduled on the 29th May 2004.

The future of the business venture will be tested over the summer of 2004 although the entrepreneurs do have strong data that it will be a success. It is more a question how fast or slow it will grow. The designer has developed the project on those terms so that the Myvatn Nature Baths should never look unfinished while additions will fit in with the current project.

Figure 3. Myvatn Nature Baths logo.

The development plan done by the designer and accepted by the local government includes various further possibilities such as a health centre, hotel and sports spa, plus great scope for expansion of the first activities. The project will always be a cluster of small buildings scattered over the pre-existing gravel mines that are being re-landscaped.

12 The design schools have to increase their involvement in entrepreneurial methodologies

It is very important to run projects in design schools that have to do with entrepreneurial matters since ever greater part of design work is influenced by marketing issues. Today, an understanding of the economic and social culture is central to the role of the designer. He is no longer a creator of form only, a generator of objects that people receive from him when he hands it down from the heights of his specialty. Now designers are group players and the design academia has to recognize this. Furthermore, it is extremely important for the design community to educate the business community to use designers. They should understand that designers should be involved in business ventures from the first moments and this can best be done in the academic institutions through project work where members of both groups have to work together. This is the reality of the present society and many design academies have not yet realized their responsibilities in this.

What is to be learnt from this?

1. The designer has to study precedents, both formal design issues and market environment.
2. Context: the designer has to be well aware of political and economical climate if he is take part in entrepreneurial projects.
3. The designer often arrives at entrepreneurial projects because of local or specific knowledge.
4. The designer has to study local conditions because it is there that entrepreneurial activity will take place.
5. The designer has to take an active role from the beginning. The business team would have difficulty in bringing off such a project without his involvement because of the importance of the visionary concept that is held together by the design.
6. The designer must put forward a clear vision that will withstand various entrepreneurial forces during the process of realization.
7. A designer who takes an active entrepreneurial role in a project has to respond continuously with visionary conceptual drawings during the proposal period.
8. The designer has to be aware of social and eco-political issues and methodologies.
9. The designer has to be able to understand the necessity of flexibility and the fast changing nature of entrepreneurship.
10. The designer should be involved in all the marketing factors in entrepreneurial projects – not only his specific field.
11. When the designer has been involved from the beginning, he has clear understanding of cost implications in decision-making and authority because of accumulated knowledge of the project.
12. The design schools have to increase their involvement in entrepreneurial methodologies.

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Designers as Entrepreneurs – a Norwegian Perspective

After the oil runs out: the case for a strong Norwegian design enterprise culture

Abstract

Traditionally the designer was only used for the styling of a product and not allowed to become an equal partner in the project. The entrepreneur decided what to do and the designer was only meant to give form to a pre-defined idea. Designers are now not only artists they are also technicians who are able to sum up concepts and envisage the whole picture.

Norway is a high cost country; therefore trying to compete with other countries on price is pointless. Norway's indigenous industries must realise that without a characteristic design ethos and distinctive goods and services the future holds nothing more than a return to a low cost, low value economy.

1 The state of Norwegian industry

1.1 Introduction

Global competition in the market is threatening the ability of Norwegian industry to produce and retail innovative contemporary solutions with equal-quality, using cheaper manufacturing methods. Norway is a high cost country and the ability of its industry to compete on price is problematic. Many of Norwegian businesses have gone bankrupt by not adapting their process and product(s) to the fast growing competition of other countries. Some businesses have already moved overseas due to high staff costs and low sales in Norway itself. A notable example of this is the transfer to China of the production of fishnets and related tools, originally made by REFA of Troms Country.

Researchers note that average Norwegian salaries have doubled over the past 20 years while savings rates also are up. Average annual pay amounted to NOK 320,000 last year, which is equivalent to USD 45,000 or GBP 27,000. Normal wages for an unqualified job, like working in a supermarket, in Norway is approximately £8.50 pr hour in contrast to £4.50 in the UK. For the third year in a row, the United Nations' Development Program has ranked Norway as having the best standard of living in the world. This is based on of the high levels of education, pay and life expectancy. Norway is one of the richest countries in the world due to the offshore industry (petroleum). It is also the most expensive one, because of high taxes and duties (welfare state). It has been suggested that an economy based on exporting raw materials and service industries (telecommunication, real-estate agencies, beauty salons etc.) is an option for the future. However, resources will run out eventually and Norwegian wealth cannot only depend on service industry to keep up the high standard of living in the nation. Norwegian industry and government have been agreeing to adapt to industry on land for the past 35 years, but now the situation is more or less in the same as it was originally. Clearly, a change in perspective is needed.

Figure 1.

It is argued here that change will come about when sceptical industry realises the value of modern design practices. The potential of modern design practices may be found within the economic and political structures of Norway.

1.2 Norwegian economy and politics

The Norwegian economy is a successful defender of welfare capitalism, featuring a permutation of free market activity and government intervention. The government controls key areas, such as the vital petroleum sector, through large-scale state enterprises. Norway is gifted with natural resources – petroleum, hydropower, fish, forests, and minerals. In 1999, oil and gas accounted for 35% of exports. Norway is only exceeded by Saudi Arabia and Russia in this respect. Norwegians chose to stay out of the EU during referendum both in 1972 and again in November 1994. Growth picked up in 2000 to 2.7%, compared with 0.8% in 1999, but fell back to 1.3% in 2001. High oil prices helped the economy in 2002 in face of the slow world economy. With the highest quality of life worldwide, Norwegians are still concerned that the oil and gas reserves will begin to dry up. Consequently, Norway has been saving its oil-boosted budget surplus in a Government Petroleum Fund, which is invested abroad and now is valued at more than GBP 70,4 billions.[1]

1.3 Difference between Norway and other Scandinavian countries

It has been suggested (J. E Roland, 2004) that of all the Scandinavian countries, Norway is the richest in natural resources. Other Scandinavian countries have had to create new ways (innovation) of making the most of their resources (processing), Norway has found it unnecessary to do so, until recently.

Norwegian onshore industry is approximately 20–30 years behind the neighbouring Scandinavian countries (Volvo, Ikea, Nokia, Bang & Olufsen, Iittala & Tuborg) when it comes to high quality design products (figure 2) and marketing, in contrast to the development and high technology in

Figure 2. Product design from Bang & Olufsen, Nokia, Ikea and Iittala.

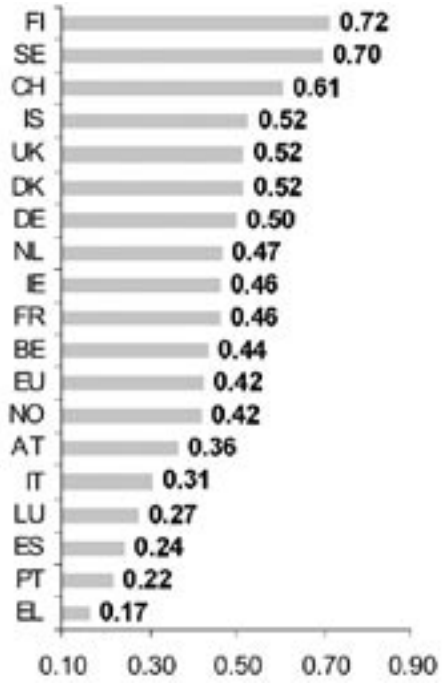

Figure 3. European Innovation Scoreboard 2003 Summary Innovation Index
– Finland and Sweden are confirmed as the European Innovation leaders, while Iceland and Denmark are in 4th and 6th place respectively.
– Norway finds itself in 13th place.
– Spain, Portugal and Greece show the weakest innovation performance. [2]

1 Europe, Norway, economy [Online].
2 Chart 2004 [Online].

Norwegian offshore industry which is the best in the world and is an important export commodity. The Swedish government is in 2004 investing nearly GBP 8.5 million over a 3-year-period to enhance design awareness in the public, with a view to supporting its national design. Denmark did the same in 1997, while Finland has done it continuously over the last decades. Even though, Norway is the country that needs it most, its government has not put aside any substantial amount of money in the same way.

From a design point of view looking at the Scandinavian design history, Norway's contribution has been a minimum. Whilst Denmark, Sweden and Finland have a rich design history and great names that are known all over the world, Norway has practically none. There is now a great need for support of design innovation in Norway, so that this imbalance can be rectified. The potential lack of future resources should provide the stimulus for this support. (figure 3)

2 Design in Norwegian industry

2.1 Use of design in industry

While some companies have recognised the value of design as a part of the innovation process, some only bring in the designer to give form to a pre-defined idea. Some manufacturers think that a good idea is enough for a product to be successful, that design will ruin the functionality of the product, and that design will make the product more expensive, and therefore, less attractive for the consumers. The truth is that bringing in a designer through the whole process, involved in the product development, through environmental or ecological efficiency[3] discussions, through production methods, functions, user friendliness and ergonomic aspects, including the form, will make, in most cases, the product and company more competitive and sustainable in both local and global aspect. Government and industry leaders as a whole know this. The problem is to convince every company to realise that design might make the product cheaper to produce, improve its quality, and make more desirable for the consumers. The Norwegian Industrial and Regional Investment Fund has been doing their part to help open new design firms with both financial support and training in business management. Norway's leading design organisations, Norsk Form and the Norwegian Design Council, are also working to enhance knowledge about design and architecture among the general public and business leaders. Still, the impression the media and the average average person has of design is that it is basically styling and that it is for a style-conscious elite.

A recent (2003) investigation carried out for the Norwegian Design Council shows that 41% of business leaders in Norway have never used a professional designer. It is not satisfying, but it is progress in the right direction. In February 2001, the Minister of Trade and Industry, Grete Knudsen, said that only 25 per cent of Norwegian companies emphasise design. Which means 75% did not.[4] This might be due to an undertone of Norwegian tradition, where historically the designer was only used for the styling of a product and not allowed to become an equal partner in the project. A designer today is no longer just an artist, but also a technician that is able to sum up concepts and envisage the whole picture.

Figure 4. Leonardo da Vinci's drawings.

3 Ecological efficiency is defined by WBCSD, World Business Council of Sustainable Development, as business, which is competitive on price and at the same time reduces ecological strain and use of resources to a minimum in line with the earths ability (WBCSD,2000) Eco-efficiency could be narrowed down to creating great value per unit of ecological strain.

4 Knudsen 2001.

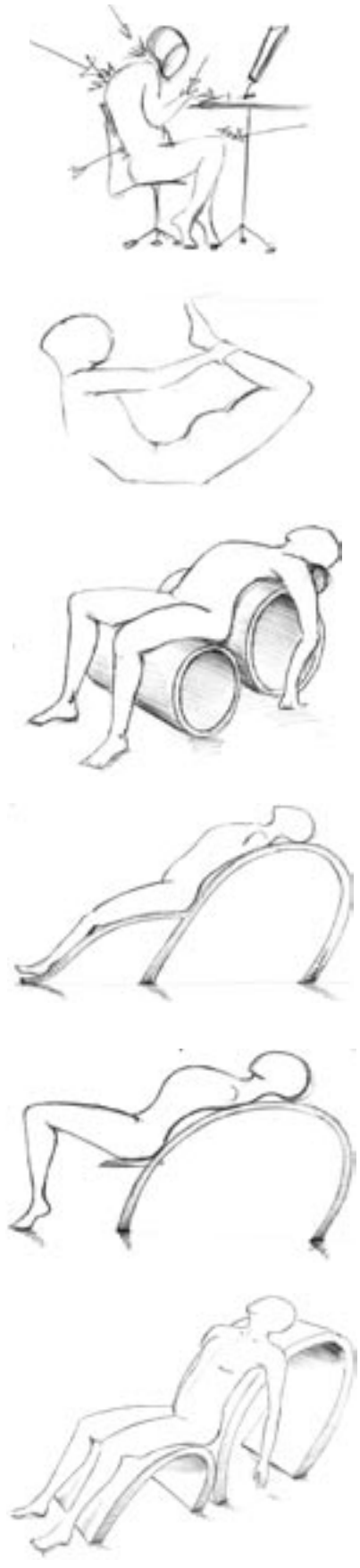

Figure 5.

2.2 Design as an innovation and competitive tool

An analysis preformed by the STEP group in 1996 for the Norwegian Design Council on "Design and innovation in Norwegian industry" concludes that firms who invest in design have superior performance than firms who do not:

– They spend more on innovation as a whole and place a higher value on innovative objectives.
– They generate a significantly higher proportion of their sales from new and technically improved products.
– They seem to be more profitable in general.

The study strongly suggests that design capabilities are of great importance for both the innovation performance and the competitiveness of Norwegian firms. There is no question that Norwegian industry would benefit from using designers in their developing process and for counselling in different matters.

In the mid 90's the word design was everywhere, everyone did something related to design, or thought they did. It was a hip word to use in presentations or to impress someone on a night out. If you ask an industry manager about design, you probably will get an answer where he or she describes the form and colour of their product, but the term involves so much more, as was described above. Today the word to use is "Innovation". It is ubiquitous in the media. Everyone is talking about it, newspapers and politicians, without really knowing what it is. Maybe there is hope that a revolution in Norwegian industry is on the horizon.

2.3 Communication between designer and industry

As mentioned before Norway has the best and most advanced petroleum technology in the world. Why has this sector of industry had the chance to flourish, and not the others? The answer to this is as simple as money – investment, innovation, problem solving, and the government. Since the government has had control over this important industry for so long, internal competence and knowledge has been exploited in

the most efficient way, which is very positive, but at the cost of neglecting onshore industries.

Norwegian industry's main obstacle to progress is communication. More and more businesses realise that to survive they have to get some sort of help. In this respect, most Norwegians think about financial support. However, to get that you have to have an idea or a concept that interests the investor. This is where design makes its entry, normally, but if the designers are in a totally different part of the country, like in for instance central Oslo instead of being where the action is taking place, in the districts of Norway, it would seem more intimidating to the management to employ them. We have to be honest enough to admit that industry in Norway today is driven by traditional men, who rarely make any changes, and when they do, it has to seem safe. Designers in Oslo are complaining about the lack of understanding from industry, and the lack of job opportunities, while on the other hand, industry is pondering where to turn. The government, industry and designers have to find a language that is understood by everyone.

One example of how this opportunity deficit is being addressed is by locating new businesses in the regions. By locating out of Oslo County designers find themselves closer to potential clients. For example, "GULBERG Produktdesign" settled in Kongsvinger, two and a half hours from Oslo by train. The two partners of the firm, Ida Huse Gulbrandsen (special competence; metal) and Teresa Bergerud (special competence; wood), both from Hedmark County, realised while doing their BA degrees in product design last year, that their district is packed with industries using wood, glass, steel and aluminium, but with no distributors of design services. Instead of moving to Oslo to search for a job, they decided to establish the first design firm in the county. While they were working on their BA, they also did a course in business management, and before they had completed their degrees, they won their first four design contracts. It seems that the only thing they had to do was to be available, geographical speaking. The key to their initial success was their approachability. The first year (since September 2003), they had a turnover of GBP 5,000. So far this year they have projects worth nearly GBP 30,000, while the aim for the whole year is GBP 50,000. By 2006, they expect to make a profit out of the business.

3 Proposed solution & conclusion

The Norwegian Government talks and talks about innovation and design as the need for the future, but no substantial amount of money is being set aside for it. Instead of investing the Government Petroleum Fund abroad, a new national investment strategy is needed. A strategy based upon the creation of knowledge based economy to promote the development of indigenous Norwegian industry. Because, eventually, there will be a new revolution in the way we work and generate wealth, there has to be a strong commitment to innovate, or else the welfare state in Norway, as we know it, will decline. Trying to quantify design value to a sceptical industry is going to be hard, but if something is going to be done, there has to be some compromising.

Figure 6.
Mikkel Rev Griffetavle, design by GULBERG Produktdesign for Rauhella AS. The children's song, "Mikkel Rev", about a fox writing so much on his blackboard that it broke, inspires this blackboard for children.

As there are hundreds of design students graduating every year in Norway, there would not be a problem to send them out to different small and big companies for a trial period. Using Government money to support the training, there would be little risk to the company, and yet the potential value of design in the company's activities could be tested.

Contemporary evidence suggests designers must realise that just staying in the capital talking about the poor industry in the district that does not understand the importance of design, is not helping. Instead, we should approach them on their own turf and try to prove our worth.

Of course, this is a solution that sounds too simple, but how difficult could it be? Norwegian industry needs innovation, creativity and design to survive, and designers need work. Norwegian designers have an excellent opportunity to create a new era of Norwegian design, since they do not have the same proud design history as the rest of Scandinavia. This lack of design heritage may be seen as an advantage. Young Norwegian designers have the opportunity to create their own philosophy and design language free of any historical "baggage". The future challenge for Norwegian designers and industry is to create a new partnership and develop a unique and distinctive Norsk Design Language.

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The True Spirit of Entrepreneurship: Tolerance for Failure and the Belief in Success

Two design students experience from the Valley of Entrepreneurship, San Francisco, USA

Introduction

Entrepreneurship is the highest form of business. It's the only place where you in one week work equally with economy, law, marketing, sales, customers, contractors, research, technology development and human resources.

From our experience when participating at The Norwegian School Entrepreneurship 2003, Silicon Valley, we will focus on the relation between design, entrepreneurship and society. Our story is based on what we learned and experienced during lessons, working in high tech start-ups, and writing business plans.

The Norwegian School of Entrepreneurship (NSE) is a program to increase value generation from research-based start-ups at institutions of higher learning. The program offers students the change to first handed experience entrepreneurship at one of four destinations. The program lasts approximately a semester and is lectured each spring and summer. The program consists of three parts:

1. pre-course which aims at educating the students in the basics of starting a high-tech venture
2. intensive three month program of internship and lectures abroad
3. concluding seminar where new knowledge is adapted to conditions at home

Silicon Valley – a state of mind

Silicon Valley has long been the capital of high tech start-ups, since the birth of the semi conductor to the growth of big companies like Microsoft, Intel and Google. It is not really a valley in Norwegian scale, but the rapid expansion of the semiconductor (system -) industry in the sixties deeply reshaped the region's electronics manufacturing complex. It transformed an industrial district dominated by tube manufacturing into the "Valley of Silicon", as the area became referred to increasingly in the early and mid-1970s. The "Valley" is located close to San Francisco and San Jose, and contributes heavily to the GDP of the state of California – that is 25% of the total GDP for the USA. Silicon Valley companies have developed and commercialized some of the most important electronics and biomedical technologies in the second half of the twentieth century, and the Valley is still one of the most rapidly growing regions regarding technology innovation.

The Internship, CEO, COO, CTO... CIDO!

The Norwegian Trade Council (NTC) and the Norwegian School of Entrepreneurship (NSE) arranged for the class to attend a fair number of company presentations in Silicon Valley. 70–80% of the companies are searching for students with software, hardware or biotech qualifications. Only two companies were already using industrial designers in their product development. The challenge was to recognise the need of industrial design competence in other aspects of the product development than the physical design and use this in securing interviews and jobs. As Industrial design students, we sold ourselves into companies where we seemingly did not have any business. It is easy with our educational background to believe that we are into creating the physical product only, with the correct textures and

the great feel, for the end customer. The truth is that with our background we could attack the product development from many different angles and fill an empty position within a multi disciplinary team. We were not yet ready to challenge the empty space of the absent CIDO; Chief Industrial Design Officer.

Lectures and writing the business case

According to Professor John Nesheim, the business plans purpose is To Get Funded. The business plan is a documentation of the company's distinctive competence, the company's competitive advantage, and the management's plans to sustain that advantage. Doing the business plans, we experienced the value of working in multidisciplinary teams consisting of top students form different disciplines; law, economics, engineering, marketing, medicine, agriculture and industrial design. Together we created visions that seemed impossible from our current situation of resources and knowledge. WE BUILT WINNING TEAMS! The combination of working in a start-up company, writing a business plan and being lectured on the theme have prepared us on creating our own business.

Nisvara Inc

Nisvara Inc is a start-up in the hardware business; they are into making silent computers with no EMI-radiation and concentrated heat emission. Nisvara technology solves the computer industry's heat problem with a new system-level approach that requires no internal fans and no airflow for heat removal. The Nisvara Thermal Management System can remove more heat from the system than the best internal-fan-based airflow solutions. Taking away the fans, and cooling the computers with point source technology, they removed the most frequently cause of computer failure, which means that big companies could reduce their total cost of ownership considerably. Nisvara was in the early beginning of their business, and had done a lot of things right. They had a brilliant team, they where self-financing the first round of product development and had created a proof of concept and a second prototype of their computer. They had created an invaluable link with NASA product development and supercomputer team – patents arepending on their technology and they owned the rights to a "hyper-wall" (49 flat screens for simulations, run by a supercomputer) technology that was initially developed by NASA. They focused on the technology foremost, but acknowledged the need for industrial design competence. Nisvara worked with a great list of unfair competitive advantages.

The Nisvara technology creates a new generation computing for the music industry and home environment systems. Harrison, the CEO of the company, with a career from Apple and Sony, knew that for to succeed they needed to implement industrial design in the process. Their product needed the right look and feel to be accepted into the home environment and home entertainment marked. The internship at Nisvara gave a taste of the high tech start up business. A lot of the job was done in haste. They were already too late and needed the stuff yesterday. The work was mainly to develop concepts on daily basis, so they could send to their partners and use in presentations showing their capabilities. Design was used at this point to show the added value for the customer extending the technology itself, looking cool and emphasizing the innovative features of Nisvara's technology.

BioCardia Inc

BioCardia Inc is a medical device company developing platform technologies and products for improving cardiac care. BioCardia's first products are being used in preclinical studies today for local intramyocardial delivery. Moreover, they continue to develop new catheter system for interventional cardiology. Their mission statement remains to enable the advances of therapeutic companies to treat patients with safe and efficient local delivery in a routine clinical setting. BioCardia has a highly professional team and the engineers at BioCardia focus on the quality of the design on their products and the ease of use, which enables the development of a broad variety of local therapeutic strategies to treat disease. Filing patents is an important and strategic way to secure value and ownership to the technology for licensing to other companies, develop products and establish new companies. Peter Altman, the CEO at BioCardia, is named inventor in 25 US

patents. He was also the founding CEO for three other companies: Expression Diagnostics Inc, XDX Inc. and Sinus Rhythm Technologies, Inc, and has raised more than $20 million for California based life sciences companies.

At BioCardia the internship was mainly based on designing the next generation catheter system to enhance the implantation procedure for cardiac re-synchronization therapy. This project included interviewing physicians, attending surgical procedures, developing three dimensional engineering computer models, participating in corporate negotiations for strategic partnering around this product, and making marketing materials for venture capitalists – all this in three months. Working with the great team at BioCardia gave me valuable experience and learning. In addition, their enthusiasm on their business, their infectious good spirits, and friendly stance towards each other inspired me even more – it was fun doing and learning business at BioCardia!

The unfair advantage – the recipe you need to succeed

To succeed in the era of start-up business, your company needs distinctive resources and competition proficiency. Optimistic naivety when building a new enterprise is dangerous; newness is not enough. Being the first to educate the world about the new market leads to quick but short-lived fame; be aware the followers will get it right. They will end up dominating the new markets and IPO charts. First mover is not always an advantage. Some companies operate within the me-too expression, meaning companies replicating, but cheaper, faster, better. These companies do not distinguish themselves from the crowd of newcomers. To succeed in building an enterprise you need to have your own recipe; one that is unique for your company only, and cannot be copied. It is called a sustainable competitive advantage and/or unique competitive advantage, like grandma's recipe. In his new book, *Unfair Advantage* (2004), John Nesheim describes unfair advantage like this: "Unfair Advantage is a unique, consistent difference in product attributes and services arising from a company capability gap based on delivering superior value over long periods of time to the customer".

The GREAT Team

Regarding to the VCs (Venture Capitalists), the most important and critical factor for success is the team. It is the team you want to put your money on, not the idea. As long as the team cannot carry out the Business, there is no business. No other business can offer the same true multidisciplinary groups with complete expertise as a high tech start up. The GREAT Team must have the ability to work together professionally as well as socially, because all good forces do not necessarily pull in the same direction.

The designer vs. the business entrepreneur

Designers are into creating the perfect product, while the entrepreneur focus on bringing the idea to business, hence designers as entrepreneurs must have the ability to see the business; the importance of network, work with people that are better in other areas than you, bringing creativity and dynamic into the team and together build a world class business.

The value of building and maintaining a network

It is vital to have an established network in relation to build a start-up company. In the Valley, there are world champions in creating and maintaining networks. Organised networking exists and is often used to meet like-minded people, in order to establish valuable contacts. We participated in several of these meetings, and got hands-on experience in how to behave and not behave. Making contacts is not about dealing business cards and have a whole book of them after a meeting. Establishing contacts is about going home with two or three valuable contacts, and they will remember you and your company, not your business card. What comes in mind as well was the entrepreneurial mindset in seeing the value of sharing their network with others. They pass on their contacts to help others; success would create fertile conditions for all parts and the growth of a healthy entrepreneurship culture. Even at the University, the students were encouraged to start their own business, or participate in a start-up company during education.

As NSE alumni, we see the importance of education institutions creating and arranging a culture of entrepreneurship based on their profession. Traditionally Universities and Academies have educated students to be employees, from now on, they should also work on establishing a culture of entrepreneurship, and visualise the actual conditions and opportunities that exists, starting from today. This involves preparing and stimulating the students to see other possibilities within their special field, and on this basis prepare them to be able to establish and manage their own business. The future entrepreneurs share knowledge, and work together; it is a win-win situation. We were surprised by people's willingness to help and if they could not, they always knew somebody who could.

It can be scary to present an idea, but within certain limits, one should test an idea and get valuable knowledge from experienced entrepreneurs. The worst thing that can happen is that they tell the idea doesn't have potential, and that will save time and effort developing something that wouldn't succeed. The next worst thing is that they would say that your idea really has potential, and they would give you valuable advice and support, and arrange meetings with people that would help you succeed with your business idea. We were surprised on how "easy" it was to get a meeting, and how willingly successful and serial entrepreneurs listened to us young entrepreneurs. *"The future entrepreneurs share knowledge."*

The elevator pitch

In the Valley there is a saying that if you cannot sell your idea standing in the elevator going from 1st floor to the 3rd you cannot sell our idea, hence the elevator pitch. In the USA, there are immense opportunities for networking and meeting important people with skills and/or money that you need. Most important, you will not always know when you will meet them. Therefore, to exploit all the opportunities you will have to learn how to present and sell your idea anytime, anyway, on not much more that thirty seconds to a minute at the maximum. Imagine: what do you do if you suddenly meet someone that is important for your company's success, in the middle of nowhere? Keep your pitch prepared. In seconds, you have to capture that person's interest in what you are doing, and hopefully, you win a second meeting.

The meeting

Impression is everything – we learned some valuable tricks on how you practically appear during a meeting, and how you can "give the truth a touch" to give a good impression of the company. It seems a bit banal, but where you place yourself around the table could be central when you are in a discussion about a co-operation between to companies. Partners from the respected companies do not sit on opposite sides of the table, as if in a hearing they mingle. When a small start-up company is in discussion on a joint venture agreement with a large company, you give an impression that you are a bit larger than you are. So when you get the question on how large the start-up is, the answer is not six, but less than twenty.

The VC presentation

Presenting your ideas is an art, selling instead of presenting, talking business instead of product. Nisvara made some common mistakes, even though the team members were old in this game. The slides were not good, the disposition was not good, and they did as most entrepreneurs do: they used too much time focusing on their great idea instead of their business, unfair advantage and time to market.

Designers as sellers – give them an offer they cannot refuse

It is all about selling, whether you sell your idea as a designer within a company or as an entrepreneur to a potential investor. Peter Altman, CEO at BioCardia Inc. is a world-class pitcher and seller. To be a good seller and pitcher, you really have to know whom you are addressing and what is their reason to buy. BioCardia was in corporate negotiations for strategic partnering regarding their next generation catheter system to improve the implantation procedure for cardiac resynchronization therapy. Peter knew exactly how to manage the presentation in order to achieve what was in the best interest of his company. The brilliant move was to make the other company believe that they had gained exactly what they were after. To

achieve this, Peter had done his homework: a careful preliminary study and figured out which resource base the company X needed to develop a next generation catheter system. BioCardia had filed all the patents that secured their ownership to the development of this product, so the company X was unable to do it without BioCardia. Peter Altman, CEO of BioCardia is an excellent patent filer as well. He also referred to one of company X's competitors that recently had concluded an agreement on a co-operation with a smaller company on a similar product. Company X and BioCardia could cooperate on this development and outmanoeuvre the competitors in being first to market. Peter went for a win-win situation, and gave the other company an opportunity they could not refuse.

Think big

A general observation and experience from the Valley is the mentality of thinking big. The experience of "thinking big", helped us discover new opportunities. In the Valley, the general view on thinking big, both from outside and inside of a start-up company differs from earlier start up experience. Generally, we consider our marked nationally to control a company, but this prevents global expansion in the end. *"Something happens to you when you drive past Sun, Google, Microsoft and others, on your way to work."*

The mentality – tolerance for failure and the belief in success.

It does not hurt to ask or try; the worst that can happen is that you get exactly what you want. When doing a start up, one thing leads to the other and it is easy to get lost in all the opportunities. The most important word for the entrepreneur is no – focusing on the right thing, and focus on one thing only, is often the problem. In the Valley the main source for inspiration, knowledge and experience is the mentality inbred in their culture and heritage.

Experience and defeat are two very different things. In the USA, you have a great respect for those who try, while in Norway you have a great respect for those who succeed. Failing is a value adding process, which should order to attend a bigger acceptance for failure. In the Valley, we experienced that it was usual to have a numbers of bankruptcies behind you, before you really made it, and there was room for new retries. If you fail, you have gained experience for your next retry; failing is valuable learning and can strengthen your reputation. "You won't make the same mistake twice".

The culture of entrepreneurship in the Valley cannot be copied, but a culture of entrepreneurship in Norway can be established. Believe in the story, in the team, in the product and in the business. Believe in success and in the competence of the people you are working with.

Thanks

Co-students from: UIB, UIO, NHH, BI, NTNU, NLH, UIT, AHO, Norway; The Norwegian School of entrepreneurship NSE, Norway; The Norwegian Trade Council NTC, San Francisco USA; The University of Oslo, Norway; Cornell University, New York; Innovation Norway; Oslo School of Architecture AHO, Norway; Professor John L Nesheim, Cornell University New York; Are Gjelland, Special Advisor, NTC, San Francisco; Harrison Rose and Nisvara Inc, San Francisco USA; Peter Altman and BioCardia Inc, San Francisco USA,

For the hardest working, most labour-intensive, exciting, instructive and inspiring summer ever!

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RECOMMENDED READINGS ON THE SUBJECT

Bruce, M. and Bessant J. *Design in Business.* (Strategic innovation through design)
Dollinger M.J. 2003, *Entrepreneurship, Strategies and Recourses,* 3rd edn.
Nesheim, J.L. 1997, *High Tech Start Up.* (The complete handbook for creating successful high tech companies)
Nesheim, J.L. 2004, *Competitive Advantage.* (It reveals the secret that made new enterprises in Silicon Valley so successful)
Ries A. and Trout J. 1986, *Marketing Warfare.* (A guide to outmanoeuvre your competition)

Design, Ethics and Humanism

Why Design offers a great opportunity to companies to work on their "Ethics"

Design is "in fashion", "in fashion" for companies convinced that creation and innovation are key factors for their future development. Managers evoke strategy in terms of forecasts, concepts and possible futures. They become transversally organised around projects, they align themselves with ideas concerned with what the future will bring. They have the willingness to "make our world brighter", more beautiful and more "design" than today – and of course more profitable.

Design has become a key factor for all outstanding and on-the-cutting edge companies; Design is at the service of companies.

But what remains of Design, of this humanitarian discipline, which stems from Applied Arts? What is left of "the human dimension and aesthetic values inherent in ancient craft production [1]?"

Why is it necessary today to bring to mind how Design has been defined? As if we need to be reassured about the intentions of design, its merits and objectives?

In terms of Design being a creative discipline, it would be vain to negate the link of Design and Humanism. Design has its foundations in the humanist visions of Renaissance artists and philosophers. Design is Humanism. Creation in itself implies a result, which at least for its creator embodies either progress or pleasure. It defends the good against the bad. Creation is ethical as it is undertaken to give birth to something "better" in regard to the moral intentions of its creator. In addition, even if the creation in itself would evoke the devil and downfall of humanity, it would nevertheless procure its creator with a sense of pleasure. Even the devil has a morality as he legitimates "the Good".

However, although its merits as a creative discipline and its intentions are unquestionable, its "marriage" with Economics remains more controversial. Design increases sales and boosts companies with regard to added value and profit. Is it hence moral to use design to make products? Products are perceived by some of us as being more and more futile, more and more attractive, packaged with beautiful images and sophisticated graphics – all of these being at the service of companies and their profits.... The designer, is he therefore serving creation or capital, progress or profit?

My approach consists of three parts:

1. In what way does Design embody a Humanist approach?
2. Design and Ethics
3. Design, an industrial and marketing discipline

Can we evoke Ethics and Design when a designed object assists in producing and selling more?

I shall conclude with the economic opportunity of Design to contribute to an economic conscience.

What is design about, what is a designer? Let me illustrate it with this small fable:

"A long time ago, three of my great grandfathers were stone smiths: The first one said: "What I do is,…. I hit the graver with my hammer. For my whole life, I have had sore hands…." The second added, "I cut my stones the way I have learnt to do it, I go along with its outline, its vibration, if my stone is beautiful, I am happy…." The third one said, "What I do is,.... I look at the stone, I look at the graver and the hammer." He takes two steps back and while lifting his eyes to

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1 Jocelyne Lebouf, Director of Studies at the Ecole de Design Nantes Atlantique.

the sky he continues with excitement "…Me, I shall build a cathedral with its bells reaching right into the sky." The last one who spoke was a designer: he had a project, tools and he thought that with reaching the sky he would not only satisfy himself but also assure happiness for the others.

1 In what way does Design embody Humanism?

Humanism is a world vision where everything revolves around Mankind, contrary to former Western visions where everything evolved around God. This philosophy gained momentum during the Renaissance, especially with Thomas Moore[2] at the beginning of the 16th century – a philosopher, theologian and English politician, an ardent protestant. By opposing himself to traditional theologians who made the world evolve around God, he adopted and added to Protagoras sayings that (Platon – le Protagoras – dialogues with Socrates): "Mankind is the measure of everything and the source of all light". His most famous work "The Utopia" is a revelation of an imaginary world, created and run by mankind. It depicts a kind of perfect world. It evokes on the one hand an idealistic yet impossible allegory, which is nevertheless precise enough for us to project ourselves into it. This vision consists of perceiving humankind as being able to conceptualise and create the absolute, a perfect all empowering love. This vision varies from Christian theories claiming that all happiness can only stem from the God All-Mighty.

Later on, Humanism moved away from theological and Christian references and became, especially with Kant, a general life concept (political, economical and ethically) based on the belief of "man being saved by his own efforts only".

"Up to the present, philosophers have been busy interpreting the world, what counts though is to transform it."

This is a challenge. Humanism became a real doctrine in the 19th century. It is up to humanity to transform this world and make it better. At the beginning of the 19th century, especially after the industrial revolution, which considerably modified social order and questioned all moral values, humanists asked themselves the question and answered them in their own ways. As Thomas Moore writes in his *Utopia*: "Yes, we need to transform the world – but which form should we give to it?" In a nutshell, this sums up the dilemma of a designer: the need to transform the world and make it a better place, to transform our surroundings and make them more beautiful, more useful and more functional.

2 Design and Ethics

Whether we examine the work of a designer from a philosophical or technical angle, we are obliged to recognize that it is a specifically human activity based on a moral, intuitive or reasonable approach with regards to progress. Designers project themselves into the future; they create their "Utopian island". This activity demands a thought process, reflection and conscience of that which is and that which it will become. It induces pleasure, in the sense that the designer remains conscious of that which would be the best as well as the pleasurable intuition of that which it will result in. This is how Spinoza defined humanity in his "Ethics" [3].

The Cartesian doctrine "Cogito, ergo sum" – define humanity according to two specific approaches: conscience and desire, the conscience of days gone by, of today and tomorrow. The desire and kind of sensibility to distinguish the good, that is to say, that which is even better. It evokes pleasure but beyond that, the conscience of good and evil. The designer's activity of creating perfectly corresponds to the definition of humanity: a conscious act of projecting oneself in order to satisfy the desire of doing ones best.

Designers today continue to use tools and relearn the secular art of craft production. This specialization is essential as it is not enough for designers to only be "a brain, managing a project". According to Darwin's evolution theories and our adaptation to our environment, humans distinguish themselves from animals

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2 Thomas More (1478–1535), English philosopher and catholic martyr, "De optimo rei publicae sive de nova insula Utopia", 1518.

3 Baruch Spinoza (1632–1677), Dutch philosophy, "Ethics", 1677.

in being able to use tools, to perfect and use them. It is partly due to tools that humans have been able to adapt themselves, to become detached from their original tribe, and most of all, to change the world they were living in. Without tools, the designer is only someone managing a project. With them, he becomes an active craftsman, who is participating in the construction of progress – in happiness- in the future.

Last of all, the designer creates. Beyond all conscience, it might happen that the drawing pencil virtually slips out of the hands of the designer and invents forms and shapes all on its own. In that instant, the designer, who is just another mortal being, is close to the sublime, he is part of something bigger than he is, and of a truth,… he is touching God with the tip of his pen. In a sense he is inventing, he is creating.

If we would address ourselves to God, irrespective of any religion, we would make him talk to us about morals. Apart from any theological references, ethics is a philosophy interested in our actions within society. It offers a moral judgement of the good and bad. It goes beyond morals: morals make us feel sorry for the hungry; ethics oblige us to take on the responsibility of reacting in order to feed them: "When faced with the hunger of a human being, responsibility becomes an objective endeavour"[4]. Ethics replaces religious moral values and becomes part of all reasonable actions.

Design because it creates, because it goes beyond our intentions, it touches the essential, a truth, a kind of happiness orchestrated by Ethics. Design is a humanist discipline with the objective of giving its best, of procuring pleasure and well-being, and progress. Design is ethically and morally acceptable for what it is and what it stands for.

3 Design, an industrial discipline and marketing

We also have to recognize the fact that design is an economical discipline. The first designers emerged during the 19th century's industrial revolution, the revolution of coalmines and railway lines. They were faced with the challenge of discovering the values of an artist as well as the one of a craftsman faced with mass production. Their aim most probably consisted in discovering a bit of humanity in those values, the conscience of good work, the principles of "a beautiful piece of artwork".

Designers always have to come up with even more useful products, which are more functional and more beautiful. They are asked to define the utilization and development of accompanying services. They create more ergonomic, easier to use products, displaying a form, image or reasoning, which evokes a sense of pleasure in its user and facilitates its appropriation.

The industry offers a new field of creative application. Artists create objects and designers create products.

The product notion clearly falls into the field of economics. It can be understood according to two distinct paradigms: When referring to production economics, the product is the result of an industrial process. From a market economy point of view, the product is one of the elements making up a marketing-mix. It has been manufactured to correspond to a need, which will be satisfied by the product in question. In addition, design makes products sell, that is its function. Whether referring to the rationalisation of production methods or the sales of products, design favours added value for companies as well as profit. Design boosts sales: "it is the henchman of capitalism of capital".

Design is fashionable in a liberal and capitalist soci-ety: where more competition leads to more differentiated creations. Design hence increases the differentiation of products, it contributes to better and higher sales and to accumulate even more profit in a world that is expanding all the time and in return becomes more difficult to control.

If capitalism is based on the doctrine of self-enrichment – money produces even more money, and wealth even more wealth – design, although

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4 Emmanuel Levinas (1905–1995).

merged with its humanistic objectives, is suspected to serve the interest of profit. When perceiving the adventure of capitalism as being not very moral as it allows the rich to become even more so and the poor to remain so forever, design not only stops to be ethical but even more so becomes perverted by economics. This ambiguity is even more accentuated when companies use design as a cultural or ethical banner to sell their image and products. Design is an excuse for an intention, which is difficult to admit.

Consequently, how can a discipline that is anchored in the discipline of economics – and comforted by it – be accused of getting lost in it? This question is essential as it influences the debate on the importance of design, its role in companies and more broadly speaking the role of a creator in our society as well as the Economy of Creation and Innovation. First of all, and to counterbalance the written ambiguity on the subject, one should ask the question on morality, ethics and capitalism and its connection with the trade economy we are all part of. This question is very relevant as business schools are developing their own sets of trade ethics. One even finds, what a great incongruity, courses on "ethical financial placements".

"As an economic system in itself, capitalism has only one function, namely to enrich itself." [5]

There is no conscious connection between any possible good or bad when exchanging or selling something. To exchange beautiful shells against food has never been very moral. Nobody, no business person, no company head has ever sold a product out of moral duty but always, which is normal, because of gain. Sales actions only serve one purpose, namely to satisfy the needs of their buyers. This action has no moral. An immoral action would consist in cheating on the client: but the client, once he has been deceived, will never come back again and the shop keeper will have lost all future possibilities to sell a product to this person again. It is not out of moral obligation that he is not cheating on his client but purely due to his own interest.

Capitalism does not feed on the moral or immoral, it is the system in itself that has no morals.

To the great dismay of the anti-globalists, idealists and revolutionaries who evoke the humanitarian duty of each one of us when trading, capitalism functions according to its own sets of laws. The fair distribution of wealth hence remains in vain forever. This exchange system has been stripped of the possibility to adjust itself according to moral set of values. In return, it is up to the politicians to monitor the flux of wealth distribution. It is the politician's task to determine the laws for product regulations.

It would be useless and even dangerous to renounce to this exchange system. Whether we like it or not- the societies based on a free market economy have generated more freedom for humanity than those based on a totalitarian approach. Nevertheless, it is up to us to come up with the necessary legislation, which would lead to a better utilisation of the opportunities at hand. Capitalism is not about humanism. This should be kept in mind by the anti-globalists who are often tempted to adopt a "moralist" stance by giving lessons to the entrepreneurs of all countries.

Therefore, what is the rightful place of design: the stakes are fantastic. No designer should ever forget that each product, each package, each image has been created to serve mankind. He should never lose touch of the fact that he is there to further progress, comfort and happiness. Never ever should design have as an objective to generate profits. This would be a perversion in itself. The objectives of a designer should not be mixed up with those of the company employing him.

He should not forbid himself to generate, on the contrary. What better could we strive for than to generate happiness and wealth? Profit becomes a means…. and the market offers opportunities of exchange. What a great chance to be able to spread that, which is good and well. The market in itself will reflect back to the designer the recognition of his work as well as its justification. By placing humanity at the heart of their strivings, the designer is in charge of replacing economic-driven reasoning with humanitarian reasoning. Profit hence only becomes

5 Karl Marx (1818–1883).

a means and the designer grows into becoming the key person of an “ethical company”.

Why having created the word “markethique”, as it exists already, namely: Design?

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Innovation Network of Nordic and Baltic Art and Design Universities

Introduction

This paper is based on a preliminary survey "Innovation Network of Art and Design Universities in Nordic and Baltic Countries" by researcher Hanna Heikkinen. The survey is prepared at Designium, the New Centre of Innovation in Design at the University of Art and Design Helsinki and it focuses on the Nordic and Baltic art and design universities and on the innovation-supporting services provided by them.

1 Background

The importance of universities as part of national innovation systems has grown in recent years. Universities are no longer merely institutions that conduct basic research and provide higher education and training. They are seen increasingly also as producers of commercially important innovations.

Innovations are easily associated with patentable inventions or other technological solutions. However, innovations can just as well be in the field of culture, such as design, music, cinema, multimedia, or any other artistic or cultural discipline. At art and design institutions, these types of new cultural and content-related innovations are created daily. Nevertheless, a recognized problem is that inventions made as for example in diploma works and term projects do not find their way from students and departments to be commercialised and utilized by companies. For the successful commercialisation of research results, universities need to have systems in place for the innovation supporting services. In addition, the art and design universities should support and enhance the entrepreneurial atmosphere among the students.

It seems that there is a growing interest among Nordic and Baltic art and design institutions to develop their innovation activities further. A clear sign of the development is also that in many countries the policy makers have started to consider how design could contribute to the national innovation system. Due to this, many countries have included innovation related actions and goals in their national design policies and programmes. A base for this can be seen partly in the structural changes of the economy and in the growing awareness of creative knowledge and creative industries as source of renewal and development in society.

The growth of the creative industries is much due to the changes in the customer behaviour and needs in the markets. The advent of the information society has increased the significance of "soft" and cultural innovations: high technology needs to be supplemented by content and form. People look for experiences and the most valuable products are ideas and meanings, produced not by machines but by the imagination.

Frameworks for innovation are essential to the development of new products of boosted cultural and financial value. Actors in the design field have realized this and much development can already be seen. Art and design universities have started to build up units and methods for more effective commercialisation of innovations. In some cases, universities have created structures for innovative environments and design concentrations in their surroundings. This provides a basis for the creation of clusters focused on design and innovation. Art and design institutions have also started to emphasize the role of research and continuous creation of new knowledge in their operations. Furthermore, the research occurs more

and more in co-operation with different companies and other external partners. Additionally, it has been increasingly recognized that new value is created when technical innovation, artistic creativity and business entrepreneurship are deployed together to make and distribute new cultural products. This has resulted in the multidisciplinary approach in many art and design universities.

Even though actors in the design field have started to establish frameworks for more effective innovation environment, there is still a clear need for development. Nordic and Baltic countries are in very different phases in the development and learning from other's experiences would be highly valuable. Designium, the New Centre of Innovation in Design at the University of Art and Design Helsinki, has taken an initiative of surveying this field in more detail and prepared a preliminary survey concerning the issue. The project was conducted under the supervision of a steering group consisting of members from the University of Art and Design Helsinki, Umeå Institute of Design, Estonian Academy of Arts, The Oslo National College of the Arts and Danmarks Designskole.

The main findings of the survey are presented below.

2 Findings of the preliminary survey

Findings of the preliminary survey show that there is a clear need for further developing innovation supporting services in Nordic and Baltic art and design universities. It seems that universities in the field of art and design are somewhat behind in the development of the innovation supporting activities compared, for example, to universities in the field of technology and medicine.

Naturally, the different characteristics of the fields should be taken into account. There is an interest in developing these things, though, and many art and design universities have started to develop their activities accordingly. In the following, good practices, units and methods involved in the innovation supporting activities are described using six categories. The findings are summarized in table 1.

2.1 Innovation supporting services in universities

To be able to provide their students and researchers with better services related to innovation development, the art and design universities have started to build up units and methods for these purposes. However, much of this development is still in a

Table 1. Summary of the actors in the main categories.

COUNTRY	INNOVATION SUPPORTING SERVICES IN UNIVERSITIES	CLUSTERS	COOPERATION WITH COMPANIES	RESEARCH	MULTI-DISCIPLINARY APPROACH IN EDUCATION	DESIGN CONSULTANCY SERVICES
Finland	Designium	Arabianranta	-	TEKES, Academy of Finland	IDBM	-
Denmark	-	-	-	Design Research Centre	-	Danish Design Centre
Sweden	Uminova Innovation	Stenebyskolans Knowledge Park	Umeå Institute of Design, SVID "Sommardesign-kontoret"	SWIDREA	SSES	SVID
Norway	-	Akerselva Innovation Park	-	-	-	Norwegian Design Council

preparatory phase. Additionally, it does matter whether we talk about big universities, where art and design are just two subjects among others or if the university is solely dedicated to artistic disciplines. In many cases where art and design is just one of the many focus areas, such as in Umeå University, they have systems in place and ready established instruments and methods for the innovation supporting activities.

An example of this is the Uminova Centre at the Umeå University, which also offers services for students and researchers in the field of design. Another example, but representing the case where the university offers education only related to arts, is the University of Art and Design and its Innovation Centre Designium. It provides innovation-supporting services in the field of art and design but also conducts multidisciplinary research in close collaboration with the universities in the fields of technology and business.

2.2 Clusters

One clear sign of the development is the establishment of clusters and the creation of structures for innovative environments in the field of design in many countries.

In some cases, such as in Finland, this cluster formation is also in accordance with the objectives of the national design policies. The concentration of design and media know-how at Arabianranta in Helsinki provides a basis for such a design cluster. At the heart of the cluster are The University of Art and Design Helsinki; Innovation Centre Designium; Design, Media & Art Business Centre Arabus and the Centre of Expertise focusing on culture and digital media. Different research institutes and design companies are also part of the cluster.

Another good example can be found in Oslo, in the Akerselva region, where Oslo School of Architecture, The Oslo National College of the Arts and The National Institute of Technology have worked together to develop an innovation park and a cluster based on the combination of art, education and business. There will also be an Art & Design Lab together with an incubator to facilitate the knowledge transfer and start of new businesses in the field.

Similar developments can also be found in Sweden, for example ar Stenebyskolan of HDK, where they have established an incubator close to the school and placed strong emphasis on developing these things further. Finally, still another example can be found in Stockholm, where an initiative was taken to develop a regional design programme in the Stockholm region and to build a design cluster to enhance the co-operation of companies and universities and to support the establishment and operation of new design companies.

2.3 Cooperation with companies

The findings of the survey show that most of the art and design universities in Nordic and Baltic countries cooperate with companies. This might be in form of trainees, scholarships, joined research programmes, company representatives participating the lectures, workshops in companies etc.

A well functioning example of this seems to be The Umeå Institute of Design, where the collaboration with industry is very strong. In all the programmes, the Institute co-operates regularly with a number of companies and organisations. This co-operation with industry has proved to be very successful and beneficial for both parties. While students can learn from real projects in industry, companies get new fresh ideas and contacts with possible future specialists among the students.

Another good example is the “Sommardesign-kontoret”, Summer Design Office, a national effort by SVID. The idea is that students can work, during the summer, in design offices in different parts of the country. This offers a good way for students to gain experience in work life, while companies benefit from the assignments conducted by the students.

2.4 Research

The role of research and continuous creation of new knowledge in design has been emphasized strongly in Finland. The National Technology Agency TEKES,

together with the Academy of Finland, has strongly invested in the research of design in its Industrial Design Technology Programme. There are 60–100 researchers and eight universities involved in these programmes. The research programmes also aim at enhancing utilization of design in companies. Thus, there are about 50 companies involved in the programmes. The total financial effort put on the design research in Finland amounts to nearly 30 million euro.

Additionally, many initiatives have been taken to develop the research operations between art and design universities. One example is SWIDREA, the Proposal for a National Graduate School for Industrial Design in Sweden. It is initiated by SVID and Umeå Institute of Design and will be a national research and training programme aimed at creating new, interdisciplinary design research practices that will result in better educated and more innovative and reflective industrial designers.

Another example is the establishment of Design Research Centre in Denmark to enhance the knowledge and know-how in the design field to benefit education, design industry and other sections of the corporate sector dependent on design. It is a joint initiative by The Royal Academy of Fine Arts, Aarhus School of Architecture, Designskolen Kolding and Danmarks Designskole and it should start in 2004.

2.5 Multidisciplinary approach in education

As universities have become more aware of the fact that some business-oriented education should also be included in artistic education programmes. Therefore, many joint programmes where design is integrated into business and technology have been established.

The International Design Business Management programme (IDBM) in Finland is a good example of such a programme that has proved to work well. It is a joint teaching and research programme of three Finnish universities: the Helsinki School of Economics, the University of Art and Design Helsinki and the Helsinki University of Technology. The programme started in 1995 and today includes a further education programme for professionals. Additionally, a Scandinavian Executive MBA in design strategy and innovation, with IDBM the Finnish partner, is under preparation.

2.6 Design consultancy services

When looking at the innovation environment as a whole and actors other than universities involved, the design consultancy services are of great importance. The Danish Design Centre is an example of a very strong organisation aiming at stimulating the development and strengthening the dialogue between designers and businesses. It emphasises the provision of consulting services related to design for companies. It also seeks to improve and develop Danish designers' competence. One example is the Designer-ISO certificate that Danish Design Centre has developed, together with Association of Danish Designers and Dansk Standard, in order to improve the designers' business procedures. Overall, the Danish Design Centre has a very strong role in the Danish design system as a whole.

Of the Baltic countries, Estonia has taken the strongest initiative for developing the design sector further. In addition, in Latvia, they have development programmes under preparation. When it comes to Iceland and Lithuania, their design sector is in need of comprehensive development programmes.

3 Preconditions for further development – a new project

Findings of the survey presented above have now led to the development of a more effective co-operation between the Nordic and Baltic art and design institutions. This is planned to take place through a network, which will function, at least at the beginning, as a forum for exchanging ideas and getting to know the procedures and methods that exist for the efficient commercialisation of design innovations in Nordic and Baltic countries.

The main objective of the project is to develop the innovation environment as a whole in the field of design in Nordic and Baltic countries. Firstly, the focus is on art and design universities

and in developing their infrastructure and services for successful and effective commercialisation of design innovations. Secondly, the purpose is also to investigate what could be the benefits for SMEs for utilizing these innovations and which companies would be the most receptive to them.

Taking into account the fact that all the art and design universities in the Nordic and Baltic region are at least slightly different in nature, networking would allow them to adopt the good practices and methods that have been found to work well. Additionally, for SMEs an enhanced cooperation with art and design institutions would provide an opportunity to exploit research and expert resources of leading art and design institutions from all Nordic countries in their product development and innovation activities. Altogether, networking would mean a wider market area and considering the whole Nordic and Baltic region instead of one separate country. This could also lead to the strengthening of the more unified concept of "Nordic" design.

4 Concluding remarks

Design has been recognized increasingly as a strategic tool for companies. Almost all Nordic countries have for instance formulated national design programmes and strategies in order to enhance the promotion and increased use of design. Such strategies also recognise the fact that the increased use of design alone is not sufficient to guarantee enhanced competitiveness. Great emphasis should also be placed on research, on the development of the knowledge generated by it and, above all, on the application of this new knowledge. Thus, in many Nordic countries, a lot of effort has been made to improve research and post-graduate education. In addition to research, the development and consolidation of the innovation supporting services is particularly important in order to derive the most benefit from the acquired knowledge and innovations.

The survey presented in this paper focuses on the Nordic and Baltic art and design universities and on the innovation-supporting services provided by them. Universities have a significant role in the building of the creative information society and in the development of the competitiveness of their operational environment. The survey suggests that more effective co-operation needs to be encouraged between the Nordic and Baltic art and design universities in the field of innovation-related activities. This could be achieved by establishing a network that would operate as a forum between the different actors in the field. This would further reinforce the international competitiveness of the Baltic region, accelerate the development of design knowledge as one of its competitive factors, and facilitate the development of company operations with the aid of design.

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From Passion to Profitability

Can a designer work as an entrepreneur in the society, and if so, what are conditions for that? University of Art and Design in Helsinki has provided a business incubator for nearly 10 years. During that time, the incubator has helped individual designers to work as entrepreneurs. The incubator has also worked as an operative tool for regional development. Furthermore, these experiences have been successfully applied nation wide in Finland. All these activities can be described detail as follows:

Designer as an entrepreneur:
– personal requirements: passion for creative work, but entrepreneurship also involves business orientation, intelligence and skills
– operational preconditions for companies on the business field

The third task of the university:
– promoting entrepreneurship in society
– commercialisation of innovation and research
– ARABUS Incubator as an operational tool:
-focus on creative industries: design, media, culture and content production

Activities nationally and in the Nordic countries:
– nationally:
-conceptualising and implementing training and operations by taking into consideration the regional aspects
-part of the incubator network in Uusimaa region
-Werstas incubator in Ruukki community, also training[1]
– Nordic countries:
- Jenka-project[2]

The contribution of the public sector together with the designers' passion, desire and knowledge can add value to society in form of new business and employment today and competitive edge in future.

From passion to profitability: how a designer can be an entrepreneur and run a business successfully? In the words of Charles Leadbeater "Three forces are driving modern economies – finance, knowledge and social capital. It is no coincidence that all are intangible: they cannot be weighed or touched; they do not travel in railway wagons and cannot be stockpiled in ports. The critical factors of production of this new economy are not oil, raw materials, armies of cheap labour or physical plant and equipment. These traditional assets still matter, but they are a source of competitive advantage only when they are vehicles for ideas and intelligence, which give them value."

Designer as an entrepreneur

It is not usual that designers start a businesses based on their design skills. The "normal" way after graduation is to find a job. Is it possible for a designer to start up a business? Does he or she have any knowledge of the market forces? Putting together the two different worlds of creative work and market forces can create a big challenge and probably an uncertain future as an entrepreneur. Of course, many have done it and have been successful, but too many have lost their money.

Passion for creative work

The major driving force for a designer is always a passion for creative work. If creativity is supposed to be the major aspect of work, how the requirements of market forces can be met at the same time? Is it possible to produce brilliant ideas or unique work

1 Werstas [Online], available at: <http://www.werstas.com>.
2 Jenka Project [Online], available at: <http://www.jenka.org>.

and at the same time to make a living out of them as an entrepreneur?

Personal requirements for an entrepreneurship

If a designer wants to be an entrepreneur there are at least two major personal factors, which should be considered. They can be defined into "can-do" and "will-do" issues. If a person has a good educational background or adequate work experience, building up a business is possible but this is only the "can-do" part. An entrepreneur should definitely also has a "will-do" part. An entrepreneur should be goal-oriented, motivated to do business, willing to earn money and to be innovative to find new business opportunities.

Entrepreneurship involves business orientation, intelligence and skills

The passion for creative work is not enough to be an entrepreneur; it is only the other half. The other half is the know-how of business orientation. The basic ideas of what you are selling, to whom you are selling and how you are going to do it.

These questions lead us to think the products and services to be offered. One idea can be wrapped in several different "packages". The idea of selling work by hourly basis does not give any potential for growth in the end – differentiation from competitors is important. This can and should be profitable for the designer. Furthermore, segmentation of potential customers needs to be considered. The difficult part, however, is how this all is done in practice. The same idea can turn out to be a goldmine for someone and someone else goes bust; appropriate implementation of the idea brings out profitability.

Operational preconditions for companies in the business field

Starting up a company in Finland is fairly easy. If we think the how designers work, we can identify some preconditions. First of all the office or work facilities must be there, because no one can work at home forever. The second important precondition is the existence of business network, a start up company and an entrepreneur should find good connections and networks, especially in Finland where design offices are quite small and therefore the personal contacts are crucial.

The third task of the university

Commercialisation of the innovations and research

Universities have operated in the field of education and research for centuries. This has been accepted and considered the only way for universities to participate in society. During the last decades, the world around has become more complex, and increasingly based on the quartal economy.

Universities have also faced new challenges of finding different kind of jobs for university graduates. There has been more emphasis on the necessity of preparing the graduating students to the life after studies and use their skills. If the jobs and options for making a living have changed, then the universities have to provide all the possible help to ensure success in life after studies. Earlier, promoting entrepreneurship at universities was not seen necessary. The markets took care of it and an academic from a university was not seen as a potential entrepreneur, sometimes it was not even seen appropriate for a designer to start up a business. Commercialising the innovations and research is nowadays encouraged and seen a way to benefit the whole society.

Promoting entrepreneurship in society

There are many ways to foster business skills, especially among the young, in our society. Measures taken during the education ensure that the basics of entrepreneurship are known. Whether we think of the competitive edge of a nation or of the whole Europe, understanding of business and markets is essential. Intangible and immaterial rights provide us the most growth potential together with most added value to the economy. This is one of the opportunities we have to seize. The potential is there, we have to acknowledge and take an advantage of it, because otherwise we cannot compete with the low labour cost countries in future.

ARABUS Incubator as an operational tool

University of Art and Design Helsinki has established a business incubator Arabus in 1996. It is a part of the university and within the organisation; it belongs to the unit of Continuous Education and Development Centre. The mission of the incubator is to commercialise ideas, support start-up businesses and build networks between the companies within the incubator as well as with companies in the business field. Arabus incubator utilizes the potential business concepts developed at the university.

The Arabus incubator has focused on creative industries: design, media, culture and content productions. The clear and strict focus has been possible since Arabus is working closely together with the Uusimaa, Southern part of Finland, incubator network. This network consists of 15 different incubators. All of the incubators have a clear profile and focus in certain sector.

There are two possibilities to get in Arabus. The companies or people with business idea can apply to Arabus with a business plan throughout the year. The other possibility is to apply first to the business-oriented training. The purpose of this training is to the basic skills how to start up and how to run a business. The outcome of this training is a business plan.

Arabus always requires a business plan. This is important when the applicant idea and the management team or the entrepreneur is evaluated. On the other hand, this business plan also gives to the entrepreneur a better understanding of the business, the strengths and weaknesses of it.

Once the company has been accepted to Arabus, it can work together with the incubator for two years time. During this two years time incubator will rent an office room, give business advice and coaching. Furthermore, it is very important to build networks with other companies within the sector. If the companies need services, which cannot be found at the university, incubator will get them from the market. From time to time incubator will provide business training for the companies. There are some informal events and some formal ones. The main task for the incubator is facilitating these business ideas get wind under their wings and the companies to survive in the market.

Since 1996 there has been around 100 companies at Arabus. According the survey last autumn around 80% of companies still exist. This is a far better outcome than what could be expected without an incubator period: normally only 50% of new companies will survive after three years.

Regional aspect

Arabus has influenced at the area of Arabianranta shore regionally as many of the companies have stayed at same area they started. This has made possible to find synergies between companies and it has shaped the Arabianranta area business profile: together with the university and other schools, the area has profiled itself very clearly as the cradle of design, innovative and creative industries in the Helsinki metropolitan area.

Activities nationally and in the Nordic countries

Nationally

This training concept developed at Arabus during the years has been a very good model for other development driven organisations or locations. The local aspects have been taken into consideration and the training concept has been successfully been applied five times so far. The feedback from the students has been excellent. This has always been very down to earth training, concentrating on practice.

For example the Werstas incubator in Ruukki municipality in northern Finland has successfully applied Arabus training concept.[3]

Nordic countries

Arabus incubator is a national contact point within the Nordic Jenka-project[4]. The goal of this project

3 For more detailed information, see: <http://www.werstas.com>.
4 Jenka [Online], available at: <http://www.jenka.org>.

is to network all the creative industry players in the Nordic countries as well as to gather information from the sector and help people to meet personally in order to facilitate contacts. This project helps people to see new ideas and perhaps learn from each other – the idea is to share knowledge not to hide it. If one of the partners in one country has developed a good concept, all the partners can take advantage of the experiences. It is impossible to copy the concepts from on country to another, but the ideas can be applied and adjusted to local requirements. This Jenka-project is ideal because all partners are in the win-win situation.

Finally

There are many ways to proceed if a designer wants to become an entrepreneur and start up a business. Arabus has developed one winning concept during the years and so far the university, local authorities and companies from Arabus have been satisfied with the results. It is not perhaps always easy for a designer to be an entrepreneur, but when there is a will, there is a way.

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Design for Tourism Business

Design research for the Athens Olympic Games

Introduction

The basic idea of our research is derived from the fact that during the last years, and due to the up-coming Olympic Games in Athens, the conditions for entrepreneurship in Greek tourist business have changed very much, influencing the designer's role and implementation. In our study, we focused on situations where design operates as a leading discipline of innovation processes and entrepreneurship: the development of new high quality products and designs, and the adaptation of new technologies. The development of entrepreneurship, as well as of new skills and designs in the tourist business, in order to stay or become competitive was considered in the context of the immense pressure on small firms from external production changes and the expansion of high technology applications.

Greek tourist business

In modern Greece, tourism business is especially important. It is a major source of income for the Greek economy. The interest of foreign visitors in local and traditional products, mainly textiles, is an emerging phenomenon expected to become even more evident during the period of the Olympic Games. As a result, tourist companies have shifted their attention to producing hand-made traditional textiles and items for their unique aesthetic value. The problem is that in many cases, traditional products exhibit a lack of identity, due to the imitation or duplication of designs. This results from a combination of factors. The producers' low educational level leads them to easy solutions, such as either entrusting the production to low cost Chinese companies, which produce cheap machine-made imitations, or "copying" traditional prototypes in a reformatted and simplified way. Tourist production should bear the history and the identity of the native country and its people, and it should never be lost for the sake of modernism, internationalism and the requirements of tourists.

Greek tourist producers can be categorised into two groups: professional producers earning their living from sales, and those who produce hand-made items as an additional source of income. The first group is open to new developments and displays a high level of interest in seeing and learning about new techniques and design improvements. They usually have distribution networks, including outlets abroad. The second group retains a small but very important niche in the Greek market, because it is related to the retention of local and regional traditions, and the presentation of a level of quality and exclusivity, which cannot be found in manufactured items. They are small businesses of self-employed artisans. This second group was the target our case study.

Craft tourist products are still produced locally, with various unique traditional methods and materials. Individuals and small family or cooperative firms produce traditional items, mostly following the old ways of production. The major handicap of this production is that it results to poor repetitive re-productions with very limited innovation in design, products and materials. Designs, which were handed down through generations and reflect local history, religion and customs, have been degraded during the last decades, due to massive and un-controlled production. The cost of production is a major factor, but the rapidly increasing tourist demand for local traditional Greek products has also been a determinative reason for this phenomenon. Repetition, lack of knowledge of design, lack of competence in new designs or product development, lack of artistic background, influences from abroad, both commercial and technological, became evident, and they downgraded the quality and identity of the

materials produced. In addition to that, handicraft producers face the competition of imported products from Asia.

Case study

The study was carried out in ten pilot regions of Greece that produce tourist products. *The research team* was composed of the staff members of the TEI's Textile Design Workshop and undergraduate students of the eighth semester. The students, within the scope of their final degree projects and practical training, undertook studies of the tourist business throughout Greece, investigating local tourist handicrafts, cooperatives and businesses, tourist export centres, and foreign tourists with the assistance of the Hellenic Tourism Organization. They also studied the possibilities for innovative uses of the traditional Hellenic designs and proposed commercial exploitation for the tourist industry inspired by classical and traditional designs. The final design selections and the decisions for production were made and carried out with the support of the Organization of Small and Medium Industries and Handicrafts and the consulting assistance of exporting tourist manufactures.

Four groups of practical trainees, eight final degree projects, and ten handicraft cooperatives that produce tourist items, located at important tourist areas participated in this study.

Data analysis

The research work began by categorizing the activities and targets of the project. First, in order to support local producers, a questionnaire on their *skills, needs, sales* and *targets* was distributed to the craftsmen and women in each of the pilot regions involved. A sample of 500 local and international tourists was interviewed concerning their purchases at the selected pilot regions of Crete, Corfu, Chios, Zante, Arta, Pella and Limni, thus covering mainland Greece and the islands. 35% of them indicated that they had bought textile products during their stay. Almost half of the respondents had bought clothes, of which T-shirts formed an important part, 40% of all clothes purchased.

Textiles and *ceramics* are souvenirs purchased by many tourists (55%), with *jewellery* coming far behind. In Greece, there is an established demand for textile and ceramic products among tourists. In many cases, textile purchases are limited to T-shirts and other textile souvenirs, but a significant number buy more traditional, and definitely hand-made, items. The full spectrum of local tourist textiles includes all kinds of hand-made traditional carpets, textiles from natural fibres, hand-woven and embroidered women's clothes and accessories, men's accessories, children's wear, home textiles and home accessories. Due to their weight, mainly local or car travelling tourists prefer ceramics, jewellery is favoured by those with higher income. Those most interested in textile and ceramic products are usually holiday makers, Greek or foreign, differing greatly culturally and economically. This group strongly influences production by their purchases because tourist sales are strongly related to the "usefulness" of the purchase.

The target of tourist producers is principally the local tourist market (72%) and, to a lesser extent Greek households (28%). A great share of the sales takes place during summer in the big cities of Athens, Rhodes, Heraklion and Corfu that receive a large number of tourists. Foreign markets appear to be interested in Greek tourist and handicraft products, but exports are limited due to the lack of distribution networks. *Personal items,* such as clothing and household objects cover 80% of the sales, while the decorative ones only 20%. Bags are also best sellers, as well as carpets, each having 13% and 7% of the sales, respectively.

Women are the best customers, over 60% of the purchasers.

Youngsters prefer T-shirts (31%), bags (26%), cloths (21%), pareos (a kind of light robe worn over the swimsuit) and scarves (17%), and only 5% of their buys are decorative items.

Older people usually buy lightweight items, such as tablecloths (42%), handkerchiefs (19%), towels (15%), linens (10%), jewellery (10%), and only 5% carpets.

High-income tourists prefer more sophisticated and

exclusive hand made items (over 50%), mainly embroideries, ceramics, jewellery, carpets, silk products, traditional costumes and dolls.

T-shirts, bags and towels are, for their usefulness and portability, the main and often the only preferences of tourists with a *lower income* or backpackers.

Regional characteristics

Production for tourism is particularly suited to sustainable development, since local materials and labour are employed. Specific designs, forms and methods of production are also closely associated with specific regions: Silks are the favourites of Crete and Thrace, and are still produced in the traditional way, often in loom-woven quality and coloured, in most cases, with natural dyes. In central Greece, woollen carpets and textiles are hand-woven, with the fibres being dyed with local plants. In South Greece, the Nuns' Cooperative creates very fine exclusive textiles from silk and linen, fine ceramics and copies of Byzantine icons, a tourist favourite of the local market. In the islands, the production of handmade ceramics, featuring local traditional shapes, colours and designs, is of exceptionally high quality. The regional design differentiations are illustrated on traditional products. Locally created products are worthy of promotion, since they serve a double purpose: to provide tourists with authentic cultural artefacts of the region and to support the local economic basis.

Marketing

The basic characteristic of tourist handicrafts is that they are strictly limited to large and expensive items. Although it is very important to keep the traditional character, it is also important to redirect handicraft production towards new products or designs, which can be produced effectively with a low cost.

Research proved that local people had realized that the sales of their products depend on diversification in two directions: the development of new products and designs, and the adaptation of new technologies in order to meet the needs of tourists. It is actually a question of product diversification and the development of a range of products that can be addressed to different target groups – specialists, exclusive tourists and everyday users. Significant progress had already been made in the development of new products and techniques, but there was an increasing need for new designs and effective marketing. Most producers were working with the traditional designs and means of production.

Our research assessment on current and potential craft-tourist producers was that many are lacking skills in terms of design development, production for the market, pricing and communication. The most important deficiencies were in the areas of design and management. The fields of management, production, and marketing, are correlated and require expert assistance in most areas. Design is a major factor of the marketing processes, as well as an important marketing tool, since it determines the form and the uses of the product.

The required skills

The lack of essential skills regarding *design, management* and *marketing* proved to be a common feature in all participating tourist handicrafts. The lack of essential skills is summarized as follows:

– development of new products and designs
– innovation in design
– aesthetics and knowledge of the true tradition and heritage
– awareness of new technology
– basic awareness of marketing
– basic awareness of production organization
– development of methods of quality control
– basic awareness of management

It is vitally important for all tourist handicrafts to obtain basic awareness of the existence of new information technology. The support of private consultants could also be valuable for the introduction of information technology and the use of multimedia in the design process. Quality control is a major issue, too. The rational operation of quality control demands the existence of certain persons with such responsibility. The aforementioned persons need to have the necessary awareness for maintaining the

quality control standards, and those responsible for quality control have to be trained in order to make this process more effective.

Out of 10 participants, seven were equipped with some kind of quality control processes. Four participants had individuals or committees responsible for quality control. In seven participants, there was a dedicated person aware of the quality standards, which have to be maintained. In all participants, people were specialized in the traditional character of products. *Design, quality control* and handling of *new technology* equipment were the *"specialist" skills* that were necessary for the effective operation of their business.

The research team offered the participating handicraft producers an operational module that would meet their skill needs, regardless of their operational and cultural differences, on entrepreneurship with basic, simplified, lessons on design methodology and development, management, production, marketing and modern technology (figure 1). The module was transferred on a CD-ROM, a form suitable for distance learning and e-learning.

The design process

Traditional producers usually copy designs from museum exhibits. Research proved that most traditional producers thought that it is very important to be trained in design and to collaborate with external designers. Some had attended seminars on design, organized by the National Organization for Handicrafts.

Thus, our second action was to offer them a simplified design methodology that satisfies the tourists' demand for innovative designs and products with Hellenic identity. The notion of designs from heritage – a quite well known area to the producers – was retained, and design innovations via multimedia for updated production technologies were additionally proposed. Instructions can be fully integrated with multimedia equipment and new product ranges and services can emerge through or be available as digital media. The design alternatives proposed are based on traditional tourist favourites but with a modern point of view (figure 2).

We focused on solutions that maximize the sales, improve the quality of the products and use updated technologies, without depriving the final products of their local identities or heritage. In addition, a simple design-production methodology and basic principles on colour combinations were offered in order to help producers to improve their abilities. The researchers worked on design development with the assistance of multimedia that the participants could use. In addition, research on market requirement and market acceptability was carried out among tourists and tourist manufactures.

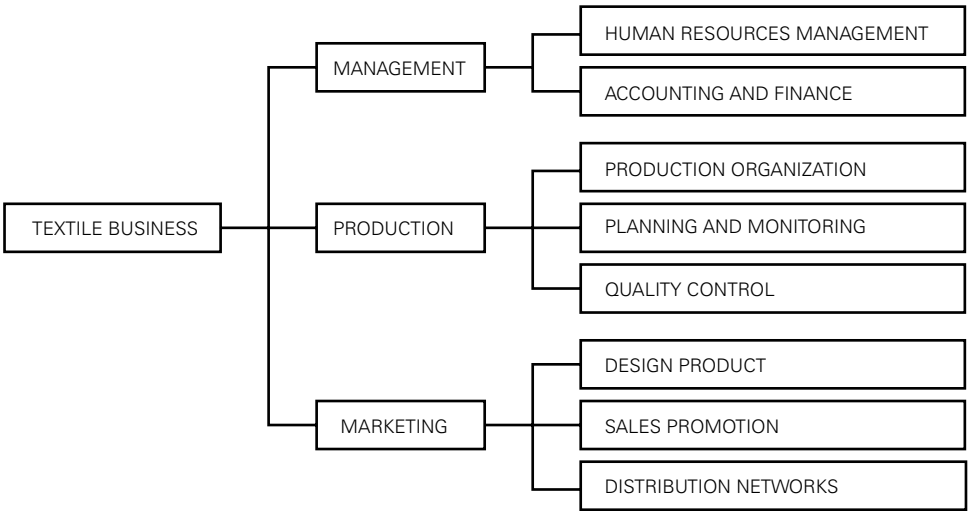

Figure 1. The proposed operational chart for the tourism business.

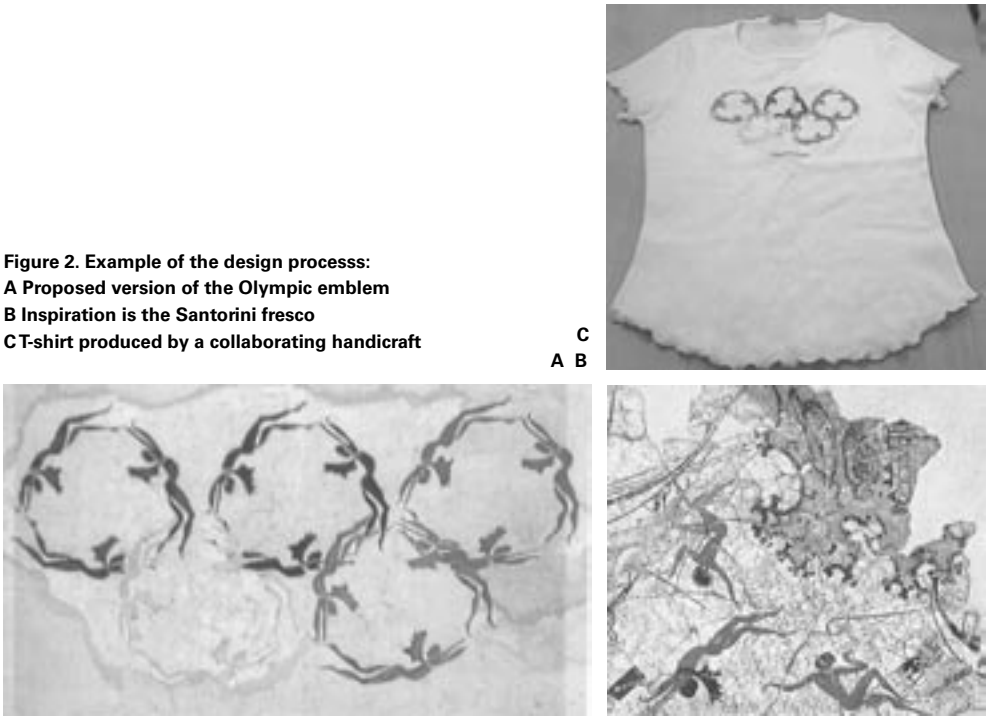

Figure 2. Example of the design processs:
A Proposed version of the Olympic emblem
B Inspiration is the Santorini fresco
C T-shirt produced by a collaborating handicraft

The research team evaluated the results and experimentally produced samples that fulfil modern demands, have the ability to evolve, adapt to the rules of market and agree with the tourists' taste. The samples produced were exhibited by the participating tourist cooperatives in the selected regions, to assess the tourists' acceptance. The most popular samples were produced with the support of the Hellenic Organization of Small and Medium Industries and Handicrafts. The materials and means that were employed – either hand or machinery – were the ones used in Greece and by Greek manufactures.

As far as the design work is concerned, the focus was on helping producers to visualize, design and produce evolutional, innovative possibilities of well-known and overworked designs. The aim was to help producers open their minds to design methodologies, new technologies and possibilities, and not to enforce upon them the use of specific designs and applications. All our design work is also accessible through the Internet, providing a suitable forum for exchanging information and experiences, and where design has been traditionally represented in print, it is also accessible via the Web. This, on the long run, will enable the creation of networks for cooperation and utilization of synergies, and stimulate provincial youngsters to become involved and take up positions in their regional businesses. We also proposed the establishment of thematic networks, which can have considerably positive effects on the handicraft tourist production and can support rural producers.

Conclusions

Distance learning was included in the project, transferring design and marketing know-how, providing opportunities to tourist producers and workshops in remote/rural areas to obtain access to training and develop the skills necessary to become competitive. It also opens cross-disciplinary perspectives for them and points out the importance of tourist business to regional growth. Fifty Greek Tourist handicraft enterprises have benefited from the study module the first year. More than 100 will benefit each year, either directly compiling information, or indirectly, by being able to use the module for designing purposes.

The practical results of the research are intended to render design a field of study able to participate in the processes that develop local values, resources and realities, opening new roles and opportunities,

coordinating and synchronising many parameters. Human creativity is adopted as a strategic tool in the design process and designers can play important roles in the research innovation process and entrepreneurship.

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Handicrafts tourism producers:

– DEKAS; Carpentry, furniture
– Women's Textiles, Skylountia; Carpets, bags
– Women's Knitting Handicraft of Limni; Embroidery, knitwear, textiles
– Potter's of Thrapsano; Large vases and flowerpots,
– Women's Embroidery of Tichero, silk/Byzantine embroidery, tablecloths
– Folk Art of Callimasia; Linen/cotton embroidery, dolls making, traditional costumes
– ALCYONES – Corfu; Knitwear, casual wear, traditional costumes
– Women's Farming of Zante; Woven textiles, embroidery, knitwear, handkerchiefs, towels, blouses
– Women's handicraft of Peta; Table clothes, embroidery
– Ancient Pella; Copies of ancient mosaics, small sculpture

Online source for the tourist business:

<http://sfr.ee.teiath.gr/htmSELIDES/Lab_CAD/Afro_Maria/thbp01.htm>.

Designer as a Learning Enabler for Strategic Design Processes in Local Development

Evidences from ME.Design research case studies

Abstract

The main focus of this work refers to the design actions for local development considering design as the result of a strategic activity developed within an ad hoc constituted *project communities*. Referring to the community of practice learning model (Wenger), we suggest a designer's role as the enabler of the organisational, cognitive and cultural learning processes triggered by design actions.

The hypothesis verification is based upon the analysis of some action research case studies related to projects developed within an Italian framework research called ME.Design. *Design strategies, tools and procedures aimed at increasing the value and promote the resources of the Mediterranean area between local and global.*

The result is the proposal of a model that describes three levels of design activities related to the competences and tools used for designing at territorial scale. Design for territories is considered not only as the activity aimed at designing the physical artifacts' shape but as that action by which it is possible to define the *intangible artefacts* (organisational and communicative) to which the design strategic processes are tied. In this sense, design aims at defining the *nature* of the artefacts realised at a large scale projects, that is the tools useful to materialise the negotiation conditions, the languages and the actors' expertise, the specific conditions of the design process.

Introduction

The aim of this paper is to describe *territory* as a specific field for design action and to evaluate the role of the designer as *learning enabler* in ad hoc constituted *design communities*. We start arguing the particular nature of territory as a different object of design from the classic ones belonging to the disciplinary field represented by simple artifacts (see *A different starting point* paragraph); in particular we consider territory as a milieu in which the material and immaterial, the human and the physical, the social and the economic dimensions tend to merge. In fact considering designing territories and their resource systems (economic, human, social, physical, historical-cultural) we have to face the particular nature and the specific conditions and limits that this context fixes (see *Defining conditions for design action at a territorial scale* paragraph). In that part we explain more in detail:

1. the *situativity condition*
2. the *path dependency condition*
3. the *multi-actor condition*
4. the *multi-scale condition*

This set of rules strengthens the statement that designing for territories is not only a matter of *giving a shape* to something. It means that in order to give a shape to a territory we need to integrate the design discipline with different approaches and specific tools. The hypothesis of this work (see *Building and enabling design communities* paragraph) is that the design action at a territorial scale is characterised by a *participative condition* to a locally event-related *community of practice* (the *design-based community of practice*) that requires to be enabled at different *design* levels. The enabling process starts from the basic level of enabling competences and languages (that allows to define design community identity and then to communicate and work) to the most specific one related to the disciplinary tools. The aim of the paper is thus to propose a simplified taxonomy of design levels in which different actors, competences, tools and objects are related to a different level of territorial design action.

A different starting point

We can define design for local development as a design activity referred to different disciplinary levels (strategic design, service design, communication design, product design) with different focus (managerial, strategic, social, economic etc.) to

promote systemic innovation processes (social, economic, technological) starting from the territorial resources.

The aim of the design activity at a territorial level is thus to set up actions that improve the quantity, the quality, the accessibility, the distribution of local material and immaterial resources (physical or human resources, of knowledge, of relations) that constitute the *territorial capital* [1]. Aiming at a sustainable local development (either economic, environmental, cultural or social) the designer can suggest design solutions and scenarios to:

– identify and strengthen the territorial relationships network;
– integrate and increase the value of the local production chain; and
– suggest solutions for increasing the value of the territorial services offering.

The design action sets up the conditions for carrying out real projects through different typical steps like: the setting up of knowledge exchange mechanisms, the building of *design communities*, the creation and the use of specific design tools, the organization and development of the design action and the design of real solutions.

Defining conditions for design action at a territorial scale

The local areas are often characterised by a high degree of complexity tied to the social, cultural, productive, technological dimensions, which result from the interaction between several different territorial resources. To be effective, the design activity needs a specific approach: in order to create value and innovation at a territorial level, the designer has first to detect, interpret and map local resources to produce a design vision and a project that integrates the territorial resources, through a *systemic* design dimension. The design's action has then to face:

1. The *situativity condition* (design action dependence from the area), i.e. the opportunity to build a design action starting from the territory's own resources. Territorial resources are a complex system; they are so many and they are often intangible and non-transferable, strictly tied to a particular *socio-cultural tradition* and *environment* [2]. The mix of these factors is continuously changing: the design action is then strongly linked to the territory's *situated* characteristics (it can be considered as a *situated action*[3] in a specific cultural, social, economical context).

2. The *path dependency condition* (the dependency of design action from the design process history), i.e. the design action at a territorial scale can be seen as a process. It is realised through different interventions and temporal levels (decisional and operational levels) involving all the actors of the design process. The design condition is then influenced by a level of dependency which comes from the *history of the project* that involves both the objectives and the tools for the design action (Fabbri, 2003).

3. The *multi-actor condition* (the collective dimension of the action), i.e. the territorial design action involves several actors, having different nature (institutional, cultural, economic, social, etc...). Each actor has a specific role in the design action (the *design community* role) but at the same time he also plays a role in the local area (the *general community role*) in which he spends his competences carrying out specific activities. Referring to these characteristics, the territorial design action can be compared to a *negotiation*

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1 The "territorial capital" represents all of the elements available to the area, both tangible and intangible, which in some respects constitute assets and in others constraints. The territorial capital refers to the things that constitute an area's assets (activities, landscape, heritage, know-how, etc), and are not part of an accounting inventory exercise, but are intended to identify the distinctive features of an area whose value can be enhanced. It is constituted by eight components: physical resources and their management, the culture and identity of the area, human resources, implicit/explicit know-how and skills, local institutions and administrations, activities and business firms, markets and external relations, the image and perception of the area. LEADER Dossier, 1999. The social capital represents an important resource as well: it depends on the social relationships between individuals, institutes and enterprises.

2 Caldarini, C., Decoster, D.P. 2000.

3 The *situated action* theory suggests that the human action must not be seen as the mere execution of a pre-established plan by an actor in a specific context, but as a continuous adaptation of the actor to the changes in his context-environment. Suchman 1987.

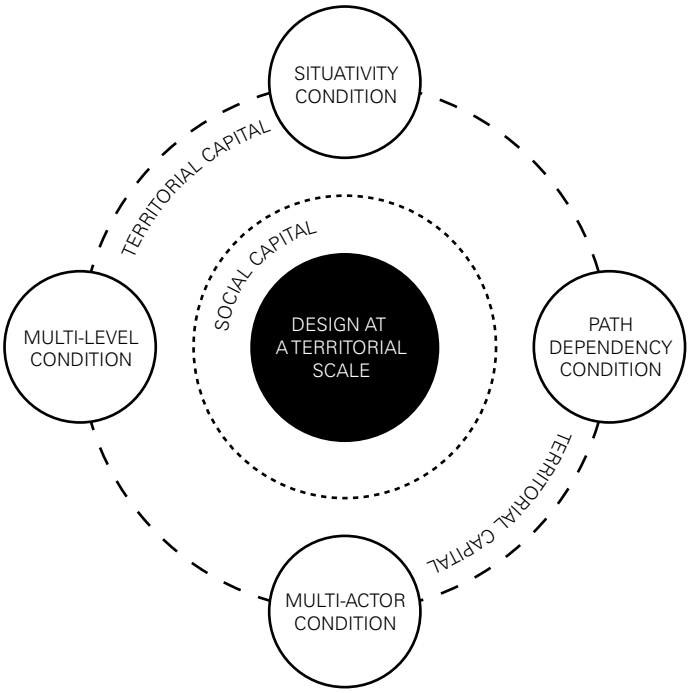

Figure 1. The design action conditions at a territorial level.

process between the *design community* and the *general community* on the goals, the ways to reach them and their results[4]. The *design process enabling* happens when the right conditions for the *dialogue* are set up, through the definition of a *common language* and backgrounds and *shared tools* within the *design community*.

4. The *multi-level condition* (different scales of design activities): the design action plays a role on key dimensions as well as at different design scales, starting from the planetary up to the regional, local, urban ones interacting with several spheres tied to the individuals daily life an to the organisation of the production/re-production resources cycles. It is then necessary to consider the territory through a multi-scale design perspective.

Building and enabling design communities

The design action is then a collective action requiring a shared process to define goals, practices, tools etc. It is carried out in a territory and it is aimed at supporting the resources development (tangible or intangible) characterising that particular area. According to this idea a territorial design action requires actors competencies, enabled interactions, in order to create what we can define a *design community*.

Our hypothesis is to consider the networks involved within a territorial design action as a *community of practice*[5] (Wenger, 1998). The so-called *design community* is established, for a precise period of time, around a shared objective (the project), on the basis of a *mutual engagement*, sharing and creating a *common repertoire* made of languages, tools, actions, styles (Wenger, 1998). This community produces an effective *design process governance*[6]: this one allows the different actors (individuals or communities) to share a common design vision and to define the *process* for its accomplishment.

Our hypothesis also considers the designer (with his own disciplinary competencies) as the enabler of this community. The designer in fact acts on the languages, routines and tools (*shared repertoire*) that the community uses or produces throughout the project (Wenger, 1998), enabling then the creation

4 The theme of the negotiation process at a territorial scale is well discussed in territorial planning literature like, in example: Fisher and Ury 1981, Forester 1989, Elster 1993.

5 The *design community model* refers to the Wenger's *constellation of community of practice* model. Wenger 1998: the local actors interacts and share knowledge in order to achieve a shared consensus and a common capability of design together.

6 "…Capability to combine different interests, actors and organisations and to express them in a local context…" Le Gales 1997, p. 45.

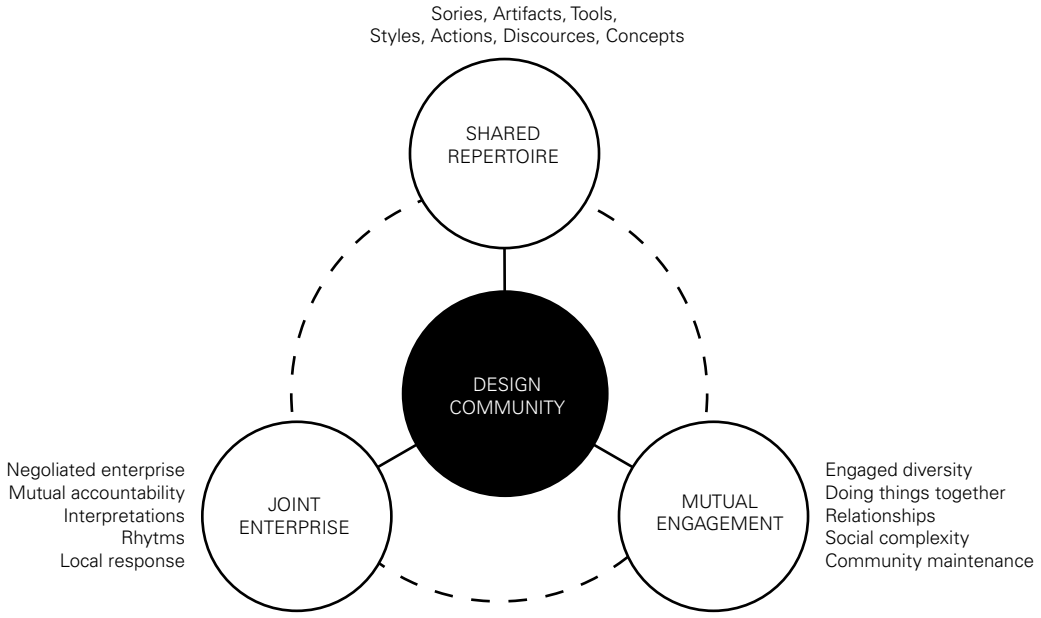

Figure 2. Constitutive elements of a designing community as a community of practice (adaptation from Wenger, 1998).

of design guidelines and the ways in which they are *visualised*. In this sense the designer could be considered as a *learning enabler*[7].

The learning process is thus considered as an essentially social process, deriving from the exchange and the sharing of the experiences of each member of the designing community. In this case, the learning is situated (Lave, 1990; Brown and Collins, 1989) in a practice: the design process.

So we propose a model and some *design levels* emerged by ME.Design[8], a research activity on the field, carried out by the SDI Agency[9] of the Design Faculty of the Politecnico di Milano. The research focused on the identification of the competencies, tools and activities the designer can use to support the development of localities. The approach of the ME.Design was that of an *action-research*[10], so its hypothesis had been verified on the field through a series of design workshops, carried out in different Italian territories (rural sites, tourist sites, urban environments etc.) The workshops focused on: the design of tourist services, the development of local productions, the valorisation of the environmental, historical, cultural heritage.... The research highlighted three *emergent* and significant levels for enabling design activity:

1. the level of the relationships amongst the local actors
2. the level of the strategic project definition (design guidelines)
3. the level of *system-product* definition (artefacts, communication and services)

At all levels designers act on the competencies, the languages, the aesthetic dimensions comprising the *shared repertoire* that Wenger describes in the *community of practice* model even if the aims to be reached, the actors involved and the tools used vary from a level to another:

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7 "…Community of practice can be though as shared histories of learning…" Wenger 1998, p. 86.

8 We are using the experience of *ME.Design. Design strategies, tools and procedures aimed at increasing the value and promote the resources of the Mediterranean area between local and global*, a MIUR (The Italian Ministry of the University and Research) funded research carried out in 2002–2003. It involved a group of over 90 researchers from seven Italian Universities.

9 SDI|Sistema Design Italia (Design System Italy) is a network of design research Agencies. It comprises of 8 agencies throughout the whole National territory; see the Agency website <http://www.sistemadesignitalia.it> for further information.

10 *Action-research* is a research approach that could be considered as a tool for solving real problems, found by the people within their professional field, the community they belong to, and their daily lives. Stringer 1996.

11 Seven workshops have been carried out: Valdambra (AR), Sanremo (IM), Mantua, Morcone (BN), Ustica (PA), Reggio Calabria, Naples.

12 In example *workshops, road shows, street stalls* are tools for *vision definition*. Wates 2000.

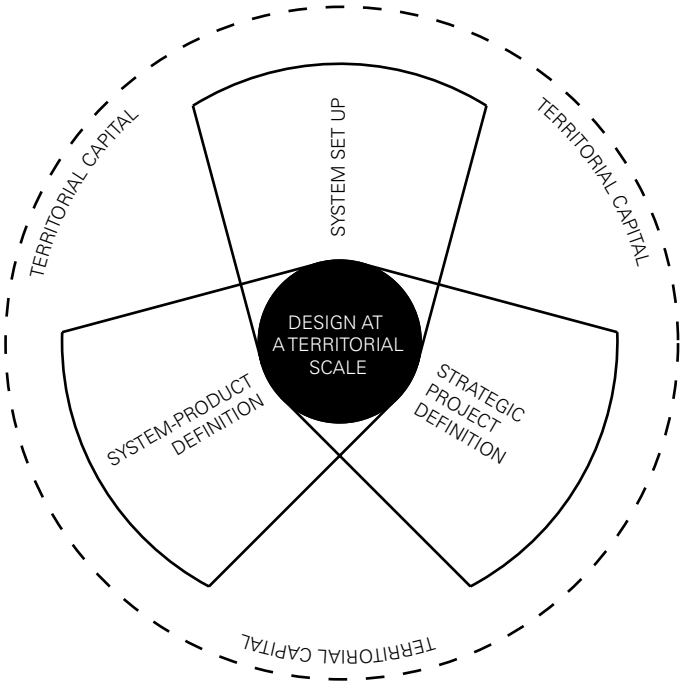

Figure 3. The three possible levels of territorial design action.

1. *System set up level.* At this level, the designer's activity focuses on the *joint enterprise* and the *mutual engagement.* It then refers to the creation of the *network of actors* involved in design action at a local level (*design community*), to the building of the relationships amongst these actors, to the identification of the competencies and roles, and then to the development of the organisation framework needed to realise the actions. The designer's activities are mainly dedicated to the creation of a *common language,* of a communication and organisation system which can support agreement and trust amongst the actors involved in the design process. In this phase, it is necessary to define objectives and identify the tools to reach them. The designer has, in this sense, the expertise and the capabilities to move the community from an analytical level of action towards a concise one. The designer's capability to visualise and represent (through maps, images, metaphors, etc.), could represent a powerful resource to facilitate the *dialogue* and the *interaction* amongst the design community's members.

2. *Strategic project definition level.* At this level the designer acts on the dimensions related to the *mutual engagement* and *shared repertoire.* In this phase he helps to define the *design guidelines* related to areas of action in which it is possible to identify real solutions. The designer can thus suggest design scenarios for the valorisation of the territories, identify and visualise possible ways for the resources development, set up the tools to facilitate the building of common design visions[12] shared both amongst the *design community* members, and amongst external actors.

3. *System-product definition level.* This is the level that could be considered closer to the usual designer's activities. The designer carries out his own activity when the roles of the actors are structured and when design guidelines are developed and visualised. The designer's action regards thus the design of artifacts, services and communication. In this case he acts as a specific resource within the *design community* together with other competencies involved in the design process (either economic, managerial, legislative, etc.).

In the pages below we present some cases arguing more in depth the presented territorial design action levels. Each case is characterised by the presence of a situated dimension, of typical territorial design conditions (multi-actor condition...), of complementary design levels and of different design solutions developed.

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13 Morcone is a small town close to Benevento (South Italy), and its territorial context is mainly rural.

Case 1.
Workshopdesign Morcone 2003:
System set up level

Building the Sannio Community: the hypothesis of a consortium amongst the small towns. Designer as enabler of collaborative processes.

The territory

The ME.Design activity started in May 2003, when a group of researchers of the Università degli Studi di Napoli Federico II and the town Council of Morcone [13] decided to collaborate at a project for the valorisation of the Sannio territory (County of Benevento). The starting point is a socio-economic dossier drawn up by a local territorial marketing company.

The design activity

In the starting phase the researchers made a series of interviews with the local actors to understand the strengths and needs of the territorial context. The researchers understood that the analysed villages had not the required resources to face with innovation actions. The starting point for the design action was the hypothesis of a local consortium between small towns aimed at promoting local services for the citizens and visitors. According to this premise a design workshop was carried out. The activity started from the collaboration between the Università degli Studi di Napoli "Federico II" and the Università degli Studi di Palermo, the Province of Benevento and the Town Council of Morcone. The design workshop started from some questions:

– How is it possible to create value for territories on the basis of a territorial cooperation?
– How is it possible to communicate the design concept to local government?

The workshop was carried out for five days in September 2003. A lot of researchers, designers and students took part to the workshop, working together to generate common design visions and find design solutions. The workshop activities generated a series of strategic outputs:

– a communication strategy for the local consortium identity through integrated services systems;
– different services systems hypothesis in which projects suggest a design strategy aiming at integrating the whole of the territorial capital's resources, so that the local actors can be directly involved in the change process.

The design solutions were presented to the local mayors of all towns involved in the projects. In this case the design concept represented the starting point for a collaboration amongst different mayors in order to empower local resources.

The designer's role

The aim of the design action was to build a collaboration framework between actors of different villages, creating a *design community* and defining its objectives.In this case the designer's role was that of facilitating the communication in the starting phase, designer and researcher created some documents to *organise* the *design community* activities (*shared repertoire*) and create a common language shared amongst the actors involved. The designer's work was to enable a learning process on the territory's potentialities through the generation of design visions of some possible development scenarios. The design activities, related to the *system set up* level, aimed at defining the initial stage needed to promote some territorial development processes within a group of institutional actors (*mutual engagement* and *joint enterprise*).

Figure 4. 0ne of the design workshop result: tourism service aimed at changing the perception of a specific place of the Sannio territory.

Case 2.
Reflecting Mantua:
Strategic project definition level

A design strategic process for creating the Mantua identity. Designer as enabler of communication processes between administration and citizens.

The territory

The ME.Design activity started at the beginning of 2003, when the Town Council of Mantua and the Politecnico di Milano collaborated at a project focusing on the town communication plan. A working team was created, comprising of the researchers of the SDI Agency, the mayor of Mantua, and the youth policies Councillor. During the meetings the actors decided to set up some guidelines for the communication of Mantua to be used by Mantua government. The design action had two outputs: a desk research about Mantua tourism communication, and the realisation of some video reportage.

The design activity

The aim of the design activity, in this case, was the visualisation of the Mantua territorial capital through different tools to be shared with other *design community members.* Mantua resources were visualised through some communication artifacts (*Posters*) and video reportage. While some young designers realized the Mantua Posters, a film troupe realised some ethnographic video reportage involving some local cultural and civic associations with the collaboration of local newspaper, and the local TV. The videos represented what the Mantua's community perceived about their social and cultural identity. The videos and the *Posters* gathered from the desk research represented the tools to enable, together with the community, a communication process of the perceived cultural and social identity between local government and citizens. Those tools represented a mean through which it is possible to set up a communication strategy of Mantua, thank to the cooperation amongst different local actors.

The designer's role

The aim of the design activity was to create a set of tools to represent the Mantua social and cultural identity to facilitate the *dialogue* between city government and people. This case describes in fact the designer as *communication enabler* between the institution and the citizens, through the setting up of specific design tools (*shared repertoire*) that facilitated a knowledge exchange between different *communities.* The design action, referred to the *strategic project definition level,* aimed not at proposing final design solutions, but the result was the organisation of a process through which the different local actors would be able to find solutions aimed at setting up a communication system of Mantua city, according to their own competencies and knowledge.

Figure 5. Mantua territorial capital videos were build through people active participation. Communication artifacts (Posters) were also created to represent the tourism flows in the city.

Case 3.
CaLABria Design:
Product-system definition level

The exploitation of the local handmade textile production. Designer as design strategies enabler.

The territory

The ME.Design activity started in May 2003 when the SDI Agency started collaborating with ATENA, a trading company in handmade textile products. ATENA comprises of a network of craftswomen working within the county of Catanzaro (South Italy). The ATENA project is tied to a series of actions at a wider level, started in 1999, aiming at encouraging the local entrepreneurs to create new positions. The design aim was to make the local handmade textile productions more competitive, to allow ATENA to be competitive both on the national and international market. The design activity. The design activity started with an analysis of the textile productions also visiting the artisan's laboratories. The analysis allowed the researchers to understand the local production system, and the local artisans to understand their own weak-ness and strengths related to their own productions. The effective collaboration amongst designers and artisans began with the participation to the design workshop, carried out in Calabria region. The aim of the design action was to define a design strategy for exploiting the production of several local entrepreneurial realities, associated under the ATENA brand.The participants were given an informative dossier in order to better face the design workshop. The dossier presented some design best practices focusing on the issue of the handicraft production development. Textile entrepreneurs, ceramic artisans, tourist services managers participate to the design workshops. Together with the researchers, designers and students artisans took part to the design proposals definition, aimed at the local handicraft production development. The workshop allowed the participants to share a design method for handicraft productions. The local productive systems had been considered as integrations amongst handicraft productions, local entrepreneurships, hospitality services, etc..., in order to suggest products, communication artifacts, selling and delivery systems.

The designer's role

In this case the designer activities, related to the *product system definition,* suggested real design solutions for the territorial context development, starting from the handicraft resource. The design action lead to a twofold result:

– the design solutions of products, communication artifacts and market strategies;
– the importance of the design capabilities for the handicraft production: design as method, strategy of action, action modalities to exploit the handicraft productions (*shared repertoire*).

Figure 6. One of the result of the design activities: new product-system for handicraft production (products, communication, delivery) for babies.

Conclusions

In conclusion we could state that the designer role could be interpreted as that of a *learning enabler* in a specific case of *community of practice* theoretical model, i.e. what we called *design community.* Through the action-research case of the ME.Design research we identified three main levels for enabling the *design community:*

1. the first level, the *system set up*, in which the designer is involved within a negotiation process. It requires the capability to *visualise* the concepts, ideas, relations, meanings, shifting from an analytical to a synthetic level.
2. the second level, the *strategic project definition,* in which the designer tries to visualise the possible design opportunities defining directions and tools for the design action
3. the third level, the *system-product definition,* in which the designer acts as a specific resource able to give shape to the design solution using specific methods and tools.

The designer's role within the level of *system-product definition* is generally acknowledged as an accepted and specific competence within the *design community.* At the opposite, for the system set up and *strategic project definition* levels, the designer needs to widen his own usual competence and to modify his design tools, adapting them to the characteristics required by the territorial design action. Within the territorial design action the designer then characterises his role as that of a *learning enabler*, able to act in different ways at different levels of the design process. His field of action is wider: he doesn't only designs the *artifacts' shape,* but he also *gives shape* to the design community language, competence, organization.In this sense he enables the *design community* to communicate, envision, design, act and develop.

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The Relationship between Design, Entrepreneurship and Society

The paper considers to what extent the designer has a moral responsibility when designing in these times of globalisation

Abstract

This report investigates the relationship between design, entrepreneurship and society and pays particular attention to the role of the entrepreneur and the changing conditions for design with the emergence of Globalisation.

Before considering the question are we certain we understand it? The paper considers the definition of design, entrepreneurship and society and the relationship between the three with (the emergence of) Globalisation. Following that is an evaluation of what Globalisation means for the entrepreneur in the future, by utilising examples of design around the world.

The role of the entrepreneur is then discussed and evaluated in terms of opportunities and moral obligation- the paper looks at whether the design individual has a moral responsibility when designing in these times of Globalisation. The paper concludes with a balanced assessment of Globalisation and the role of the Designer.

Introduction

We live in an age of international competition and design, where companies are now very keen to tap into a *"one size fits all"* global consumer market. While this approach may be economically tempting, the reality is difficult to achieve. Designers are imperative to the success of a company; their creativity can directly enhance the reputation and influence the company's profile within the ever-growing worldwide market.

The difficulties facing both the designer and entrepreneur within the global market are moral, cultural and ethical issues that are crucial in the total design and business approach in targeting the right market.

Design on a global scale

The world in which we live is technically getting smaller with the acceptance that information and knowledge are almost immediately available to those in the developed world through the adoption of the Internet, email and mass media. Business meetings can be undertaken with various participants in different locations around the world. In addition, global imagery, be it the logo of a multi national fast food chain or the latest footage of the ongoing "war" in Iraq, can be seen, understood and digested in any language or culture all around the world in real time.

After World War 2, the period of reconstruction and rebirth saw a reduction of trade barriers, and this integration was assisted in the nineteen seventies with the lifting of restrictions on international

Figure 1. "BBC News" reporter John Simpson on location in Iraq, 2003.

Figure 2. The revamped Regent St branch of McDonalds with Interior design by freelance designer Lucy Powers.

trade, investment and capital. The fact that national economies are now more closely integrated has developed a globalisation of the economies; this has seen the growing importance of economic organisations such as the world trade organisation and international monetary fund in regulating trade policies.

Barriers between cultures are being lowered because of the increased amount of global communication. Increasingly, individuals are becoming more global in their outlook and may not follow the traditions laid down by their culture, for example Chinese tradition dictates that black is an "unhappy" colour. This is not reflected in the purchasing habits of Chinese consumers buying home entertainment units such as VCR's and DVD's in the typical black casings. Consumers have ignored their traditions in favour of modern technology and a global company. This is one of the results of globalisation and one that evokes feeling in most individuals whether they agree with the term globalisation or not. It is interesting to see how different individuals interpret the word. Some campaigners use the term globalisation with a different emphasis; they see globalisation as potentially describing a positive global environment where everyone in the world can benefit from economic interaction and not just a small business minority.

However, not all people believe in globalisation, whilst it can offer business and national economies many opportunities such as advancements in communication, the spread of a free market ideology and economic development in particular to the third world presents many dangers, such as rapid unsustainable economic expenditure with no underpinning strategies for long term growth and prosperity. The global economy is dominated by multinational businesses and these currently control more than eighty percent of the worlds stock and more than half of its trade. One multinational company that creates controversy is the franchised American fast food chain McDonalds. With over 30,000 restaurants worldwide, some people see this as the spread of globalisation eroding local culture and tradition until the whole world exists as an extension of the USA, with their culture and ideology. McDonalds after a steady loss of profits is introducing a gradual redesign of its entire brand. After incorporating healthier ranges into its standard menu it is now moving away from the Americana beige plastic tables into an environment which is intended to be an extension of our homes and lives. In comes scandinavianesque furniture and lighting whilst the walls are decorated with wide stripes of colour to encourage a warm and relaxing atmosphere. It is hoped that the latest McDonalds opened in Regent St, London will raise the image and the eat-in experience but surely, until McDonalds stop selling fast food will the culinary experience improve.

Designers must navigate many avenues when designing, as the market for their products and services does not end at national borders, they must be able to survive the intense diverse global environment. Designers need to bridge languages, cultures and living environments. In this competitive age, design is the key factor that can provide business competitiveness in the global economy. In an interview, the acclaimed design entrepreneur Dieter Rams was asked how he felt about modern design:

"Braun were always willing to take a risk – what's missing today is that these kind of entrepreneurs are no longer there. Today there is only Apple and to a lesser extent Sony." (Dieter Rams, 2004)

Figure 3. The 1998 iMac, left, which revitalised the company fortunes of Apple and the 2001 update.

Both Sony and Apple are highly successful global companies and have design presence around the world initialising centres for design research and development. Another multinational, Samsung, has initiated a comprehensive international design programme establishing or reinforcing design centres in Seoul, Tokyo, London, Los Angeles and San Francisco. The purpose of establishing this global design network is to transform Samsung from a design follower to a global design leader, to present its products as innovative, approachable, high quality and excellent value by using adaptive design.

Adapting design for world markets

Adaptive design can be defined as design that takes an existing product and adapts it to suit the specific tastes of other cultures. It is important to realise that over-adapted products may lose their unique identity and therefore their competitiveness in the local market. Mobile phone manufacturers, such as Motorola and Nokia, illustrate adaptive design. They will adapt both the physical design of their handsets and the user interface to better suit different cultural tastes. In the Chinese market for example, Motorola often offers handsets in unique colours and finishes to better suit the demands of Asian consumers whilst Nokia offers culturally specific features such as Chinese astrological symbols.

Clive Grinyer, Director of Customer Experience at Orange identifies two strategies for exporting products to the global marketplace: *value exporters and value collectors.* (Clive Grinyer, 2002)

Some companies are seen as being value exporters. The company will normally have strong values and these are linked to national characteristics. Design will be utilised as a tool to emphasise values that set them apart from the competition. Examples of this type of company are Rolls Royce who exports the reputation of handcrafted excellence, and Land Rover who export proven and dependable British engineering. In Rolls Royce and Land Rover's case, any attempt to modify the design to fit in with conventional local market demands would result in a reduction of its value to the potential overseas customers. Another good example of a value exporter is the work of designer and business innovator Paul Smith. Smith's clothing designs, which have been called quintessentially English – classic tailoring with a hint of eccentricity – have been applied to furniture and successfully exported to the Far East where the brand is the biggest European designer in Japan.

The remainder of companies are *value collectors.* They will probably have a strong internal culture, but their outward style is less identifiable. More time and money will have to be invested in researching their potential markets and then design will be used in order to create products to connect with their international customers. The Japanese or Korean brands such as Sony, Samsung or Panasonic are all examples of value collectors. Design is often undertaken in-house or in consultation with agencies, who provide region-specific research and design to the company. It is very important to understand which approach to utilise when venturing into international markets, as sometimes globalisation and nationality can be difficult to separate.

The report "Investing in Design to Improve Export Potential" by the University of Sussex states that:

Figure 4. Examples of furniture by the designer Paul Smith, whose work couples existing design with an eccentric twist.

"In the past, competition has been driven by efforts to reduce the price of products, whereas in the 21st Century 'new economy', customers are demanding a greater choice of products and services." (University of Sussex, 2002)

This means companies are finding that in the context of rapidly changing consumer taste and opinion they can no longer derive a competitive advantage simply from reducing costs.

Corporate social responsibility (CSR)

"We've found a new way to win in the marketplace – one that doesn't come at the expense of our grandchildren or the Earth, but at the expense of the inefficient competitor." (Ray Anderson, CEO, Interface)

There is growing acceptance worldwide that the corporate sector must face up to its responsibilities in the global environment. In addition to reducing environmental impact, an increasing number of companies are getting involved in areas such as human rights and fair trade, non-discriminatory employment practices and development of local economies. This trend towards sustainable development in the corporate sector, which relates economic success to social and environmental factors, has become known as corporate social responsibility (CSR).

In March 2000 the UK became the first country in Europe to have a CSR minister. Stephen Timms assumed this responsibility in May 2002, when he joined the Department of Trade and Industry as Minister of State for Energy, e-commerce and postal services, which includes the sustainable development and CSR agendas.

The seventh Design Council *D-Futures* debate: "Necessity or Nirvana" was held in Newcastle and the first speaker, Bharat Lad pointed out that traditional business processes make sustainability difficult to implement.

"Companies tend to have a one-way business model, no one takes responsibility for what finally happens to the product and it's usually someone else, such as the local council, who ends up footing the bill." (Bharat Lad, 2003)

It is not just the social and environmental responsibility that companies must face up to, but also the controversial aspect of human rights, working conditions and fair trade.

"Globalisation refers to the growing integration of national economies, evidenced by an increase in cross-border flows of trade, investment and financial capital." (Core Management, 2000)

"Oxfam has proposed realistic action plans that create the kind of globalisation we would be proud to tell our children's children about, Make Trade Fair = globalisation for everyone". (Dr Tanya Lyons, 2001)

These are two interpretations of the term globalisation, and in addition to ensuring they understand a target market, the designer now has to be aware of public opinion of the intended market.

As society struggles with global change, individual consumers are adopting a more socially responsible attitude. For example, the increase in supermarkets such as Tesco and Sainsburys providing their own brand fair trade products has been because of

Figure 5. Chris Martin, lead singer from the band Coldplay campaigns on behalf of the Make Trade Fair campaign.

consumer demand. This had led to greater awareness on the organisations part of adopting greater social responsibility. Adidas is another case of public opinion suggesting companies adapt or change previously held business operations through the public awareness of sweatshops and tragically low pay and deprived working conditions. The trend shown by companies such as Marks and Spencer of having dedicated CSR directorates impacts on the entrepreneur as he or she will need to incorporate CSR into their business plan. Whilst this may prove more expensive for the entrepreneur in the initial stages of business set up, in a socially responsible market place it is essential for the long-term success of any business.

The admittance from Proctor and Gamble that they would be launching a fair trade coffee is not entirely down to tireless campaigning from Oxfam and others but due to the fact that public opinion believes farmers should get a fairer price for their crops. Thus if more and more customers request fair trade products a company will launch one. It would be both foolish and potentially damaging to a company not to offer what the public want in today's competitive environment. It is not just the coffee industry that has started to hear the views of society change; another industry is the clothing market, particularly sportswear.

"The majority of workers in the sportswear industry are women. If women workers are going to escape from poverty we need to change the way these companies do business and make trade fair." (Jasmine Whitbread, 2003)

Adidas, like other global brands, is a potential target for media pressure and protests if its policies and practices conflict with public opinion. The company uses an external supply chain that allows them to keep costs down and remain competitive, but the company recognises that outsourcing supply should not mean outsourcing moral responsibility. Adidas has a long-term vision of self-governance for suppliers by building local capacity to enable suppliers to manage their human resources.

This will hopefully result in agreed health and safety standards and human rights. The company will publish its fourth social and environmental report

Figure 6. Sportswear manufacturers such as Adidas have received criticsm for their unethical working practices.

Figure 7. THe DC03, the latest incarnation of the Dyson cyclonic cleaner.

in 2004. The first report was written in 2000, highlighting the tension between manufacturing in the southern hemisphere and marketing in the northern hemisphere by contrasting images of competitive sport with images of poverty and child labour from developing countries where the products are manufactured.

In addition to existing companies sourcing cheaper labour from developing countries, the last decade has seen a variation on the theme in that of British companies moving part of its operations to developing countries such as India. The process is known as "offshoring" and these companies have included Abbey, National Rail enquiries and Dyson.

James Dyson and his revolutionary cyclonic cleaner was a major success in the nineteen nineties. The Dyson cleaner was an achievement both on a design level and an entrepreneurial one, the cleaner used cyclone technology and thus eliminated the bag, which meant no reduction of power, and Dyson had constantly believed in his product after countless redesigns when no one else would.

Unfortunately at the start of 2000 James Dyson announced that due to increasing demand he would be building a new factory but not in Britain. Contrary to the statement made in 2000 that none of the jobs in Wiltshire would be lost by the move to Malaysia, 800 jobs were lost in 2003.

In an interview Mr Dyson blamed the strong pound for his decision.

"The problem is that the pound is overvalued by 30%. When we export we are 30% more expensive," he said, "We are becoming a very international business and our exports are doubling every year." (James Dyson, 2000)

Conclusion

Society influences and is influenced by design. The designer of today has to bear in mind many factors when designing a product as in this globalised world there are many different traditions, cultures and types of ideology. It is important to keep these traditions and yet at the same time be open to the cultures and thoughts of other nations. A balance is needed as the population and the economies of the world need to exist with each other, trading and using the various skills and geographical features to benefit as many people as possible. The term globalisation has the potential to become more of a word that is positive for the majority of the world's inhabitants and not just the multi national enterprises that currently dominate the financial world.

Of course human rights, working conditions and fairer trade will not improve overnight, there will always be rich and poor, but with CSR and individuals in society making their voice and opinion heard things can only improve. Certainly, from a design point of view the globalised world presents many advantages and potential disadvantages to the design entrepreneur especially if the gap between the northern and southern hemisphere widens. Designers can design for the world and can use adaptive design for different markets as required. On the downside, though the individual is faced with moral dilemmas such as working ethics and unfair trade. Globalisation is currently a term, which sees benefits for the minority, but which is paid for and laboured

by the majority, that is the perceived business ethic that must change.

Globalisation could become a positive expression for the world as one community, with each individual still in touch with their heritage and history yet aware of other cultures. There should just not be any extremes such as any one country saturating its beliefs, ideology or business ethics onto any other through heavy-handed tactics or trading restrictions. If each individual becomes more tolerant and aware of others then Globalisation has the potential to become a positive term and that can only be beneficial to all, especially the modern designer.

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The Role of the Designer in the Innovation Process

Chances and challenges for design education

1. Innovation – design – entrepreneurship

"This conference will shed light on these issues in order to help design education and design communities take a more active role towards innovation and entrepreneurship for the future."[1]

Benefits can be derived from a close cooperation between innovation practice – design – and innovation research. Both disciplines are dealing with the same topics, observing them from different perspectives and using different terms. If design education provides knowledge in innovation theory, and beyond it, trains students in entrepreneurial skills, it may enable designers not only to take a central role in the innovation process but also in entrepreneurial functions, generating value through successful innovations.

Describing the characteristics of innovations, the first case study resumes general criteria of innovation as a basis for design activities, typifying them with an entrepreneurial example. The subsequent section outlines one specific research field – and exemplarily illustrates implications for design education and practise. To give a brief impression of the presentation, the appendix contains some slide-examples.

2 Entrepreneurial innovation – a case study

In one of our research projects at TUM Business School we are cooperating with a Munich based mass customizer of women's shoes. Given the fact that the founder and head of the company is a designer herself and holds a Master in Business Administration this case study is a relevant example for the connection between innovation, design and entrepreneurship.

The business model of this company is based on a radical innovation in design, production and distribution: mass customization. Customers have the possibility to choose their model and then adapt it to their preferences and needs regarding material, colour and size. Customers are offered individual products fitting exactly their individual needs. These shoes are manufactured on demand and shipped to the customer.

As described above the entrepreneurial activities of this start up are based on a radical innovation. Innovations offer entrepreneurial chances, but these chances go along with risks. Empirical Studies show, that depending on the industry, 30–50 percent of all innovative products and services are "flops",[2] meaning they are not adopted by the market.

Emerging questions are: What are the critical success factors influencing the adoption of innovations, and how can we support these critical success factors?

2.1 Adoption of innovations

Innovation research provides indications. Everett M. Rogers describes five characteristics of innovations, as perceived by individuals, in order to explain their different rates of adoption[3]:

– *Relative Advantage* is the degree to which an innovation is perceived as better than the idea it supersedes.
– *Compatibility* is the degree to which an innovation

1 <http://www.aho.no/cumulus/conference_theme.htm>.
2 Brockhoff 1993, p. 2ff.

is perceived as being consistent with the existing values, past experiences, and needs of potential adopters.

– *Complexity* is the degree to which an innovation is perceived as being difficult to understand and use.

– *Triability* is the degree to which an innovation may be experienced on a limited basis.

– *Observability* is the degree to which the results of an innovation are visible to others.

Apparently, these characteristics demonstrate the pivotal role of perception within the process of adoption. Thus, communication is of vital importance. Obviously potential customers cannot perceive the relative advantage of mass customization by the perception of the product itself, moreover results (benefits) are not visible to others. *Complexity* is high and *triability* is low. Due to its nature as a *product-service-bundle*, the advantages of mass customization have to be communicated to the customer explicitly.

2.2 Implications for design education

Designers are experts in communication – or at least they should be. Applying their expertise in communication designers can play a vital role both within the development and within the adoption process of innovations. Within the research project, we conducted a design competition for architectural students in cooperation with Prof. Richard Horden. To support the adoption process, a mobile shop unit had to be developed, communicating the high degree of innovativeness of mass customized products.

3 Innovation process and customer integration

As described above, 30–50 percent of all innovative products and services are "flops",[4] meaning they are not adopted by the market. Thus market and customer orientation is critical to innovation success. Common methods of market research prevalently are subject to restrictions, as they normally refer to existing products and therefore rarely lead to breakthrough innovations.[5]

Innovation research suggests that customers can play an active role in the innovation process. Innovative users not only can deliver information, but also above all can take part in the development of innovative products. This concept is aiming at the utilization

Figure 1. Design for a mobile shop unit for mass customized shoes by Martin Bielmeier, TUM.

3 Rogers, E.M 1995, p.15.
4 Brockhoff, K. 1993, p. 2ff.
5 von Hippel 1986, p. 793.

of implicit knowledge. The term *lead user* has been coined by Eric von Hippel, and it characterizes those users, whose present needs are going to be relevant for the market in the near future. Furthermore, *lead users* are going to benefit from a solution of their needs significantly.[6]

The concept derives from the given fact, that many breakthrough innovations were developed by users. Sports goods offer various examples, for instance snowboards and mountain bikes.

3.1 Toolkits for customer integration

What are the requirements for an integration of the customer in innovation processes? Within the framework of the concept described above a specific tool is provided to users in order to shift relevant aspects of the innovation process to the customer. These *toolkits*[7] can be web-based interaction devices enabling users to assemble a potential future product from various components and modules. Whilst using the toolkit users access their implicit knowledge unconsciously.

Toolkits have to be developed and designed, and findings have to be integrated in the innovation process. Designers can fall back on their experiences in product design and their communication expertise. Visualisation is an essential requirement to enable customers to take over parts of the innovation chain.

Within several research projects, we are cooperating with another company that can be seen as a relevant example for the connection between innovation, design and entrepreneurship. The Munich based start up has been founded by an industrial designer and a consultant, and it focuses on various forms of customer integration, among them design and development of toolkits. The company embodies the utilization of the results of innovation research and their integration into an innovative business model.

3.2 Implications for design education

As discussed above designers should be experts in communication. Beyond that, they should be experts in product development. Applying these skills to new application fields deriving from innovation research may lead to new business models, offering new fields of activities.

4 Chances and challenges for design education

Leiff Huff, IDEO's head of industrial design Europe[8], outlined potential employees as *"T-shaped"*.[9] In the course of a symposium conducted by our institute in march 2004, he elucidated his illustration: The vertical element symbolizes the strong expertise and skills needed by employees in their specific professional discipline – for instance industrial design. The horizontal element embodies the interconnection skills needed to be part of a successful innovation team.

Innovation research offers a potential leverage affect, enabling designers to apply their knowledge exactly where it is needed, leading innovations to market success by communicating their specific benefits effectively. Designers can extend their role, taking an active part in the concept phase of innovations. Furthermore, innovation theory may provide knowledge that potentially results in new business models, leading to innovative entrepreneurial activities of designers – as described in the second case study.

Innovation research analyses a multitude of issues that may be basis for innovative design activities. Service innovation should be mentioned as another sample. Addressing the particularities of service innovation such as their intangibility and the integration of external factors, it may provide valuable knowledge applicable also to other fields of innovation. Dematerialization is proceeding, blurring the boundaries between physical products and services, emphasizing the necessity to focus on

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6 von Hippel 1986, p. 796.

7 von Hippel 2000, p. 2.

8 IDEO [Online]: <http://www.ideo.com>.

9 Leif Huff, Head of industrial design Europe IDEO, at the conference "Innovationserfolg durch Kundenintegration", Munich, 25 March 2004.

customer needs. Benefits can originate from a close cooperation between innovation practice – design – and innovation research. Both disciplines are dealing with the same topics, frequently observing them from different perspectives and prevalently using different terms. If design education provides the knowledge in innovation theory, and beyond it trains entrepreneurial skills, it may enable designers not only to take a central role in the innovation process but also in entrepreneurial functions, generating value through successful innovations.

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That Crazy Spiral

There are so many things one can say about the work we do, so many ways to explore the words and phrases of the language of design and entrepreneurship – but somehow I still remember the story of why I became a designer in the first place and how I did it. The heads of all designers are exploding with strategies and fears, with product ideas that have no place to go, wondering if they really can accept their changing role in the world as makers of brands, product developers and businessmen. The beginning of an entrepreneurial life in design seems to me to have more the quality of a ski jump than of an evening class in business administration. As a designer, you feel yourself ready to go, your skis swishing back and forth in two tracks, pointing towards an unbelievable slope.

You can't quite imagine why you would even want to do this.

Chapter 1

I became a designer in the sense of the world of little shops rather than global economies, and yet, the issues of innovation and entrepreneurship and finding a common language of designer, manufacturer, seller and end user are somehow always the same, regardless of scale.

I remember the feeling of holding a prototype in my hands. I remember the feeling of the special world of objects and the relationship these objects have to human beings. This is a real interface, a special case of product ergonomics: emotional, tactile, and part of the genetically programmed nature of human beings.

As designers, we are among those people who simply want to make things! As people, we are also part of that group who value objects. And objects need us as we need them, poetically speaking anyway: they are something like the relationship between humans and their pets, like dogs or cows, our loyal friends, our pals in life – there must be some parallel reality that exists in the universe of objects, a world with different DNA, lyrical biology and helical structure.

This was my first contact with a crazy spiral.

Figure 1. The spiral.

Figure 2. Helix.

It is in all of us. It is what makes us do the things we do. It is not only designers who live with one foot in the real world and one foot in the world of objects. Everyone does to some extent or other: artists, dentists and truck drivers, users of products, people who collect antiques, scientists like Ernst Haeckel who went off to the South Seas in search of little geodesic radiolaria. With the friendly collaboration of designers, objects come alive, in time and in space as evidence of our existence. Just as DNA has a spiral language, the mass-produced object, by its dissemination through-out the world like little cells, speaks the language of design.

Has anything really changed since we were all children and no one had to teach us how to make pictures and little wooden boats? Only we, designers, kept on doing it, when most of the others, the accountants and lawyers, the politicians and stockbrokers, turned towards more lofty matters. And we had better keep on doing it, before the motivation which still lives inside us transmutes forever into a different kind of genetic structure of money and market research, and before real innovation gets swallowed up by advertising.

I was an architect in the beginning, and so I escaped the traditional path of industrial design education and was never exposed to the possibility that design was only a matter of problem solving. There is evidence that there is more to design than solving problems! I am thinking that the soul of design must be in the making of objects, and perhaps in the experiment of where new ideas might lead.

While I was in Japan working as an architect, life was hard. Lost in the world of architecture and urban design, I drank beer and ate raw fish as often as I could, and, I realized, after months in a strange land, how much cultural information one absorbs, out of a hunger for understanding and a need for survival. In Tokyo, the atmosphere crackled with strange architecture, symbols, language, objects, as well as a different relationship with time. This was a culture where natural disasters formed the city; earthquakes and fire designed its history. This was a culture where, until 1873, time was measured by unequal hours that got longer and shorter from day to day, through the seasons. A culture like this cannot fail to give a designer big ideas!

My idea was about clocks and whether it was possible to change the way people tell time. A stupid idea maybe, and yet, I imagined telling time with colour and in my mind saw a “colour clock”, a cylinder of many illuminated bands, with a kind of spiral mechanism inside to turn on and off the lights in sequence with an ordinary motor. It was my friend

Figure 3. Helix tubes.

who said this was a terrible idea, but she thought that the spiral mechanism itself might be an interesting sculpture, and that most people would not bother about "blue minutes after pink o'clock", or being "yellow minutes late for a meeting". (I also realized that an object can force users into learning a different language and that this demand easily makes enemies of consumers.) I also realized that the clock, like a lot of scientific tools and musical instruments, has a long tradition of aesthetic ergonomics. In this tradition, a product has to look good in order to be used. Imagine playing an ugly violin, for example.

Somehow, with a growing obsession with spirals, a spiral clock was born – well, a "helical" clock really, a spiral with a constant radius. I named it Heligraph and it was really just a machine for changing rotary motion into linear motion, just like a screw. I was guided by some sort of spiral impulse and a kind of childlike wonder about objects and their making.

This period was about wanting to show the beauty of the mechanism. Hours move very slowly in a clock, measuring time in an un-visual way. I wanted a little more action, so I ended up making this clock very long, with three helical rotors, and made the one, which shows the seconds the longest, made up of sixty discreet segments, and then accentuated it with a polished mirror base, which reflected the sensuous rhythm of the passage of time.

I was already in the air, hurtling at high speed towards somewhere. I think of this as the steep "learning curve" of a new field with its own language and materials, and no safety net! I decided to show this prototype to another human being. One friend saw this funny machine, actually liked it and said he would like to buy one. (This is called "market research", by the way.)

I took a night class called "starting your own business" and showed the strange spiral clock to the professor. Six students in his class signed up to help me research the feasibility of bringing the Heligraph to market. "Market" is indeed a romantic, expressive institution. It is, I can tell you, "the market" which animates products; in the market, the designer can hear the sweet songs of fame, fortune, and affection for one's work. This is why we do it. I also loved the smooth sound of the word "entrepreneur" and the most lyrical words of all: MASS PRODUCTION.

So, here were six students eager to put me in business. We photographed the prototypes, visited retail stores, interviewed owners, tried to price parts, learned of exotic processes and materials, and went to trade shows. Then I called a phone number in Boston. I had learned of a little two-man company, (an architect and

Figure 4. Helix in lathe.

a physicist) mass producers of clocks that employed polarized filters to make the face change colour as time passed. Ideas, like twins, always come in pairs. Just when you get an idea, someone else has it, too.

They wanted to see the prototype. The great moment of this visit was the factory. Machines everywhere, precision machines, numerically controlled lathes and mills, grinders and drill presses, hand tools and testing racks, strange-looking fixtures and a definite mood that here was a place where human beings and machines were equals. Here was the heart of industrial design, where products would jump from their boxes, dancing through the night to the tunes of an aluminium orchestra, or a mighty pipe organ, made of acrylic tubes of every diameter and wall thickness.

We talked of licensing, production costs, sales, materials, patents and royalties. We decided to call the lawyers: it was time to make a deal.

Parts for five prototypes were made on a pantograph mill and carefully assembled into the finished clock. 102 hand-made parts in the spirals alone. How to produce this? The solution would come from a farm in Connecticut, where a small injection moulding company offered to make these little segments. Parts began to fill a cardboard box. Registration pins and holes in each part made assembly much easier. Tight angular tolerances had to be maintained, sixty segments to make one 360-degree revolution, not 361.

Chrome, black and yellow production prototypes went to the LA gift show. The name was changed to Helix, and orders were taken. Labels were applied to the newborn clocks – the label said: "designed by Steve Diskin" and it would be visible to the naked eye when the product was in normal use!

The first unit went to Los Angeles. I waited in the store listening for comments, "This spiral thing is crazy! It makes me so mad," a mother told her 12-year-old son, who openly coveted serial number 1. An electrician fixing an electrical outlet on the wall of the shop looked up from his work and said: "I get it! This is just a regular clock twisted into three dimensions!"

A week later I heard from the owner of the store that number 1 was sold, and to a noted luminary at that: Stevie Wonder. A blind musician. Who says there is no poetry in mass production!

Shipping started. "Shipping" happens backstage in the theatre of manufacturing, directed by the dramatic numerology of purchase orders, invoices and packing slips. And designer-makers look on

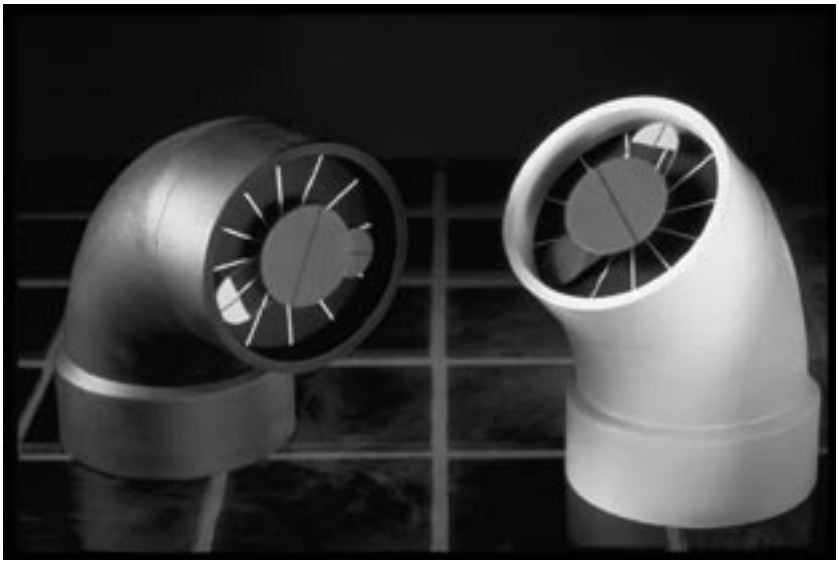

Figure 5. Octo.

wistfully as friendly birds leave the nest. Ultimately, shipping is the end of the ski jump, a form of flight, in all the meanings of the word.

In the mean time, Helix appeared in stores, catalogues, magazines, and newspapers. After a year, difficulties in production were gradually resolved. Then suddenly the company was sold. The new owners saw only balance sheets where smokestacks should have been. The music of the factory became silence. Fewer than 1000 clocks would be sold. But I had received my diploma from the school of industrial design in the streets.

Now it was really time to work.

Chapter 2

There would also be no going back. I had survived the curvature of the ski jump and now I was in flight. Or falling? I would become a designer-maker, a manufacturer, an entrepreneur. I quit my architecture job and started a very tiny company called Tik-Tek Engineering in a 40 square meter studio-factory, on the sixth floor of an old office building in Los Angeles. We subsequently produced over 25,000 new clocks, simpler clocks, but nevertheless proudly displaying the label "designed by Steve Diskin" and visible to the naked eye when the product was in normal use.

Small budgets make you very clever. With no money for tooling, I hunted for existing parts in a hardware store. I ended up with plastic pipe elbows. I filed and sanded and painted the parts and a respectable new clock was born. With the spiral experience of the Helix clock, observing work in the factory, cycling through the process, I could speak some of the language of suppliers and fabricators. But can you imagine a young designer trying to buy 1000 toilet fittings from a giant national plumbing manufacturer?

I took the prototypes to design shops in Los Angeles and got some orders. Somehow, I convinced sales representatives in California and New York to promote my work. I contracted with a handicapped workshop for assembly; mentally disturbed people were starting to put clocks together! I took the first boxes of finished clocks to UPS in my Citroën.

The endless problems of manufacturing and designing started to reveal themselves. It was a matter not of the design of the product anymore, but the way of making it. This is a different kind of excitement than making sketches or building computer models. Then came the stunning realization that one product is not enough, and that a manufacturer is always thinking of the next product while the impatient market is getting hungrier and hungrier. You are in business.

This is real.

But I did it. I started to make some money and this paid for the next product. I tried new materials or methods for each one. I began to develop a real portfolio of manufactured products: the Nova wall clock, the Time Capsule, Discus, Orb and Digit. Then I was discovered.

Distribution of my products was taken over by George Kovacs Lighting in New York. I gave away the tasks of business and all the paper work and some of the profits, but I got the reputation and representation all over the world by a very good company.

And soon I was designing products to be made by others. Now there would be the Brain Clock, Good Heavens and the Clock Lamp. I started designing lighting and watched as the clocks I produced got less and less interesting. Normal hands started to appear! I cared a lot about costs and production. Some part of me knew that the high-flying leap into the sky would eventually end up on the ground. I would soon come down to Earth. Life as a designer-manufacturer stopped. And sometimes I really miss it.

I used to love the immediacy of small-scale production; a designer-maker can see the life of a product as it is born and lives and dies. Above all, I loved the moment of creation, the complete mess in the studio from cutting, drilling, and painting. I would always clear a sacred area on the workbench for a bit of soft cloth, to make a ceremonial hearth for the rite of final assembly. You hold a screwdriver reverentially when you assemble a prototype and there is a glowing halo when the job is done. This is standard procedure at the altar of creativity.

And then manufacturing. It was a moment of true serenity in the quality control room at a certain metal stamping plant as I, a designer, and he, the fabricator, admired production piece number one. The fabricator knew and admired the careful work of the designer, the designer respected the capability and experience of the fabricator, and both knew that the other knew.

The executives of Siemens or Nokia, like the owner of a little atelier like mine, have all had ethereal dreams of production; they feel the primitive urges of the making of objects, they agonize over the minute technical details of finance and design, and they watch with complex emotion as shipping sends the dream to the consuming public.

There is no telling where products will go: to the pages of catalogues, shelves of stores, to the houses of people you sit next to on an airplane when you

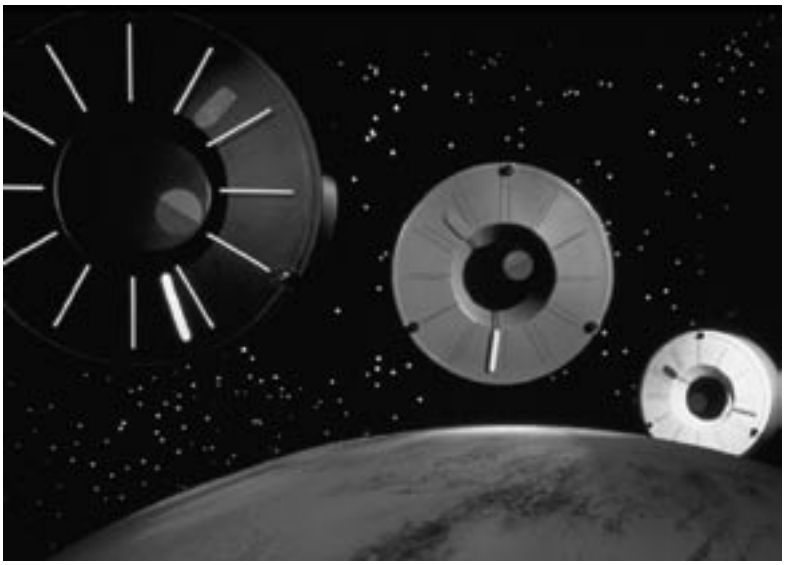

Figure 6. Nova.

Figure 7. Time Capsule.

travel. Industrial design is a dynamic world. The crazy spiral cycles forever, from beginning to end and starting over again.

Helix had ended up in the Cooper-Hewitt national design museum in New York. And I, in my own small corner of design, know that I am just part of the spiral as it moves and spins.

Chapter 3

I think there are really two kinds of entrepreneurship in design.

The first is "response", a rational, logical, analytical "hunting" for needs in the market and studying the ways to supply those needs. This idea of response contains within it the other idea of "responsibility", to all of the people involved in the design process, especially the manufacturer and end user.

The second way is "blind ambition", the entrepreneurship of trying to fly. Design emotionally, idealistically, intuitively and experimentally and then test the market. This is the idea that "if I like it, maybe others will too".

I think you need both, but I also think the second way should not be forgotten.

Students seem to spend a lot of time waiting these days, like birds on a wire, for professors, for their project tasks, and I have noticed the level of passion for designing seeming to go down. Initiative has evaporated into the air.

Students are amazed to find out they do not have to wait for permission. Amazed at what they can do when they use their energy. Amazed that there are people out there who want the sorts of things they can design. And amazed that they can JUST DO IT.

It can start with very modest projects. It is one way we can teach. Open the door and kick the students out into the streets, metaphorically speaking. This is lively research. And the kind that needs to be part of what design students do.

How can you structure this experience for students? The obvious one is with making business a part of the design education curriculum. But teaching business is like teaching a foreign language; it's easy to lose your personality when you switch vocabulary.

Second, recognize that product design is just one phase of product development and that there is more to the process than what happens inside the studio on a computer screen.

Figure 8. A page in a book.

And finally, encourage students to develop their own products, no matter how small, and seriously try to bring them to market. There is no doubt that all the theory in the world only becomes powerful when put into practice, and it is in the world, on the streets, in shops, in peoples houses and offices, in factories large and small, that product design starts to see its real power.

Entrepreneurship is about the excitement of an unknown outcome of a deep, creative impulse. To me, this is why we design and these are the things I want to tell students.

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Rapid Manufacturing, a Path to New Markets

Introduction

Rapid manufacturing is a legitimate child of the Rapid prototyping technology developed during the late 80's and 90's. Especially the layer-by-layer method can show an escalating quality performance since the early "3D printers". Early, the idea to use this technology to produce spare parts on demand was introduced. One problem was to come up with processes that were fast and accurate enough, and materials with sufficient qualities. From around 2000, this problem has been addressed and some projects using this technology have been carried out[1]. The second problem was to come up with products that were suited for the current technology, small in size, high on price. The latest two years have shown some interesting projects that fits in to this categories.

Background

The first commercial layer manufacturing system was presented at the AUTOFACT show in Detroit, MI in November 1987 by the 3D Systems company[2] and intended primarily for rapid prototyping application. Several other processes were subsequently developed through the 1980s and 1990s [3]. The technologies now available include a variety of different processes, such as Stereo lithography (SL) [4], Selective Laser Sintering (SLS) [5], Fused Deposition Manufacturing (FDM) [6], OBJET[7], Laminated Object Manufacturing (LOM) [8]. All systems are based on a 3-dimensional CAD file presented as a triangulated polygon mesh, a STL file[9]. The file is sliced in to thin layers and then manufactured by producing these layers one at a time.

Over the last decade, these two technologies have increased the build speed more than 1500% [10] and developed materials with much better properties (both mechanical and chemical). The price on the materials has been stable but the investment cost has dropped some 20–25% [11].

As mentioned earlier, the primary use of these machines was producing prototypes and visualizing new designs. This has both reduced both the design time and the lead-time for tooling, since the need for test running the tools is less. The obvious next step would be to produce small series for consumer testing. This has made it possible to stop a project before big investments in tools are made. However, the need for investments in production tools is one of the biggest problems getting your new product out to the marked.

Customisation

Car companies were some of the first to introduce delivery on demand and to give the opportunity to customise their products. They had no longer need for big storage facilities and each car produced is custom made to some extent: colours, interior, car stereo, etc. They can do this since the price level is so high and the lead-time does not increase due to computer-controlled production lines.

Could this way of thinking also be implemented in a much smaller scale? The technology is there and both old and new markets are opening up. The following two case studies show an optimisation of an old market, and opening for a new idea that would be impossible to finance without this new technology.

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1 SpaceDaily [Online]: Producing spare parts for a sanders conveyer belt.

2 3D Systems [Online].

3-9 Pham D.T. and Dimov S.S. 2001.

10 Rapid prototyping laboratory at AHO, speed test done summer 2003.

11 Wohlers Report 2003.

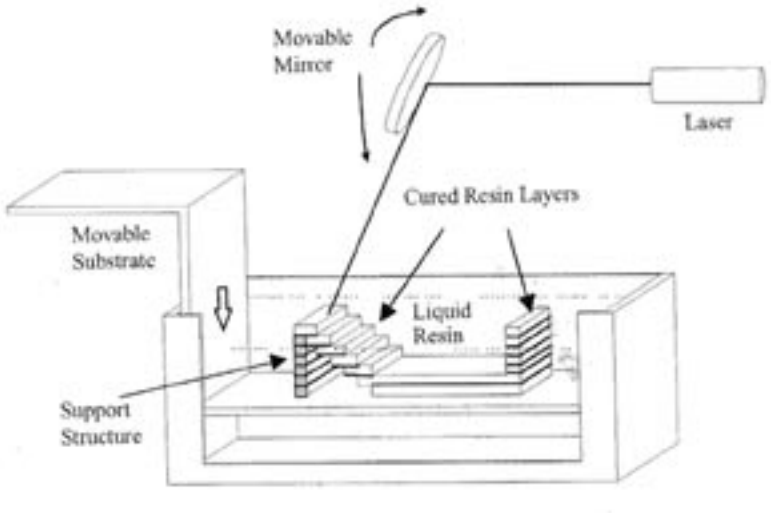

Figure 1. Schematics of sla process.
Stereo lithography was the first RP system launched. It is based on an epoxy resin which is cured (solidified) with a laser. This gives accurate parts with high finish. Needs support structure and can not stack parts in several layers since it is a liquid bath. Several materials are available, lately also transparent versions. An expensive system, both in use and to purchase. Source: 3D Systems [Online].

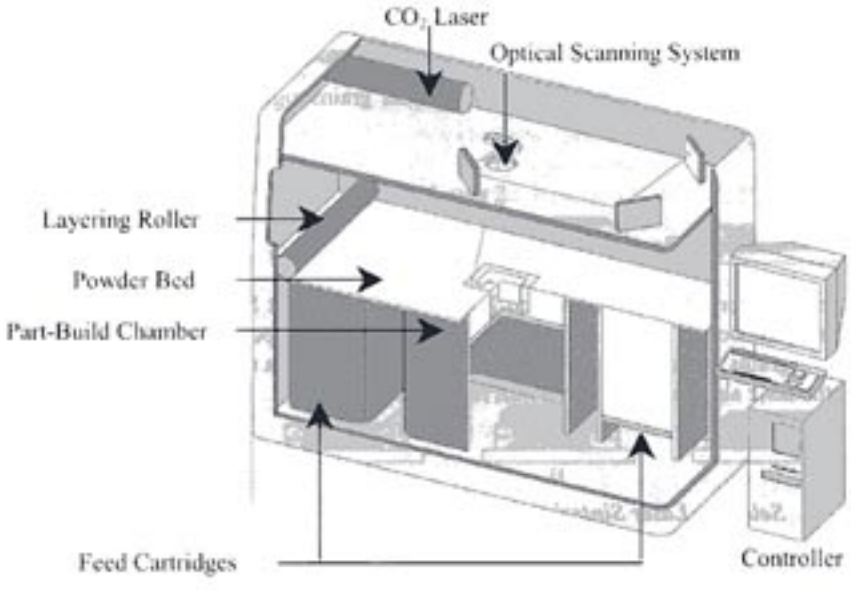

Figure 2. Schematics of the SLS process.
Selective laser sintering was developed at the university of Texas at the end of the 80s. The first commercial machine came in 1992. It is based on a crystalline polymer (often Polyamide) witch is sintered (close to melting temperature) with a laser. This gives strong, ductile parts. The surface is somewhat porous and loose powder is hard to remove completely. Since the powder gives support it is possible to stack the whole build envelope with parts, and also to add parts during production. The build envelope is for 3D systems machines 330 x 380 x 450 mm. Source: 3D Systems [Online].

First case study

At the SLS user group conference in San Francisco 200 [12], Siemens introduced a new way to produce hearing aids. The following is based on information from the conference[13].

The idea is pretty simple and straightforward. The doctor at the hearing clinic make quick silicon cast of the patients ear and send this to Siemens. Siemens makes a 3D scan of the silicon cast in a 3D scanner. The 3D file is then hollowed and geometry for electronics like a loudspeaker and so on is placed in the cavity. Then this file is send to production in either a SLA machine or a SLS machine. Production time is typically overnight and up 700 are produced at a time. Each part is labelled so it can be recognized when breaking the parts out. The parts are cleaned, electronics are mounted and shipped to the doctor who introduce it to the patient, who now gets a custom fit hearing plug.

1 2 3 4 5

Figure 3. Work sequence for producing customised hearing aid.
1. A silicon mould from the patients ear
2. 3D scanning of the mould
3. Optimising the scan, putting in mounts for electronic
4. Producing the hearing shell in a SLA or SLS machine
5. Finished shell with electronics installed in the patients ear.
Photo: Siemens.

Figure 4. Break out of a package of hearing aid shells, each one is unique and customized to a patient. Photo: Siemens. For Siemens it will be natural to let local manufacturers do the actual production.

12 Presentation at the sls usergroup conference in San Francisco 2002. Presentation at the SLS user group conference in San Francisco 2002, proceedings from the conference can be obtained through 3D Systems [Online].
13 Ibid.

Second case study

The second case study is also a medical product; however, this is a new product with a high level of innovation. A hip replacement surgeon, Bjørn Iversen had been doing hip replacement for several years when he saw the need to address one of the biggest problems with this form of surgery, misplacement. Studies done had shown that a staggering 78% of all hip replacement was misplaced[14], leading to painful lives for the patients and huge insurance payments, 1.5 billion dollar just in the USA[15]. There has been a decrease in hip surgeons of more than 20% over the last 3 years in states like Louisiana.[16]

A method to decrease this number would lead to a product in great demand. Dr Iversen found that there were some universal angles in the mounting of the hip joint and the femur, even though size and form of humans vary greatly. Dr Iversen and his company, Orthometer, have patented an interface to use during surgery. This system gives the surgeon the possibility to replace the hip joint at the correct position. The interface is just used a couple of minutes during the operation and then disposed. The hip replacement marked is today approximately 1 million operations per year in the western world[17].

Orthometers biggest problem was that there is close to 100 different types of artificial hip joints, a left and a right side and a grinder for each of this, bringing the number up to some hundreds different types. Their interface had to match. Even if they just went for one type, there were differences in cup sizes bringing the number of possibilities for one type to 12 different designs. With tooling cost in the order of 30,000 euros for each part and a lead-time of 10 weeks it would be impossible to realise this idea.

In the summer of 2002 Dr Iversen approached Oslo School of architecture with his project. The technology we are running, SLS, could be a possibility to produce these parts.

Figure 5. A picture of a misplaced hip joint (picture courtesy of Dr Bjørn Iversen) There is two parts that needs to be correctly aligned:. The bolt through the femur and the cup in the pelvis. If the bolt is not in the right angle, it will jump out of the cup when the patient moves his legs (crossing their legs etc.).

Figure 6. A small assortment of different hip joints. All have different shape and interface on top. Actually there is not one that has the same system to mount the pelvis ball! Picture: Steinar Killi.

Figure 7. Two examples of measuring interfaces, designed by Dr Bjørn Iversen and Steinar Killi. The rounded top should fit in to the pelvis cup and will vary for different cup sizes. The cross on the middle is used for positioning the hip prosthesis (30 degrees angle) At the bottom we see the different ways to mount the interface to the prosthesis. To cover all possibilities the number of these parts will exceed 1000.

14 Digioia A.M., III et al. 2002.
15 Ibid.
16 Ibid.
17 Digioia A.M., III et al. 2002.

Figure 8. For each operation there is a need for one of these quadruplets. All parts in the quadruplet can vary depending of the prosthesis used. Picture: Steinar Killi.

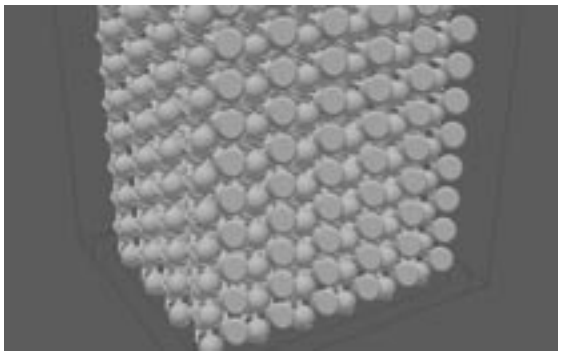

Figure 9. A production package consisting of 240 quadruplets. In theory, everyone could be different. Picture: Steinar Killi.

The polyamide powder had been approved by NAMSA (North American Medical Surgery Association) in 1997 for contact with blood and flesh for up to 24 hours. Because of the porosity of the powder, it would suck blood during the operation and had to be disposed afterwards, a key element to make this an economical success. For each operation it would be necessary with four different interface parts, in the machines at AHO it is possible to run 250 of this packages at a time, making possible delivery 8 days after ordering. Therefore, there was no need to stock parts, and "just in time" production became possible. The price for this kind of surgery could justify the relatively high price on the parts. New variants of hip replacements could be served in matter of weeks with no investment cost in tooling.

The future

The biggest challenges seem to be the price and the versatility in materials. For now, just high-end products with a high price are cost-effective. However, since the price is almost solely dependent on the size of the product, not on complexity in geometry there are possibilities also in the consumer goods area: a high price car producer (Aston Martin) has offered also customized coffee cup and cigar holders.

RM will make an impact on almost everyone. For the designers it means greater freedom in the design process, possibilities to produce parts that were unmanufacturable before there are no tooling cost constraints and complex geometry comes for free. Until now, so-called customized goods have been more module-based, like Adidas and Nike footwear. One could imagine a mass production of unique objects, a contradiction in terms until now. Generative computer modellings are tweaking parameters to produce infinitive versions of unique shape variations. As a pilot case, one could mention the project "Small formations" by Ocean North[18]. This brings the designers creativity in to the market and to the end user. Small niche markets were the designer could interact directly with the customers will lead to small-scale entrepreneurship with low cost and focus on the creativity. For manufacturers it means lower investments, design changes are possible at any

18 Ocean North [Online].

Figure 10. FORMATIONS 2002: three variations of experimental generic objects. The study aimed to investigate several aspects of Rapid Manufacturing including computer modelling techniques for rapid manufacturing, form generation aspects, creative spontaneity related to a rapid manufacturing process and the application of generic objects to varied uses. Source: Birger Sevaldson, Ocean North.

stage for very low extra cost. For customers it means increased personalization and thereby increased feeling of ownership. For the environment it means less overproduction, each part produced has an owner.

RM will increasingly be a manufacturing method and can make a seriously impact for entrepreneurs since the investments and risk will decrease dramatically. Time to market will decrease and possibilities to franchise the production could be a way to lower the transportation cost.

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The Strategic Role of Design on Radical Innovation Strategies

Comparative case study between new technologies and traditional industries in Portugal

Abstract

The survival challenge faced by the Portuguese companies nowadays, has promoted Innovation as the main management strategy applied. This study reveals the importance and the role of Design as the basic and integrative tool for the success of this strategy, focused on Radical or Breakthrough Innovation. The main contribution of this paper is the proposal of a conceptual model developed from a comparative case study research, made among Portuguese companies from the emergent sectors connected to new technologies and Portuguese companies from the traditional sectors. That work allowed the definition of the Success Critical Factors to consider for the development of radical new products: integrating new technologies (Science Knowledge), market sensibility (Marketing Knowledge), forecasting new needs or user interfaces and disruptive creativity (Design Knowledge).

Introduction

This paper intended to give an actual overview about Design, Strategy and Innovation in Portugal. The focus is on problems faced by Portuguese companies, causes and changing forces. A comparative study between Emergent and Traditional industries is made in order to point out new perspectives on the need of radical changes on strategy level and critical factors to success in order to succeed in the international market.

1 Conceptual frame

1.1 From a perspective of management

Strategic management can be summed up as the way any given entity is organized and how it interacts with its surroundings, taking into consideration a given competitive context and market dynamics. We will try to understand the current context that conditions and is reflected on management schools and practices, regarding innovation policies and the role of design.

Genelot[1] claims that corporate management has followed a path based on the planning and setting of goals, resorting to the separation of basic tasks according to coordinated patterns following the principles of obedience, optimisation of organizations and structures, taking into consideration the centralization on economic goals.

In the present social and economic moment, the aforementioned concepts cannot be adapted to the economies of diversification and relaxation, as reality requires enormous changes pertaining to the conception of management models, because the classic organization models fail to meet the requirements of an atmosphere marked by turbulence, change and unpredictability[2].

Companies are then confronted with a need to handle the unpredictable and unstable as well as the possibility to explore the creative potential presented by complexity[3].

This new reality revolutionizes the conceptual model. One must face a break from the past and lack of efficiency of classic strategic planning. Mintzberg (1994) is quite biting when attacking strategic planning: "The benefits of a formal plan do not outweigh its harmful side to the strategic development, because it separates the inseparable, mixes global with the sum of the parts and predetermines the unpredictable."

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1 Genelot 1998.
2 Toffler 1981.
3 Stacey 1993. Nonaka 1991.

The dominant leadership logic for a company is still based on conformity: leading based on estimations, respecting pre-defined plans, using tried-and-tested methods looking for order and stability or guidance for reducing costs and improving processes[4]. Considering the current challenges the companies face, they are insufficient in the treatment of the unforeseen and of instability, which should be handled by a logic of innovation and reaction. The survival/extinction of companies is directly dependent on adjusting quickly and continuously. The balance between evolution and instability, between disorder and order, must be found in a way where innovation outweighs the constructive logic. Innovation is creative destruction as Joseph Shumpeter says[5].

From this point of view, a successful company is identified as a system working in "scientific chaos". It generates instability, even when the surroundings do not affect it[6]. Companies become learning companies, as they focus their attention on organizational learning, knowledge management, geared towards learning, knowledge, and updating, renewing and consolidating knowledge itself.

This knowledge society brings another type of worker, the "knowledge worker", as Peter Drucker has named them[7]. These highly trained people learn and increase their knowledge constantly and can use it[8]. This way, the wealth-generating source is strongly linked to immaterial investments such as specializing competences and valorising human resources. Managing this factors and articulating and integrating them with new technologies becomes crucial in corporate performance[9].

The new Management paradigm: the increase in levels of complexity and uncertainty in the surrounding environment, dynamics of change and technical and technological revolution have brought about an innovation in corporate theories and practices, ranging from simple adaptations to the surroundings to acting on the surroundings and changing them[10].

Summary chart

The emerging reality is forcing us do a re-examination of company centric value creation traditional system. Consumers have more choices that yield less value – a paradox of our present economy. The changing role of the consumer allowed a new frame of reference for value creation, based on the co-creation of value. Several changes have happened in the role of the consumer: from isolated to connected, from unaware to informed, from passive to active. The impact of the connected, active and informed consumer revolutionizes emerging and existing markets, changing the Information access, experimentation, activism, the Global view, the Networking and generating "Thematic consumer communities". All these changes affect the way companies design products, develop production processes, craft marketing messages and control sales channels with little or no interference from consumers. Consumers now have the tools and the interest of interacting with enterprises and co-create value. The main support for co-creation is interaction, considering the emerging reality.[11]

1.2 From a perspective of innovation

To innovate is simply to do things differently, based on the value of ideas, in the recognition of new opportunities and in the ability to implement them. The focus of this article will be Radical Innovation as a strategic path to create distinctive values for companies. Radical Innovation linked to the strategic

4 Zorrinho et al. 2003.

5 Shumpeter 1976.

6 "Its relation with the surroundings is not a simple one of adapting or pro-acting, but fundamentally, one of creative interaction, in the sense of positively exploring, in real time, the instability in order to generate variety and develop new orientations capable of transforming their own surroundings. Therefore, instability is far from being an enemy of success, it is considered vital for the company to remain innovative." Sousa 2000.

7 Drucker 1998.

8 Sousa 2000.

9 "The management paradigm has evolved; it went from a material resources-centred logic to an immaterial resource-centred one". Sousa 2000.

10 Sousa 2000.

11 Prahalad 2004. Peters 2003.

component of business model is currently considered as a main point, especially in Portugal, towards changing the image of Innovation. One of the main authors for this Radical Innovation theory is Hamel[12] and according to Hamel: "Radical Innovation requires to escape the shackles of precedent and imagine entirely novel solutions to customer needs and dramatically more cost-effective ways of meeting those needs".

Radical Innovation is also the way to grow today, customers will always make room for something new, useful, and value laden, "but only if you bring something unexpected and exciting to your customers". It is not impossible to charge people a premium price for something they love. A radical idea is one that meets one or more of the following three standards: "A radical idea has the power to change customer expectations, changes the basis for competition, and is one that has the power to change industry economics". Innovation typically comes from looking at the world through a four slightly different lens[13]. Organizations must provide the right environment to achieve systemic innovation that is to create a process where peers, not the hierarchy, can validate new ideas. The goal is to build systems that mimic the marketplace, where ideas, talent, and capital can find one another quickly.

The only limit to Radical innovation is imagination, organizations must also learn to dream, be ambitious, and have the capability of self-renewal and re-invent[14] themselves and the industries that they compete.

1.3 From a perspective of strategic design

Design is simply "making Sense of Things". The role of Design inside an organization is to materialize the essence of companies, allowing its message and attitude to "make sense" to any receiver. Its virtues may be in the creation of the brand, in the communication material, in the goods or services used to face the market, and should embody all the technical and technological virtues of the social and cultural universe of the company's interaction with the consumers[16]. Recent theories try to tell you how consumer-oriented[17] Design tries to create products adapted to real – to some extent still unidentified – needs, and thus become a source of innovation and competitiveness for companies[18]. The consumer is studied through the observation of different dimensions: the physical one to study the manipulation, use and access of objects in relation to the user, the cognitive one in order to understand the user's comprehension and interpretation regarding the cognitive system, the social one to ascertain the social adequacy and cultural one to understand the adjustment of the goods and their value to people and culture. This method has been evolving, and reference companies such as IDEO Design and Fitch & Doubling are using it as an investigation technique and method to conduct innovative projects in the area of industrial design and this experiment enables them to upgrade the intervention design has to a more strategic level to the companies' core business. The knowledge and concrete and bi-directional relationship with clients is currently one of the main assets for the success of companies.

2 Empirical approach: current Portuguese reality

2.1 Organization and management

Most Portuguese companies are SMEs and are still geared towards the more classical organization processes, namely focused on one issue: short term financial issues (normally their one strategic plan); centralizing resources to reduce production costs; improving production processes; and the classic view of customer relations stemming from several years oriented towards sub-contracting. These are

12 Hamel 2002.

13 "Radical innovators challenge the dogmas and the orthodoxies of the incumbents, spot the trends that are already changing but have gone unnoticed, learn to live inside the customer's skin and think of their companies as portfolios of assets and competencies".

14 Peters 2003.

15 Krippendorff 1989.

16 Deganello 2003.

17 Based on the study of human factors with tools from social sciences and using the ethnographic method.

18 Vinyets 2003.

family-type operations and their corporate vision is confused with that of its head in a monolithic and hierarchical organization. The academic training of the managers is still quite low.

The Portuguese corporate fabric will have to bear structural obstacles to the level of corporate learning related to the success/family tradition, rigidity, hyper-stability, control of introspection and hyper-confidence. Carneiro[19] established a parallel between Mintzberg's[20] configurations and some learning typologies and he infers that the corporate structure has an initially high learning potential, whereas the machine-structure has a low one. There are no relevant innovative structures in Portugal, which are the ones with maximum learning. What few there may exist are small and are in specialized areas connected with Design connected to few emergent industries.

The table (table 1) shows the main characteristics that distinguish traditional from emergent companies.

2.2. Economic and competitive context

Portugal is going through a time of strong economic recession, especially due to the slowing down and contraction of internal demand. The Banco de Portugal expects a decrease in GNP from 1% to 0%. Unemployment increased and public expenditure, which tries to keep it within the limits of the SGP, is still the government's greatest concern. According to Simões, other problems Portugal faces are insufficient internal innovation dynamics (shown in the Innovation Scoreboard); limited skills and limited staff in key areas, "depletion" of financial incentives as a compensation for weaknesses and increased competition from CCEEs, namely Hungary, Poland and Czech Republic, about to join the EU and future receivers of many community funds to strengthen their potential for attraction.

However, there are positive aspects and stronger points that must be highlighted, namely: taking part in the EU and EMU, the employment atmosphere, the workers' flexibility and ability to learn, quality of life and security.

2.3 Innovation context

Innovation is still seen as an expert area, i.e., it has not become an inside concern for companies, one for which all workers are responsible. It is still linked to sheer creativity for which only a few of the company's brains are responsible. Portugal sports a few cases of worldwide recognition of innovation, as are Via-Verde, SIBS's Multibanco or TMN's pre-paid phone cards for mobile phones. If, however, we look at the statistics on innovation, Portugal is far from the European average. 2003[21] indicators from

Table 1. Dominant concepts and parameters: traditional vs. emerging industries.

TRADITIONAL INDUSTRIES	EMERGING INDUSTRIES
Mainly SME	Micro-companies
Family	Spin-offs
Strategic planning	Strategic management
Manager	Entrepreneur
Low academic training	Higher academic training
Focus on financial indicators	Focus on innovation
Internal processes – tangible factors	Creation of value – intangible factors
Individualist	Network cooperation
Internal market	Global market
Machine	Learning

Source: author's chart based on Sousa 2000.

19 Carneiro 2003.

20 10 types: Enterprising, Machine, Professional, Diversified, Innovative, Missionary, Political, or Networking (complex and polymorph).

21 These indicators are divided into groups according to indicators related with human resources, knowledge creation, knowledge transmission and application and financial innovation, product innovation or market innovation.

Innovation Scoreboard, show Portugal as being still in its embryo stage where innovation is concerned: we are EU's second smallest investor when it comes to I&D and the number of patents registered is below the European average. If on the one hand the situation is bleak, it is also encouraging on the other, and an opportunity to make things happen.

There are several reasons for our rank: we are a country of inventors (one of the countries worldwide with most awards) but not innovators[22]. In fact, the origin of the problem is to confuse creativity with innovation. The former is a human trait, stemming from thoughts that generate new ideas, whereas the latter is a "process of creation and introduction of something new into the organization or into the market[23]". [24]

However, the main obstacles that hinder corporate innovation in Portugal are the structures very focused on core business, managers not open to change, reduced corporate training, lack of internal tools and processes, culture and values afraid of risk-taking and lack of corporate cooperation, not sharing of experience and knowledge and weak connections to scientific knowledge, namely to universities, who as research centres not in tune with the needs of the industry either. [25]

In the last decade, there was major focus on process innovation, as it was necessary to renew the production processes and improve quality, due to the subsidiary and community angle of the investments.

The Portuguese leaders in innovation are some major companies in the traditional sector or micro-companies in the emerging segment. These are already born in innovation centres. This happens because thus far innovation has not been a strategic priority to most companies, especially to SMEs. Within the traditional sectors, innovation in the creation of new goods and services is emerging in specific sectors, such as telecommunications, stock market, cork, footwear, textile and some food areas, while in the emerging sectors it is related to companies that produce technological development, namely software, drugs, biotechnology and telecommunications.

The recession made managers more aware of the importance of innovation, as the crisis was deeper because there no brand-projection and no new goods and services were created.

Table 2. Innovation: traditional vs. emerging industries.

TRADITIONAL INDUSTRIES	EMERGING INDUSTRIES
Looking away from innovation	Innovation centered companies
Marginal to business	It's the core business
Little investment in I&D	Profits investeded on I&D
Process innovation	Radical Innovation
Improve to reduce production costs	New-to-the-world, products and services
No link to scientific knowledge / university	Spin-offs links to university / scientific knowledge
Innovation through copy or improving good/service	Idea-based innovation
Success linked to large or multinational companies	Success linked to young entrepeneur spirit
Internal-market oriented	Global market oriented
Individualist view of innovation as a competitive edge	Cooperation and knowledge share systems

Source: author's chart based on Sousa 2000.

22 Freire 2000.

23 Creativity is indeed a necessary condition for innovation but it is not an enough condition to innovation. It is important to bring together the innovators (reinforcing their commercial competences) and the Portuguese companies (through a culture wide open to internal and external innovation proposals), in order to be able to grow from a sustained form of creativity towards invention, accomplishing a successful innovation continuously.

24 Freire 2000.

25 Costa 2004.

2.4 Design, strategy and innovation

We can give a proper image of the current state of the intervention of design in companies, from the point of view of innovation, using three separate realities:

a) There are cases of success, basically where you have clear corporate strategic vision and thought, where design was first integrated as part of the strategic conception of the whole project and then used in managing the various interventions in implementing and developing goods and services, such as Mglass. This sort of intervention will normally either integrate an institutional agency such as CPD – Portuguese Design Center, or design companies will develop it with greater know-how in the various design areas, like Brandia did for the re-branding of Galp Energia.

b) There are many examples of design being active in the end of the development process of a new product (normally through copy) to give the product a "new face", according to the fashion trends. This type of intervention is normally carried out by a designer who specializes in product or equipment design. In this case, design can only perpetuate or postpone the death of this company in the present economic context.

c) There are also cases of companies that look to design as a last resource. They do not know what, how and with which means to produce nor which funds can be allocated to this project.

This scenario opens a number of possibilities and opportunities that will be ultimately up to the Portuguese designers to create their own mechanisms to make the best of and defend the professionalism and competencies inherent to this subject matter.

3 Forces of change and success references

Concerning the forces of change, we will focus on the factors pertaining to the incentive and innovation that strengthen the strategic role of Design. We had one basic principle in the current economic and competitive climate: we must build a new image of Portugal and show it as being a productive and technology-oriented country. Portugal's image is important to the international competitiveness of our companies, regarding the perception of value of goods and services made in Portugal. The decrease in perceived value is shown in traditional goods (for example: for the same quality level, the mark-up price of an Italian shoe is 20% to 30% above that of a Portuguese shoe) and in more technologically advanced goods[26], reflected in greater demand in specifications and lack of trust. An important number of new-generation Portuguese entrepreneurs started the initiative "Compromisso Portugal". The goal is to introduce a more optimistic approach and change corporate attitude and self-esteem to more favourable and ambitious levels, expressed in the document "100 ideias para mudar Portugal" (100 ideas to change Portugal).

There have also been some "agents of change" with some institutional weight striving to change the status quo, such as the creation of COTEC Business Association to promote Innovation, initiated by the Portuguese president and that has the support or the Portuguese corporate universe. Its goal is to publicize and create a Portuguese innovation programme. The link between companies and universities and the role of innovation centres such as technological parks and "company incubators" have also been crucial to the development of this area in Portugal.

3.1 Successful cases of traditional industries

Some companies in Portuguese traditional sectors have achieved international recognition. These cases are usually linked to larger-sized companies, which are not representative of the Portuguese entrepreneurial fabric. In the real estate sector, Sonae (shopping centres in Spain) and some Portuguese footwear and textile and clothing companies have re-invented their business, professionalized their management, adopted more current business models, such as Franchising and these chains may be considered role-models. For our study we have looked at Mglass, as design already plays an important role in their production.

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26 Simões 2003.

Mglass

Mglass was started in 1999, as a way to turn a centuries-old traditional industry with a hard time staying afloat. Mglass is essentially a brand that represents the glass industry in an area (Marinha Grande, Leiria, Alcobaça). It is made up of 18 companies in this sector. The case study touches the main topics mentioned: its management has strategic innovation; it created a brand to maximize and valorise the productive capabilities of this sector, according to a new commercial stance and attitude more suited to the current competition climate. It is an across-the-board, inter-company cooperation project as a way of beating and overcoming the obstacles internationalisation poses. Where innovation is the main strategic goal.

The Mglass objective is to promote the glass cluster of the Marinha Grande region. The intangible values of the marketing proposal and the Design concepts are present in the Brand creation, in the promotional and communication materials, on the houseware product lines, and a lot of attention is paid on the development of special designs POS. The ultimate goal is to achieve new design-based recognition of Portuguese glass within new trends of consumers' spirit. Mglass resorts to several Portuguese and foreign designers to create glass pieces, since design has a strategic role in this company's management[27].

3.2 Successful cases in emerging industries

Focusing on niches or "incubators" for innovation in emerging industries is paying off. Some companies in this sector have achieved international recognition, both through awards, as through publication of case-studies promoted by internationally acknowledged universities such as MIT and Harvard Business School, or even in international magazines and newspapers like Fortune or Liberation where the exponential growth of turnover, international pro-jection, i.e., opening highly competitive spin-off branches in the USA, Spain (Critical Software, Ydreams), inducing creativity and innovation, have been singled out as role-models. It all comes down to entrepreneurship and to a new attitude towards the global market.

Ydreams

Ydreams ("Smile, you're Mobile") is a Portuguese company, a spin-off of the Science and Technology Faculty of the Universidade Nova de Lisboa. It has a technological basis and is geared towards development of interactive and network games for mobile phones and support technologies for VR. "Undercover", a game they produced for Vodafone, is a success story, because it is a strategy game and created a loyal following for Vodafone consumers, who use the company's website to play and compare strategies and ranks and to create clans. This makes it the first mobile phone strategy game with a visual interface. This approach not only encourages using the Vodafone service, it is also an important source of data-collection of quality data on this consumer type or group.

This company also explores the VR aspect. They created a virtual flight over Portugal for Expo'98 and for the presentation of Euro 2004 and together with Designer Henrique Cayatte, Ydreams[28] created a virtual space that enables visitors to have unforgettable experiences, like taking part in a virtual football match, side by side with their idols.

4 Some ingredients for a model of radical innovation

We say that firstly it is essential to promote an approach between both sectors. For the companies in the traditional sector it is crucial to be aware of disruptive changes in industry, of habits and changing role of the consumer and of the impact the new technologies may have on their business both concerning the development of new radical products, as in creating new distribution channels and

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27 Success indicators: since Mglass was launched, both in the national and international market in 2000, the investment on Marketing was around 356 million PTE, in 2004 the total volume of sales should generate one billion escudos, the Mglass products will represent a total of 37% of the Portuguese hand made glass market and 5% of the Crystal sector. Another indicator is that the penetration on new markets as US as been successfully done.

28 Some success indicators: billing went from 1 million Euros per year to an estimated 5 million in 2004; opening Ydreams in Brazil and Spain.

interfacing with consumers. It can also be a financially rewarding area for companies in the emerging sectors. Design has the role of humanizing new technologies such as the wireless, artificial intelligence or nano-technology[29] of bringing into the development of these goods a social, cultural and physical angle, and create more than simple products. Design generates new experiences that give the consumer the urge to buy or that make him or her relate to a given product and, as a result, to the company that makes it, as in the case of the interactive exhibition of Euro 2004 by Ydreams/Cayatte.

A comparative study of quality investigating companies of both sectors, allowed us to define some critical factors for success in organization. They were network corporate cooperation, a logic of a learning organization, consumer-geared approach to make him/her the centre of the innovation project, creativity-inducing environments borderlining confusion and chaos, ambitious business perspective and a taste for risk, together with making mistakes the engine of true innovation, valorising ideas, integrating several skills as a potential for radical innovation, making everyone responsible for innovation and stimulating team-work in search of new radical solutions.

Final considerations

In a world where Schumperter's creative destruction seems to find no stable pauses, we see that learning and radical innovation triumph over adaptation.

In successful managerial practices, where design has a strategic role both in emerging and traditional industries, the following aspects have a key role: proper perception of the challenges of the new economy of the unattainable, proper adjustment of the company to the current competitive situation and market dynamics, putting more stock on knowledge and learning organizations, motivation ability, sustaining stimulus that favour lifelong learning, knowledge of network corporate cooperation as well as learning in the market and from the market through constant experience-oriented interaction with consumers. With a proper management stance that allows a company to gain distinctive knowledge and critical mass or size, with a vision and the right dose of ambition, we can then look at the market reality as being global.

Regarding design, for a few years, namely after the 1992 Porter report, when people started talking about the need to invest in I&D, the wrong message – from the author's point of view – was conveyed, that design (working the final aspects of goods: shape, colour, aesthetics) would help the survival of Portuguese companies. At the time, it was expected that this highly creative subject would conceive products that communicated with the consumer, even when you did not know the strategic path of the companies, their position in the market, or the distribution channels they use, etc. This reductive vision proved to have insufficient basis, as we have shown in this article, when faced with a tough competitive climate, the structural problems the Portugal faced and still faces and a corporate fabric that has little entrepreneurship, where only an integrated intervention based on a revolution of the companies' shape may bring about the necessary changes to achieve success. For this, we need a solid, coherent and visionary strategy.

In this case, the role of Design in the companies is, and should be strategic, in the sense that it must be present in the multi-disciplined knowledge teams that try to create a radical innovation of business. Integrating consumer knowledge on all levels: physical social and cognitive[30] and an ability to have a social and technical reading of design[31] in developing new projects, will be, together with other complementary knowledge like Marketing and Production, the best way to find new paths for the companies and for the development of new, diversified products or services. On the other hand, the recent consumer-oriented approach, acknowledging them as active players in the strategic development[32] in a framework of valorising the creation of new interfaces between the consumer and the company[33], lends weight to the idea that

29 Prahalad 2004.
30 Vinyets 2002.
31 Cova 2002.
32 Prahalad 2004.
33 Prahalad 2004. Peters 2003.

design is really a strategic tool (skill or soft skill) in today's corporate reality, also due to the integrative and wide-reaching character design has, i.e. the company's image, the brand, the communication, the product, and so forth.

We pave the way for future studies, as we think that with the opportunities in the area of radical innovation, design companies must also re-invent and re-organize themselves in order to gain more competence regarding strategy, management and marketing, to better adjust to the reality of the market and develop solid managerial work, promoting a culture of team-work and cooperation, so as to be able to generate radical innovations both for companies as for the development of new products, services or processes. This would make it possible to assume fully Design's strategic role in the implementation of radical innovation strategies in the companies.

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Why Not Latvia? Design for Collaboration between Academia and Industry

Warm-up Q&A

Q: The largest city in the Kingdom of Sweden in 1600s?
A: Riga.

Q: First automobile built in Russian Empire, 1910?
A: Russo-Balt, Riga.

Q: The world's smallest photo camera Minox, 1938?
A: VEF, Riga.

Where do we come from?

The human activity of design is closely related to a society's social, cultural and economic development – in fact, so closely, that one cannot separate one from the other. There is a cyclical cause-and-effect relationship between them: design feeds off the context, and at the same time, it creates the context – the economic, social and cultural reality that we inhabit. While going too much into this context is much beyond the scope of this conference, it is useful to remind the audience where we come from. The history of Latvia's last two generations in a few lines:

23 August 1939: the Molotov-Ribbentrop pact divides Eastern Europe into Nazi Germany and Soviet Union's spheres of influence; Baltic States are included in Soviets' interests.

October 1939: ca. 50,000 ethnic Germans – the country's economic and social elite – leave Latvia for Germany.

October 1939: Soviet Union dislocates a limited number of its troops in Baltic States.

30 November 1939: Finland disagrees with a similar Soviet proposal; USSR attacks Finland.

17 June 1940: an increased number of Soviet troops cross into Latvia; new pro-Soviet government created; after staged elections, Latvia's puppet parliament demands Latvia's inclusion into USSR.

14 June 1941: preparing for attack on Germany, USSR conducts a mass deportation of ca. 15,000 people, Latvia's intellectual and economic elite, to Siberia.

22 June 1941: Nazi Germany attacks USSR, 2 weeks later occupies Latvia.

1941–1944: Nazis exterminate ca. 500,000 Latvian and Eastern European Jews in Latvia.

1944–1945: Nazi Germany loses the war, USSR re-occupies Baltic States; ca. 200,000 Latvians flee to the West.

September 1945: Crimea Conference of the Allies confirms the incorporation of Baltic States into USSR.

1991: restoration of Baltic States' independence.

Half full or half empty?

The process of regaining independence and a capitalist, hierarchy-based economic system was not an easy one for Latvia. By 1995, its industrial output declined to some 50% of 1990 level. Among the casualties of the often-chaotic economic restructuring were the mass production of radios (VEF), minibuses (RAF[1]), mopeds (Sarkana Zvaigzne) and small electrical devices (Straume). Similarly the production of mass furniture destined for the Soviet market plummeted by some 90%, as did many other industries. Latvia's exports to the West in 1990 were only a few percent of its GDP; by 2004, it is almost the reverse – exports to CIS are no more than 15%.

Is this glass half full or half empty? By 2004, we have Europe's fastest growing economy – GDP increasing at 6–8% for the eighth consecutive year

1 That stands for Riga Automotive Factory, not Royal Air Force (not to mention Rote Armee Fraktion).

(last year it was 7.5%), and there are no indications of it slowing down. Foreign direct investment record, given the size of the country, is also not bad: Latvia is constantly in the top five of Eastern and Central European economies. At the same time, Latvia is still the single poorest EU member, and one of EU's 10 poorest regions. The "average" Latvian would make enough in a day to buy a glass of beer in Oslo.

Exporters or sweatshoppers?

Latvia's economy is strongly export-oriented; in industries such as wood-processing, textiles, engineering and metal-processing exports account for 75–90% and sometimes even 100%. However, while these industries refer to themselves proudly as "exporters", the fact is that they are only subcontractors to Otto mail-order catalogue and the like. For example, let us look at the wood-processing industry. Latvia is rich in timber – forests cover some 45% of Latvia's territory. The sector was underdeveloped in the Soviet times and has been growing without interruption for the last 15 years. Wood processing contributed over 40% of Latvia's export revenue last year – above €1 billion (table 1). The highest value-added branch, furniture manufacturing, accounted for just above 1/10th of exports. Furniture sector has been growing at 15–20% for the last several years. Even now, though, there is only one company, called BFDF, which actually sells with its own brand. BFDF, a daughter company of a large manufacturer of plywood furniture parts, has attracted Scandinavian designers and created a network of Latvian suppliers. It positions itself in the higher-middle range price segment with good quality products. It has taken, it seems, the right path – but still has a long way to go to establish itself in the international market. Why do I say so? Because none of you has probably heard of it yet.

But then, have you bought any clothes with a Latvian brand? Well, there aren't any. The picture is rather similar in other branches – textiles and garments, engineering and metal processing. Despite the products' good quality, the customer may never know that the product was made in Latvia because it is anonymous, never branded. Is there room for design here? The answer would seem obvious: design and branding is the way for Latvian industry to increase its added value.

Where is the designer?

Foreign investment and revenues from subcontracting orders may have brought modern industrial equipment into Latvia, but not product development know-how and capabilities, and those that existed pre-1990s have for the most part disappeared. Most complicated

Table 1. The export structure of Latvia's wood-processing industry in 2003 (by value).

ITEM	%
Sawn wood	42
Roundwood	11
Furniture	11
Plywood	7
Firewood	7
Joinery and carpentry	6
Paper and paperboard	3
Packing boxes and pallets	3
Particle board	1
Other wood products	8

Source: Latvian Ministry of Agriculture, Forestry Department.

things can be explained with simple models. The model of a "vicious cycle" is applicable here: the lack of demand for Latvian companies' products with collapse of the Soviet networks caused lack of demand for design services. In turn, the lack of investment in design and original product development led to low-value added products. Companies struggling for survival on subcontracting orders had no demand for young designers and could not pay them. People who studied design could not expect to find work in the industry. Thus, 10 years on, the links between industry and academia (education and research) are non-existent.

Of course, with the entry to EU, with labour and other costs poised to increase, it will soon be impossible for Latvian industries compete as low-cost subcontractors with China, East Asia and Russia. Now the industrialists are faced with the trap: while they often have quite modern machinery, they have no products of their own, and no idea how to market them.

On the supply side, it is not much better. Design education is outdated in content. Designers know little of business and marketing. Most of them do not speak English. The supply of designers from Latvian Academy of Arts is insufficient in both numbers and quality. Education is under-funded, and design research does not exist. Latvian design education is strongly rooted in the free arts; combined with lack of demand for product designers in the last 12 years, graphic design is the only industry that can (and does) employ design graduates.

Why it's not so simple

This is bound to change, but it will not be easy. The vicious circle that has been developing for the last decade has to be broken. The government and the industry will need to accept the fact that they will have to invest in design education, if they want to regain national competitiveness. Of course, it does not end there. Design is also a tool to create Latvia's image, by developing its physical environment, visual identity, facilities for tourism and international transportation. It can be a tool for regional development. National identity itself can be constructed through design, marking the difference: this is Latvia, and it means a distinctive, high-quality environment. This is not a small issue for a nation, which has a history of only 85 years.

What is the most critical barrier here? The lack of links between academia and industry means that each party speaks its own language. All parties are plagued by lack of financial and human capacity, and certain suspicion of each other. Industrialists often think of designers as "artists", "craftsmen", or "constructors" and often do not understand the value of intellectual work or the meaning of intellectual property rights. Designers, on their part, often lack understanding of business and technology, and do in fact often act as artists, thinking of design as self-expression rather than problem-solving.

Latvia's social and cultural context is not so favourable to design either. The fact that the society at large has lost appreciation for elegance and beauty, and confined them to the domain of fine arts rather than everyday life is a legacy of Soviet occupation. Degradation of urban and rural environment for 60 years, decaying public infrastructure have got people used to discomfort and dysfunction – and with little faith that it could be better for the same money. Perhaps a delayed reaction to Soviet hypocrisy, the moral values have imploded; there is a swing back into cynical individualism – lack of respect for others and for the common good, translating into the opposite of "design for all". On another level, there is a certain tendency in Latvia towards self-isolation – perhaps as a reaction to decades of Soviet oppression and Russification.

What we did

Despite all those real and imaginary obstacles, in summer 2003, three Latvian industry associations and three universities signed a protocol, agreeing to cooperate on establishing the Design Incubator. The Incubator is envisaged as a both physical space and logical structure, where academia, industry, designers, students, and researchers can interact to create new products, new companies, new brands, and new curricula. The Incubator will attract international design professionals in various roles: as professors,

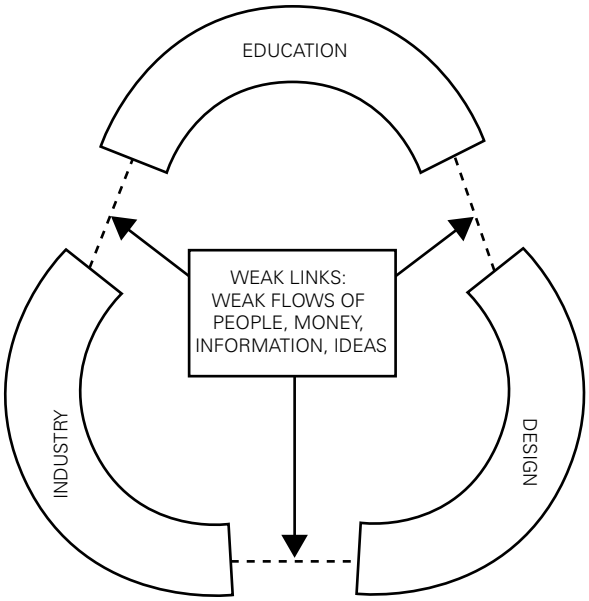

Figure 1. The weak links.

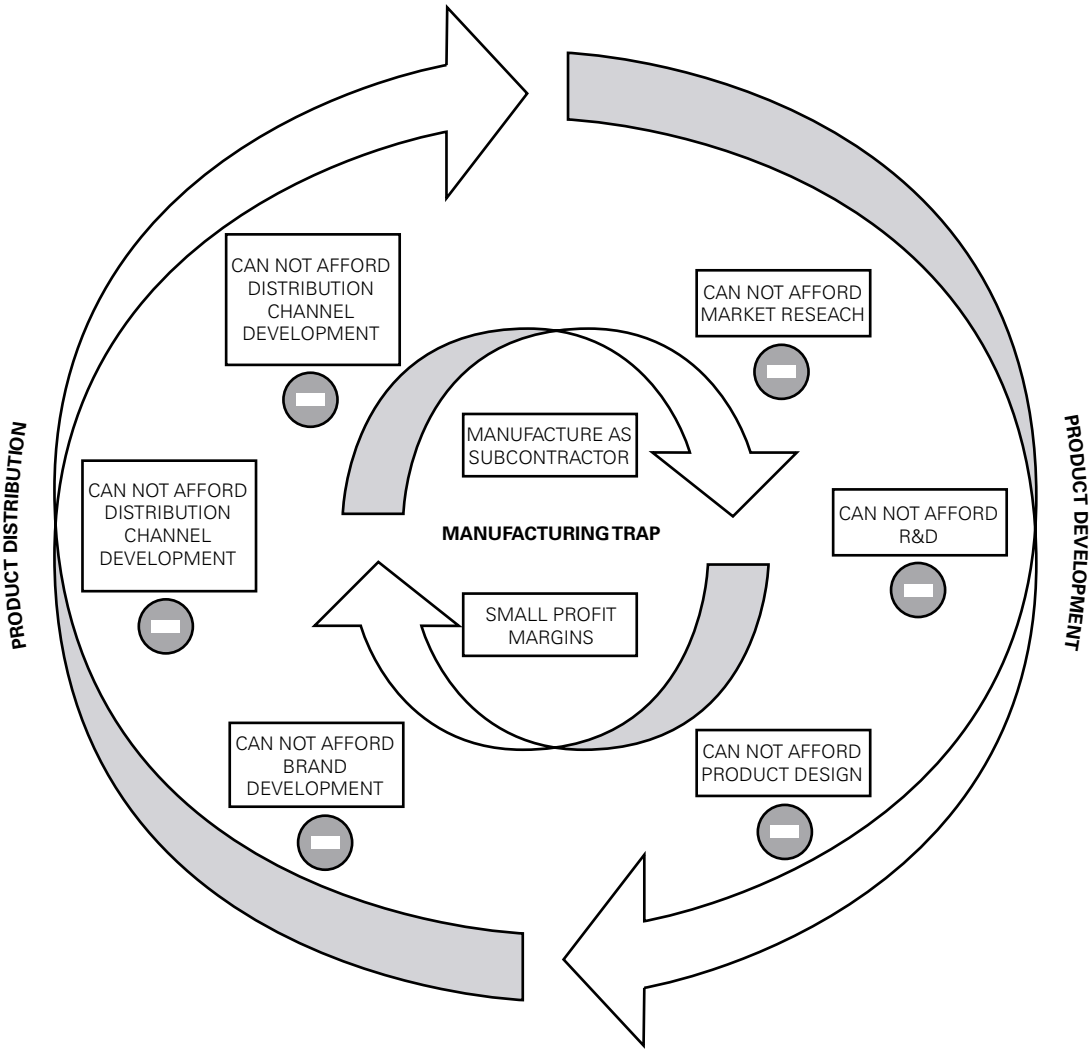

Figure 2. The manufacturing trap.

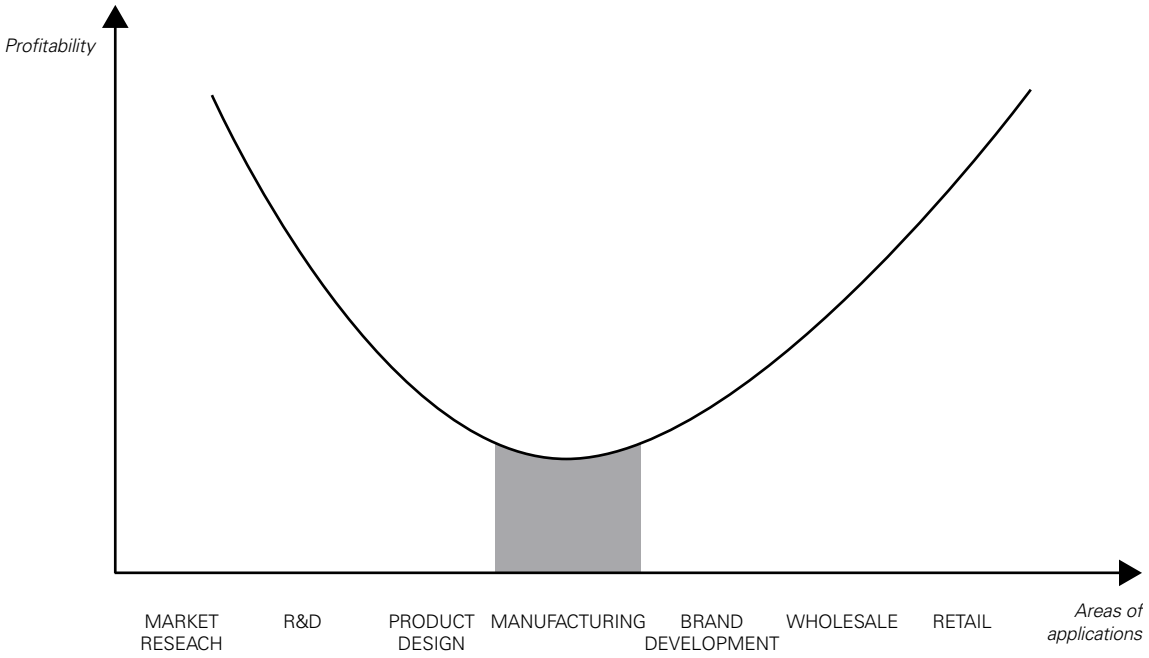

Figure 3. The bottleneck ("The saddle model").

leaders of workshops, designers, researchers, as well as create opportunities for internationalization and mobility to Latvian design professionals and students.

An abstract idea in snowy winter of 2002, by spring 2004 Design Incubator has grown into a project proposal, which the stakeholders will submit to government and EU funding. Although on a small scale, the government and industry cooperated in financing the development of the proposal. However, the dialogue between industry and academia in Latvia would be a negotiation between two poor people: one has nothing to sell, the other no money to buy. It is impossible to restart the beneficial cycle of demand and supply in design services without introducing experience and knowledge from outside. Responding to our interest, Danish Government has commissioned a project called Design for Latvia from a certain Danish design.

With a little help from our friends

The idea for this project emerged in fact at the Cumulus conference one year ago, when Dr Ken Friedman presented the design strategy job done by Mollerup team for Estonia. As Danish government was ready to finance projects in Latvia, Latvian Ministry of Economy approached proposed them a similar but extended project for Latvia. In December 2003 Mollerup Designlab won the tender. Design for Latvia[2] project's original – if somewhat longer – name is "Forming the strategic and operational basis of intensified use of professional design measures in Latvian enterprises". It consists of these main parts:

– mapping the Latvian design sector demand and supply (including a review of education)
– proposing structures and strategies for Latvia based on this mapping, and on review of design policies abroad
– conducting three pilot projects in product development with individual Latvian companies
– developing training seminars/courses for benefit of Latvian designers and business managers

In addition, the project will produce a number of case studies on successful use of design by companies in Latvia and abroad, and help with developing an application for EU funding. By the time the project

2 Design for Latvia [Online], available at: <http://www.designforlatvia.lv>.

ends with a big-bang international conference planned for Monday, 18 October 2004, I hope we will have gained enough experience to carry on with the things started, and to persuade our government to take part as well.

What do we want from you?

We – as a country – have missed out on many things in the last 60 years, but we want to catch up. For the next 60 years or so, there are limitless opportunities for good design in Latvia. Welcome to Latvia!

Emils Rode
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